DEVELOPING A STRATEGIC FRAMEWORK FOR NATIONAL MARINE CONSERVATION AREA ESTABLISHMENT IN THE BAY OF FUNDY

by

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Abstract

One of Canada's options for conservation using the marine reserve approach is Parks Canada's National Marine Conservation Areas (NMCAs) program. Parks Canada has divided Canada's oceans and Great Lakes into twenty-nine distinct marine regions, of which the Bay of Fundy is one. With its high level of unique biological diversity and human activity, the Bay of Fundy may be a good candidate site for pursuing NMCA establishment in the near future. However, it is critical not to base NMCA establishment decisions solely on a biophysical foundation without considering the social condition and interests of the region. This study explores the potential for NMCA establishment in the Bay of Fundy by examining the current views of various members of the broadly defined Bay of Fundy community. Qualitative research, in the form of interviews, was conducted around the Bay of Fundy perimeter to answer two primary research questions: where in the Bay of Fundy would the community be most supportive of pursuing talks on this idea; and what process of engagement would the be most appropriate to pursue to increase the likelihood of success?

The research identified the St. Mary's Bay/Brier Island region, on the Nova Scotia side of the outer Bay of Fundy, as being the location with the highest likelihood of success in the Bay. Especially when compared to the New Brunswick side of the outer Bay and the inner Bay of Fundy, there is considerable opportunity in the St. Mary's Bay/Brier Island region to pursue further discussions on NMCA establishment in the region. This study also resulted in a possible framework for NMCA establishment in the Bay of Fundy. The results highlight important initial steps that might be taken in order to optimize the chance of success. These steps include: recognizing lessons learned and the damage of past mistakes; building trust; finding non-governmental project leaders from the local community; ensuring early involvement and commitment from all partners and stakeholder groups; establishing a non-governmental secretariat to guide the project; developing a broad education campaign to generate public support; and the securing of funds and other resources.

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1. Introduction

Establishing marine protected areas has been on the Canadian political agenda for a number of decades. Specifically, Parks Canada has been pursuing the idea since 1970 (Dionne, 1995), initially in the form of marine parks. Parks Canada produced Canada's National Marine Conservation Areas System Plan in 1995 for the protection of representative areas in twenty-nine natural marine regions across Canada (Parks Canada, 1995). The Government of Canada can establish National Marine Conservation Areas (NMCAs) under the *Canada National Marine Conservation Areas Act* (2002), for which Parks Canada is responsible.

The Bay of Fundy is one of the twenty-nine identified marine regions requiring protection through NMCA establishment. With its high biodiversity and associated human use, it is a natural candidate site for protection in the near future. An attempt by Parks Canada at marine park establishment in the Bay of Fundy was abandoned in the mid-1980s; however, with the federal government's renewed interest in NMCA establishment (Parks Canada, 2003a), it is timely to investigate whether the Bay of Fundy is now an appropriate place to pursue this.

The research described in this thesis is focused on the process of establishing a future NMCA in the Bay of Fundy. The work is both an evaluation of Parks Canada's development and establishment process for marine conservation areas in Canada to date, and an investigation of *if* and *how* (i.e. process) a NMCA could be successfully

established in the Bay of Fundy region. In the research, I have also identified, from a social perspective, *where* (i.e. location) in the Bay of Fundy the development of a NMCA could be pursued with some probability of success. This socially identified 'hot spot' is compared to biophysical data that identify marine areas of conservation significance, in order to detect whether there is any overlap. The primary research questions of this thesis are therefore: is there a location in the Bay of Fundy where there is enough support to pursue NMCA establishment in the future, and if so, what type of process would be required to ensure the highest probability of success in the area?

In this study the focus is on identifying a location where there is potential for successful NMCA establishment from a social perspective: where are people interested, responsive, supportive of the idea, and where in the Bay are people unenthusiastic, pessimistic, and resistant? There are a couple reasons for looking at the issue from this perspective. First, several recent studies have identified biophysically significant areas in need of protection in the Bay (King, 2004; Buzeta et al., 2003; Lotze and Milewski, 2002); however, they have not incorporated social data into this identification process, and most recommended that this should be done in the future. For example, Buzeta et al. (2003) state: "the type of management and protection that a representative or a distinctive site will require, will therefore depend on more than just their ecological value; coastal communities and coastal and marine industries will need to participate to define their vision for the future of these areas" (p.64).

The second reason for focusing on the social dimension of marine conservation area identification is, as mentioned above, that area identification must consider both the

ecological and social needs in a region (Barr, 2002; Jones and Guénette, 2002; Kelsey et al., 1995; Neis, 1995; Paisley, 1995). Boyd and Smith (2002), Fenton et al. (2002), Lien (1999), and Walters and Butler (1995) have all highlighted the importance of giving primary consideration to the social context of an area of interest for marine protected area establishment in Atlantic Canada, where coastal communities are tied to the sea. They advise that government administrators should not come into a region having already drawn lines on a map based solely on biophysical features, and not take into consideration the human-use patterns in the given area, or the social needs of the surrounding communities.

Nevertheless, the pursuit of marine conservation area establishment must also be based on good science, so that the conservation area will actually make a desirable ecological difference. This will also provide assurance to community members that establishing an NMCA will be a worthwhile initiative, which will provide positive results (e.g. higher fish landings and less social stress). Because up-to-date biophysical scientific data currently exist for the Bay of Fundy, new social scientific research is needed to provide a comprehensive picture for future NMCA establishment in the Bay.

In this thesis I do not attempt to correlate the various viewpoints, opinions, and advice with the person/group/organization/affiliation that stated them. Thus the purpose of this thesis is not to assign different levels of support, or different ideas for establishment, with the various users, stakeholders, and residents in the Bay of Fundy community. Instead, in this thesis I attempt to compile the varying perspectives and thoughts on the issue from a cross-section of the broad Bay of Fundy community, and

subsequently identify the most functional path for moving forward with NMCA establishment in the Bay. The research conducted for this thesis is purely qualitative and descriptive in nature; I have not attempted, for example, to quantify: 'how many people support this' or 'what percentage of interview subjects think that'.

Although this is a qualitative research project, it is not based strictly in **grounded theory**[*]. Although the research is deductive in nature it is also exploratory, as little research has been done on this specific case previously. For example, the research is being carried out within the Bay of Fundy and NMCA context, and is looking to answer specific questions (i.e. deductive), as opposed to trying to discover something completely new, or developing a new theory from the data (i.e. inductive). Instead of identifying previously undiscussed themes within the data, here I am attempting to answer two clearly articulated questions, which were identified at the outset. This is *applied* qualitative research, having both scholarly and policy relevance.

Because the topic of marine conservation area establishment often elicits many different comments, questions, or concerns from people, it is necessary to briefly clarify for the reader the common issues that are *not* addressed in this study. This thesis is not a thorough examination of the current Bay of Fundy environment and the state of its biophysical features. It is not an evaluation of the effectiveness of marine protected areas of meeting various conservation goals, or the usefulness of zoning marine protected areas relative to human use, or an investigation into alternative management methods and where each is appropriate. Nor is this an evaluation of the science behind Parks Canada's

[*] **Bold** text definitions can be found in Appendix 1 – Glossary

definition of representivity, delineation of representative areas, or effectiveness at protecting the marine environment. Instead, this thesis is working within Parks Canada's established program, and its related mandate and legislation as it stands today. Since, as Dr. John Roff noted in one of my study interviews, even if it's not perfect, it's important to get as much protection as possible for the marine environment, as soon as possible, and then keep working from there.

Thesis structure

This thesis consisted of two research phases: the first being a literature review, and the second being primary research conducted through interviews. A full description of the research methods used in this study, and the rationale for choosing them, are described in Chapter 2.

Research examining the establishment of marine conservation areas needs to be considered in the context of the region under consideration. In many ways this context will determine what processes should be pursued, if any. Therefore, the first phase of research was to conduct a thorough literature review in order to establish a clear context within which to carry out and analyse this study's primary research; the results of this are discussed in Chapters 3 and 4.

There are three federal agencies in Canada responsible for establishing marine conservation areas: Parks Canada (NMCAs) and Canadian Wildlife Service (Marine Wildlife Areas), which are currently both part of Environment Canada; and the Department of Fisheries and Oceans (Marine Protected Areas or MPAs). Therefore the

first part of the literature review (in Chapter 3) is an examination of these three different types of marine conservation areas, and specifically for NMCAs and MPAs an investigation of the legislation and policies that govern them.

As the idea of establishing marine conservation areas has existed for more than two decades, there are some Parks Canada case studies to examine, which can provide guidance for future endeavours. Therefore, the second part of the literature review (also in Chapter 3) is an examination of past Parks Canada marine conservation initiatives, and how the extent of public participation in these shaped their outcome. Both successful and unsuccessful case studies were analysed in order to recognize both past mistakes and past achievements. From this, a list of important components for successful future NMCA establishment processes was identified.

The third part of the literature review (Chapter 4) was a description of the broad Bay of Fundy environment: its natural history, including biophysical features and ecologically significant areas; its human history, including the Aboriginal context of the area and current human use patterns; and finally other recent marine or coastal national conservation initiatives in the area.

The results of the second phase of research, the primary research (i.e. interviews), are discussed examining the two research questions separately, first location and second process. By means of the research, a general location was identified as being relatively more likely to provide a supportive environment for discussions on NMCA establishment, compared to other areas. Specific reasons for avoidance of these other areas in the Bay are also discussed (Chapter 5). Many important and useful comments

and suggestions were also made regarding the type of process that people in the area identified above would be most likely to participate in and support. Many ideas were gathered regarding how to effectively pursue NMCA establishment in the area, which, if included in any future proposal, would substantially increase the probability of success (Chapter 6). Conclusions of the research, and recommendations for implementing the findings, are summarized in Chapter 7.

2. Research Methods

2.1 Purpose

The possibility of establishing a marine conservation area in the Bay of Fundy has *not* been officially studied in nearly twenty years, following the abandonment of Parks Canada's West Isles proposal, explored during the mid-1980s. Neither Parks Canada nor other researchers are currently exploring the possibility of establishing a NMCA in the Bay of Fundy. The previous Marine Park study is now out of date, leaving a large data gap with respect to this issue. Although this data gap exists, this thesis did not come directly out of the literature (e.g. from recommendations for future work, etc). Instead the research conducted for this thesis was identified as a needed area of inquiry because of Parks Canada's commitment to eventually establishing a NMCA in every marine region they have identified, and since the last attempt to find an acceptable site in the Bay of Fundy (i.e. the West Isles initiative) was not successful. Thus **exploratory research** was undertaken to collect data to answer the primary research questions addressed in this thesis: where (i.e. location) and how, if possible (i.e. process), could a NMCA be established in the Bay of Fundy. There were three phases to this study. Phase I consisted of a literature review, Phase II was comprised of interviews, and Phase III was data analysis.

2.2 Literature review

The purposes of Phase I were: 1) to become familiar with the biophysical and socio-economic environment of the Bay of Fundy; 2) gather information on past and present conservation efforts in the area; and 3) to examine Parks Canada's relatively new

NMCA program, as well as their past successes and failures under the former Marine Parks program. Since Parks Canada's marine conservation initiative is several decades old, and includes earlier work concerning the Bay of Fundy, many lessons can be learned from their recent history in the region and elsewhere.

An extensive literature review was carried out, and the information collected was supplemented by discussions with various individuals from many different industries, associations, and communities. Data collected through this dialogue is referred to in this thesis as 'personal communication'. This research phase provided important background information on: marine conservation in Canada (the *Oceans Act* and the *NMCA Act*), Parks Canada's past successes (Saguenay-St. Lawrence and Lake Superior) and failures (Bonavista Bay and the West Isles), current efforts (Gwaii Haanas), as well as the broad Bay of Fundy environment, areas of conservation significance, and current human use patterns.

This study is not replicative in nature. It is not based on a similar study carried out previously, since virtually none exist in terms of looking *proactively* at location and process for marine conservation area establishment in the Bay of Fundy. Most related literature is more *reactive* in nature, discussing the process and outcomes of marine protected area establishment 'after the fact'. There is much more literature available from this perspective, both nationally and internationally. Therefore the literature review for this thesis did not provide insight on *how* to answer the primary research question within this context.

2.3 Interviews

The purpose of Phase II was to interview community members and stakeholders in the Bay of Fundy region, to answer this thesis' primary research questions. This research is not attempting to create a general model applicable to other situations, but instead is grounded within the Bay of Fundy context.

> Because hypotheses are not being tested, the issue is not whether the researcher can generalize the finding of an interview study to a broader population [outside of the Bay of Fundy]. Instead the researcher's task is to present the experience of the people he or she interviews in compelling enough detail and in sufficient depth that those who read the study can connect to that experience, learn how it is constituted, and deepen their understanding of the issues it reflects. (Seidman, 1991: p.41).

Interviews were also used to update and supplement the information obtained during the literature review, specifically concerning the current biological state of the area and whether it needs protection. As well as the socio-economic state of the area, including: current users who rely on this area of the Bay of Fundy for their livelihood; reasons for past successes and failures in NMCA establishment; and past resistance to marine conservation efforts in the region and how this could be overcome (if possible). The information gathered from research participants is cited with the participant's number or name, and is not referred to as 'personal communication'.

2.3.1 Why interviews?

"We interview people to find out from them those things we cannot directly observe" (Patton, 1990: p.278).

Because of the nature of this research topic, in-person interviews were selected as the measuring instrument over standardized/structured questionnaires. This research topic

has many levels to it, and most people have a great number of opinions about it, which cannot be sufficiently captured in a written questionnaire. The questionnaire would either limit the participants' answers, or it would take an enormous effort on the part of the participant to write out all their thoughts and they may not want to participate. The issues are complex and interconnected, thereby making qualitative interviewing a more appropriate data collection strategy.

Interviews are beneficial for topics such as this because they motivate the participants to provide more complete and accurate answers to questions (Sullivan, 2001). As well, because study participants came from a variety of backgrounds, experiences, and education, it was especially important that there be an opportunity for them to ask questions and get clarification on a question or topic (e.g. the difference between a NMCA as governed by Parks Canada, and a MPA as governed by Department of Fisheries and Oceans). As Sullivan (2001) explains, interviews, and the freedom this two-way dialogue provides, virtually eliminate literacy problems, a limitation of questionnaires.

Also, qualitative research using interviews is better suited for this type of exploratory research, where participants' views are not well known. Interviews provide more flexibility in the data collection process compared to questionnaires (Sullivan, 2001). Semi-structured interviews were used, where specific questions are asked of each participant in open-ended style, and thus the interviewer has the flexibility to "probe, rephrase questions, or use the questions in whatever order best fits that particular interview" (Sullivan, 2001: p.265). Flexibility in wording and flow was important for this research since different participants have different perspectives on this subject, and

therefore questions needed to be tailored to the individuals. Also, the interview remains fairly conversational (Sullivan, 2001).

2.3.2 Why face-to-face?

Face-to-face interviews were used instead of telephone interviews for a number of reasons; although, they are more time consuming and expensive. Telephone surveys are more appropriate for short interviews, where the questions being asked are simple and straightforward (Sullivan, 2001). Also, because telephone surveys are only voice-to-voice they miss out on some of the desirable characteristics of face-to-face interviews (Sullivan, 2001). For many participants this topic can be somewhat sensitive, and there needed to be an element of trust established between the participant and interviewer, to ensure accurate responses were obtained. This is especially important with some coastal community members, who may be sceptical of government-led conservation initiatives and the potential impacts on their communities and livelihoods. Government and academics are aware of the somewhat controversial nature of this subject, and they too are relatively cautious about discussing this issue. Therefore, face-to-face interviews provided a more comfortable scenario in which to facilitate discussion on these issues. Only one interview had to be carried out over the telephone because of a weather disruption. It was noted that in this case it took longer to establish a rapport than was usual, compared to other interviews. However, in the end the interview was deemed to be of equal value and quality when compared to the rest.

2.3.3 Formulating questions

"Qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit" (Patton, 1990: p.278). Interview questions were formulated which, in combination with one another, would answer this project's primary research questions. The general interview guide approach was used, where the set of issues to be explored with each participant are outlined before the interview, but the particular order and actual wording of questions is not set, and does not need to be the same for each interview (Patton, 1990). In this project the **interview guide** was a written list of potential questions brought to each interview, and each interview began the same way. The first question was designed to be both a good 'ice-breaker', and to establish rapport. As was suggested by Patton (1990) and Sullivan (2001), this first question was formulated to be general, non-threatening and familiar to the participant, to reduce any tension or apprehension they may be experiencing. The interviews began with simpler questions, where relatively more straightforward answers are possible, and progress towards the more abstract, in-depth, and at times personal questions.

Two different interview guides (Appendix 2) were created, recognizing that study participants came from a variety of different backgrounds, cultures, education, and research experience. One was designed specifically for individual community members and the other for 'professionals'. Both guides asked basically the same questions, but used different language and asked questions in slightly different ways. Compared to the guide for professionals, the wording of the questions in the guide for community members was less academic. The interview guides were developed in consultation with

the thesis committee, and were approved by the committee, and by the Dalhousie Research Ethics Board.

"The fundamental principle of qualitative interviewing is to provide a framework within which respondents can express *their own* understanding in their own terms" (Patton, 1990: p.290). The interview questions were designed to be open-ended, where the participant is asked to describe or explain something, and they shape their own answer (Sullivan, 2001). Closed-ended questions, where the participant is given "a fixed set of alternatives from which to choose" (Sullivan, 2001: p.149), were not appropriate here. It was important that participants' did not feel limited in how they answered the questions or that the interview was too structured, and that the interview did not lead them one-way or the other. A truly open-ended question: 1) "does not presuppose which dimension of feeling or thought will be salient for the interviewee"; and 2) "allows the person being interviewed to select from among that person's full repertoire of possible responses" (Patton, 1990: p.296). This permits the interview to flow more like a conversation, and the participant is more likely to feel comfortable responding. The order and specific wording of the questions was adapted to the study participant's answers to maintain the flow of the interview. Sometimes study participants would provide answers to questions during the discussion, without ever being asked directly. However, throughout the course of each interview, it was ensured that every question was answered, either directly or indirectly.

Because of the nature of the topic, the questions about potential location (i.e. the 'where' questions) were asked in a less direct manner than the questions about process (i.e. the 'how' questions). Some people are wary of identifying or articulating exactly

where they think a protected area should be, because they think it might threaten their livelihood, or that of friends and family. They may worry that other members of their community will resent them for 'working with' proponents of protection. They may worry that by identifying an area, the government might all of a sudden come along and try to protect it, and this would be their 'fault'. A number of protected area practitioners have noted that sometimes people will switch their viewpoint on the issue depending on the situation, in one scenario an individual will be supportive of protection in a given area, but put them in front of their friends and/or colleagues and they have nothing positive to say.

Therefore, the question of possible NMCA location was explored indirectly, using a series of questions about: their level of support for marine conservation initiatives; the level of support from the group they represent (if applicable); which groups in their community would be the most supportive; and which groups would be the most resistant. They were also asked to identify any specific threats to the Bay of Fundy environment, as well as particularly sensitive or significant areas, which could be compared to biological reports collected in the literature review. The question of process is a much less sensitive one; it is does not appear as 'threatening'. There is less social pressure restricting their answers, and it seems people will talk more openly about their opinions and ideas on their concept of a good process. Therefore, the question of "how" could be asked directly in most cases.

2.3.4 Selecting study participants

Study participants were selected primarily by purposive sampling and snowball sampling. **Non-probability sampling** is appropriate in this case because: 1) there is no

intent to generalize the results from this sample to the larger population; 2) the goal is to understand the social process or a particular setting (i.e. the Bay of Fundy) or group of people (i.e. the Bay of Fundy community); 3) it is impossible to ensure every element in the population had a chance to appear in the sample, both because of the lack of a complete list of all elements in the population, and other constraints (for example, it was not possible here to ensure each and every fishing interest was represented) (Sullivan, 2001).

The first step in selecting study participants was purposive sampling. Purposive sampling is when the researcher selects elements people for the sample, which the researcher's judgement and prior knowledge (and in this case, that of the supervisory committee) "suggests will best serve the purposes of the study and provide the best information" (Sullivan, 2001: p.209). The critical individuals, communities, and stakeholder groups to talk to were identified using the literature, and through discussions with my thesis committee.

Participants were identified because of their connection to the Bay of Fundy, and in some cases their involvement in marine conservation, not their familiarity with Parks Canada's NMCA program. The key consideration in the selection of participants was whether they had a stake in the current and future management of the Bay of Fundy and its resources, and whether they would potentially want to be involved in the establishment process for a NMCA in the future. Some participants were selected as individuals, while others as a result of their affiliations and/or employment. Participants were selected as, and can be considered "experts" in their particular field (be it fishing or tourism for example).

Initially, approximately twenty people/groups were identified, including: academics; federal, provincial, and municipal government employees; and representatives from First Nations, the aquaculture industry, fishing industry, tourism industry, shipping industry, economic development, NGOs and community groups. Snowball sampling was then employed by which original participants were asked to recommend other people. Many were added to the list in order to ensure broad representation of various viewpoints. Because the Bay of Fundy is bordered by both Nova Scotia and New Brunswick coastlines, a NMCA here could be an inter-jurisdictional issue; therefore, it was important to include individuals, communities, and groups from both sides of the Bay.

In all, thirty-seven individuals were interviewed, nineteen from Nova Scotia and eighteen from New Brunswick (Appendix 3). This number, and the groups they came from, was considered appropriate based on sufficiency – i.e. the numbers were sufficient "to reflect the range of participants and sites that make up the population so that others outside the sample might have a chance to connect to the experiences of those in it" (Seidman, 1991: p.45). It should be noted that in this study, saturation (i.e. when the researcher is no longer learning anything new) is virtually impossible because there are so many people involved and their experiences vary greatly.

2.3.5 Contacting interviewees

Initial contact was made with study participants via telephone. A scripted introduction was used (approved by the Dalhousie Research Ethics Board). After some discussion the potential participant was asked whether they would be willing to

participate in my research. No one who was contacted declined to be interviewed. One potential participant was unable to be contacted after repeated attempts.

Following initial contact and the participant's agreement to be involved in the research, a confirmation email or fax was sent. It provided further details about the interview process, and a short description of my research and what a NMCA is, including where to find further information. As Sullivan (2001) explains, it is important for participants to have adequate information to give accurate answers, and therefore it is up to the researcher to provide a clear context for the questions. The purpose of this follow-up email was therefore to a) clarify any misunderstandings or confusion arising from the initial phone conversation, and b) to ensure that each participant had a similar baseline of knowledge about the topic. Even so, some participants obviously had more experience and understanding compared to others, which was both expected and wanted in this study. If there was substantial time (e.g. two weeks) between the confirmation email and the date of the interview, then a reminder email was sent a few days before the interview date.

2.3.6 Conducting the interviews

The location of the interviews varied depending on the participant's preference. The majority of interviews were carried out at either the participant's office or home, some were also conducted in public places if requested. Before the interview began, participants were asked to read a consent form (approved by the Dalhousie Research Ethics Board), which outlined the purpose of the study, and any potential benefits and risks to the participants in being involved (see Appendix 4). They were given as much time as they wished to read and sign the form. On the signature page, participants were

asked to choose the level of confidentiality they wanted and how they wished to be referred to in the thesis. The interviewer kept one signed page and gave the participant the other, along with the consent form.

Participants were given five options for confidentiality, ranging from complete anonymity (i.e. 'a member of the Bay of Fundy community') to being referred to by name and affiliation. It was important to include the name and/or affiliation option because this would be potentially useful information to publish (in the thesis), since Parks Canada may wish to contact them in the future for possible involvement in NMCA establishment should it be pursued. In the past, Parks Canada has established Public Advisory Committees to help lead proposed NMCA projects through establishment; in some cases these were critical for success. Therefore, it is reasonable to consider that individuals involved in this research may be helpful in future public involvement/ participation programs, should a project be developed for the Bay of Fundy. Thus, publishing their names and associated organization or group, *if they consent*, could help future study in the area. Almost all participants were willing to be named.

Interviews were carried out between November 2003 and June 2004. The interviews were scheduled to last one hour, but ranged from thirty minutes to an hour and a half. Each interview began with the same question regarding the participant's connection to the Bay of Fundy and/or marine conservation. The interview flowed from there depending on the participant's answers. In most cases, as the interviewer progressed through the questions the participant would offer answers to upcoming questions on their own, in which case these questions were either skipped or rephrased in attempt to get

more details. To elicit more in depth responses to a question, **probes** and other follow-up questions were used, as suggested by Patton (1990) and Sullivan (2001). In some interviews, it was inappropriate to ask the participant every question, depending on the participant and their background; therefore, these questions were left out of individual interviews, as recommended by Seidman (1991).

Interviews were recorded using a digital recorder. Hand-written notes of key points and potential quotes were also taken throughout the interview, as is suggested by Patton (1990). This combination was used to ensure accuracy, avoid bias, and overcome any technical difficulties experienced with the recorder. Only two participants refused to consent to being audio-recorded. Also, one interview was conducted by phone because of bad weather, and during another there was a technical problem with the recorder. In these situations, additional detail was included in the written notes, and fortunately all four participants allowed the interview to go on longer than the standard hour, to ensure completeness and accuracy.

2.4 Data analysis

The purpose of Phase III, data analysis, was to identify within the data answers to the primary research questions articulated above. The qualitative nature of this research meant that the stages of data collection, data analysis, and drawing conclusions were not carried out separately and sequentially; this is standard in quantitative research. Instead, these phases were more concurrent and interrelated, which Sullivan (2001) notes is typical in qualitative research: "the researcher begins doing analysis and drawing conclusions almost as soon as data collection begins, and the analysis and the conclusions

provide direction for what additional data collection needs to occur" (p.452). In this study, even the very first interview provided some important answers, and through doing all the interviews and compiling field notes, more in depth answers were revealed.

To facilitate analysis, full verbatim transcriptions of all interview recordings were completed. Doing the transcription myself was an important means of becoming familiar with the data, and also facilitated my preferred method of **coding**. The coding was done manually during the transcription process. Instead of transcribing all of the interviews first, and then going back and coding them all, it was more useful to code while transcribing, as answers to the primary research question were brought up, and thoughts and ideas were triggered by participants' answers.

Since two clear questions were being investigated, 'location' and 'process', each time a related comment was transcribed it was highlighted in a specific colour (using the Microsoft Word highlight function). Different colours were assigned to different themes: 'location', 'process', quotes, and new or distinctive comments/points that did not fit into the primary research questions but were important to note. For each highlighted section of interview text, notes were made in the 'results' section. The results section was organized into more specific themes within the broad "where" and "how" categories, such as fishing considerations, tourism considerations, etc. Each time a note was made the interview number and page number was recorded. Therefore, the conclusions and recommendations were formulated as the data analysis progressed.

For the data analysis, both **categorizing strategies** and **contextualizing strategies** were employed. Coding was the categorizing strategy used to organize the data. Sections of transcribed interviews were categorized in relation to the two

components of the primary research question, 'location' and 'process'. This is pattern coding, where the codes divide up the data into more manageable sections by identifying emergent themes or explanations (Sullivan, 2001). These coded sections were usually associated with participants' direct answers to particular questions. Interpretive coding was also used, which requires "field researchers to use some of their deep understanding of the social context in order to place a section of field notes into a category" (Sullivan, 2001: p.456). This type of coding was not often needed for specific questions, but helped in drawing conclusions from certain sections of the interview, or the entire interview as a whole.

The contextualizing strategies "are less concerned with abstracting from one set of data in order to generalize to other people or circumstances, and more interested in a deep and rich appreciation of the individuals or situations from whom the data were collected" (Sullivan, 2001: p.461). A form of **profiling** was used to associate responses with individuals' backgrounds and experiences. Although this thesis does not attempt to directly link specific answers with particular individuals or groups, it is important to consider the context of individuals' responses, both their background and experiences, but also their current occupation and associations. This helps add depth, clarity, accuracy, and credibility to the conclusions and recommendations. Data analysis, started with, and involved primarily **cross-case analysis**, where answers from different participants are grouped by topic, primarily 'location' and 'process' (Patton, 1990).

The data from both the literature review (Phase I) and the Interviews (Phase II) were compared and contrasted, described and discussed, and the conclusion and

recommendations presented using a narrative style. It is important to note here that the conclusions and recommendations are limited to the study's primary research questions of 'location' and 'process', even though the amount of data collected could permit much larger discussion on other aspects of marine conservation in the Bay of Fundy. For this research to be the most effective and useful in the future, remaining focused on the primary questions was essential, as recommended by Patton (1990).

2.5 Limitations in methodology

Seidman (1991) and Sullivan (2001) point out several disadvantages to doing personal interviews, which were limitations in this project. The primary limitation is that they are costly and time consuming. Also, it was not possible in this study to interview comparable numbers of persons from all recognized sectors. One major shortcoming in the list of participants is that only one person representing the "economic development" category (from New Brunswick) was interviewed.

A significant limitation of interviews is the problem of individual biases (Sullivan, 2001). Interviewer bias is possible in unstructured interviews, where the interviewer may "misinterpret or misrecord something because of their own personal feelings about the topic" (Sullivan, 2001: p.272). The participant may be influenced by the interviewer's facial expressions and/or response to their answers, which could lead them to change how they answer subsequent questions, or motivate them to qualify something they had said previously. Also, using probes in an interview must be done carefully, so as not to bias the participant by subtly suggesting (within the question) how they should answer (Seidman, 1991; Sullivan, 2001). All attempts were made to reduce

interviewer bias by sufficiently preparing and practicing for interviews, and during the interview consciously thinking about giving neutral acknowledgements to participants' answers. Also, both interviewer and participant may be influenced by each other's characteristics, such as age, gender, race, and social class, which can subtly shape the way in which the interviewer asks questions and how the participant answers (Seidman, 1991; Sullivan, 2001). In this project particularly, differences in level of formal education may be limiting. Some participants said directly or alluded to the idea that they 'didn't know as much' as either myself or other academics, this perception may have altered their responses.

Because the primary research question addressed in this study may be considered a somewhat contentious topic, participant bias could have been significant in some cases. For example someone who feels that a NMCA in one area of the Bay of Fundy may threaten their livelihood might suggest locating it elsewhere because they are nervous about the potential consequences of having it near-by, even if they recognize the potential benefits of protection in their area. Or, those who are particularly wary of government may be adamantly opposed to the idea and thus out to sabotage any establishment process; they therefore may give inaccurate answers. Or, those who are particularly in favour of establishment may be blinded by their desire for success and therefore not give realistic or accurate answers. These types of biases are expected due to the controversial nature of this topic. This study was designed to avoid bias of this sort by including a representative range of participants. Since this research was not intended as a study of who said or thinks what, identifying these biases is not the focus of this research.

One weakness in the interview guide approach is that interviewer flexibility in the wording and sequence of questions could produce considerably different interview experiences for the participants, which makes comparisons across responses difficult (Patton, 1990). It was important to be constantly conscious of avoiding leading questions, another danger with this technique, where a specific script is not already written out beforehand. As well, as is acknowledged by Seidman (1991), it was important for the interviewer not to talk too much about her own opinions, especially since many participants were unfamiliar with Parks Canada's National Marine Conservation Areas program, or had some misconceptions about it. There had to be balance between correcting participants' factual errors, at appropriate breaks in the flow of the interview, while avoiding interjecting and trying to 'educate'.

The method of participant selection, although most appropriate for this research, results in some uncertainty with regard to the representativeness of the sample size. This "greatly limits the ability to generalize findings beyond the level of the sample case" (Sullivan, 2001: p. 205), or to generalize information from other case studies that employed this technique, to this particular situation. However, this limitation does not discredit the study because it is acknowledged at the outset that this is a specific study of a specific place, the Bay of Fundy. An important consideration in marine protected area establishment is the necessity to tailor the process to fit within the local context (Lien, 1999). On a coarser level it is still helpful to investigate other national examples, and look for correlations between their process, and success or failure at establishment.

3. Marine Conservation in Canada

3.1 Federal Programs

3.1.1 Environment Canada

3.1.1.1 Parks Canada and National Marine Conservation Areas

Parks Canada's marine conservation program began a number of decades ago but got off to a slow start. In 1970 Parks Canada published a National Marine Park System Plan, the first of its kind in the world. In 1986 a National Marine Parks Policy was approved after extensive public consultation (Canadian Nature Federation, 2000). In 1987 Parks Canada's first marine park, Fathom Five National Marine Park, was established in Ontario from a previously designated provincial marine park. In 1990 a second marine park was agreed upon and delineated, the Saguenay–St. Lawrence Marine Park in Quebec, which was officially established in 1998 under its own piece of legislation, the *Saguenay–St. Lawrence Marine Park Act* (1997).

Policy review and public consultation resulted in the renaming of National Marine Parks to National Marine Conservation Areas (NMCAs), "this designation more accurately reflects the purpose and objectives of these areas" (Parks Canada, 2003b: background). In 1995 the Minister of Canadian Heritage released Parks Canada's system plan for NMCAs, titled Sea to Sea to Sea. After a number of attempts the *Canada National Marine Conservation Areas Act* received royal assent in June 2002. Currently in Canada, no NMCAs have been established under the new *CNMCA Act*, however the first will likely be the Lake Superior National Marine Conservation Area, which is currently going through the establishment process.

Parks Canada is the federal agency responsible for NMCAs. In December 2003 the Parks Canada agency moved from the Department of Canadian Heritage to Environment Canada; thus, the Minister of the Environment is ultimately responsible for the "administration, management and control of marine conservation areas" (*CNMCA Act*, 2002: subsection 8(1)).

a) Introduction to NMCAs

NMCAs are described by Parks Canada as:

> marine areas managed for *sustainable use* and containing *smaller zones of high protection*. They include the seabed, the water above it and any species which occur there. They may also take in wetlands, estuaries, islands and other coastal lands. [italics added]
>
> NMCAs are protected from such activities as ocean dumping, undersea mining, and oil and gas exploration and development. *Traditional fishing activities would be permitted*, but managed with the conservation of the ecosystem as the main goal. [italics added]
>
> NMCAs are established to represent a marine region and to demonstrate how protection and conservation practices can be harmonized with resource use in marine ecosystems. Their *management requires the development of partnerships* with regional stakeholders, coastal communities, Aboriginal peoples, provincial or territorial governments and other federal departments and agencies. [italics added]
>
> The NMCA Program is designed to:
>
> - represent the diversity of Canada's oceanic and Great Lakes environments
> - maintain ecological processes and life support systems
> - provide a model for sustainable use of marine species and ecosystems
> - encourage marine research and ecological monitoring
> - protect depleted, vulnerable, threatened or endangered marine species and their habitats
> - provide for marine interpretation and recreation
> - contribute to a growing worldwide network of marine protected areas
>
> (Parks Canada, 2004a)

b) NMCA System Plan – Sea to Sea to Sea

Sea to Sea to Sea, Canada's National Marine Conservation Areas System Plan (1995), outlines Parks Canada's system approach to marine conservation in Canada. Parks Canada has divided Canada's three oceans and Great Lakes into twenty-nine distinct marine regions (Figure 1). Their delineation is based on a combination of physical and biological characteristics, such as temperature, salinity, currents, depth profiles and species distributions (Parks Canada, 2004b). "This framework was arrived at through consensus, following a series of workshops with scientists familiar with Canada's oceans and Great Lakes. This was no easy task. The marine environment tends to challenge our notion of easily identifiable boundaries" (Parks Canada, 1995: p.10).

There are five regions in the Great Lakes, five in the Pacific, nine in the Arctic, and ten in the Atlantic; and the long-term goal is to have a NMCA within each region (Parks Canada, 1995). Currently only two regions have been afforded protection by Parks Canada: Fathom Five Marine Park (112 km²) in Ontario, representing the Georgian Bay marine region in the Great Lakes; and the Saguenay - St. Lawrence Marine Park (1138 km²) in Quebec, representing the St. Lawrence River Estuary marine region in the Atlantic.

On October 3, 2002 the Prime Minister and the Minister of Canadian Heritage announced an action plan to create five new NMCAs in the next five years; Parks Canada has received millions of dollars to implement the action plan (Parks Canada, 2003a). The Action Plan identified three priority sites for new NMCAs: Western Lake Superior (total study area 10,732 km^2) in Ontario, representing the Lake Superior marine region; Gwaii Haanas National Marine Conservation Area Reserve (approximately 3400 km^2) in British

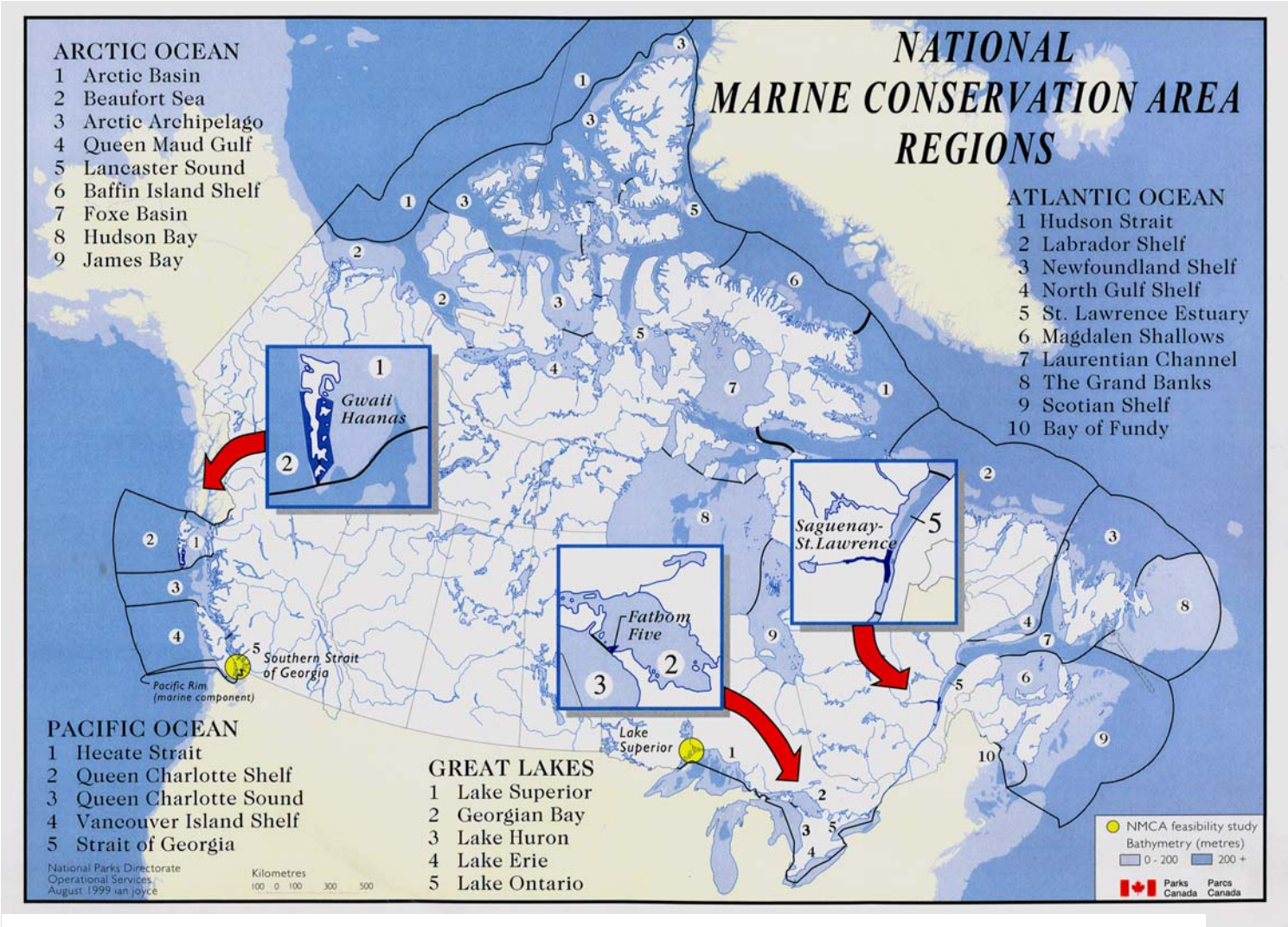

Figure 1: Map showing Parks Canada's 29 marine regions across Canada.

Columbia, representing the Queen Charlotte Shelf marine region; and Southern Strait of Georgia in British Columbia, representing the Strait of Georgia marine region (Parks Canada, 2003a). The action plan did not specify the location of the remaining two NMCAs to be created.

In March 2004, David Anderson, Minister of the Environment at the time, announced a feasibility study to be conducted on the creation of a new NMCA in a 5,000km² area around the Magdalen Islands, in the Magdalen Shallows marine region. "The purpose of the feasibility study is to determine whether it is possible and desirable to create a national marine conservation area around the Magdalen Islands archipelago" (Parks Canada, 2004c).

c) NMCA Legislation – the *Canada National Marine Conservation Areas Act*

NMCAs are defined by the *CNMCA Act* (2002), which is divided into the following sections: Marine Conservation Areas; Administration; Prohibitions; Regulations; Enforcement; Offences and Punishment; and Mitigation of Environmental Damage. The Marine Conservation Areas section, section 4, states:

1) Marine conservation areas are established in accordance with this Act for the purpose of protecting and conserving representative marine areas for the benefit, education and enjoyment of the people of Canada and the world.

2) Reserves are established in accordance with the Act for the purpose referred to in subsection (1) where an area or a portion of an area proposed for a marine conservation area is *subject to a claim in respect of aboriginal rights* that has been accepted for negotiation by the Government of Canada. [italics added]

3) Marine conservation areas shall be *managed and used in a sustainable manner* that meets the needs of present and future generations without compromising the structure and function of the ecosystems, including the submerged lands and water column, with which they are associated. [italics added]

4) Each marine conservation area shall be *divided into zones*, which must include at least one zone that fosters and encourages ecologically sustainable use of marine resources and at least one zone that fully protects special features or sensitive elements of ecosystems, and may include other types of zones. [italics added]

d) NMCA Policy

The most recent NMCA Policy (Parks Canada, 2003b) is included as one of the agency's Activity Policies, within their Guiding Principles and Operational Policies document, which was first tabled in the House of Commons in 1994. The policy has been revised over the years, and now that NMCA legislation has been passed, further amendments to the NMCA Policy may be required.

The NMCA Policy begins with a Background section, and then its Objective, which is:

> To protect and conserve for all time national marine areas of Canadian significance that are representative of the country's ocean environments and the Great Lakes, and to encourage public understanding, appreciation and enjoyment of this marine heritage so as to leave it unimpaired for future generations.
>
> (Parks Canada, 2003b)

The document is divided into the following sections: 1) National Marine Conservation Areas System, which focuses on the identification and establishment of NMCAs, and outlines the establishment process; 2) Management Planning, which focuses on an interdisciplinary approach to zoning; 3) Managing the Use of National Marine Conservation Areas, which focuses on an ecosystem management approach, based in science and executed through local partnerships; and 4) Public Understanding, Appreciation, and Enjoyment of National Marine Conservation Areas, which focuses on education and recreation initiatives (Parks Canada, 2003b).

In the policy document there is also discussion of the need for NMCAs to be relatively large, in order to be representative and be effective for conservation (Parks Canada, 2003b). NMCAs can be either coastal or wholly offshore, and in the document there is emphasis on the importance of integrated management of marine and terrestrial areas beyond the NMCA itself. In addition, the policy outlines the following management intent and strategy:

> the management philosophy associated with national marine conservation areas will differ from that in terrestrial national parks in one very important respect. Instead of trying to protect marine ecosystems in a state essentially unaltered by human activity, which is the primary goal in terrestrial national parks, management effort in national marine conservation areas will be directed towards the conservation of these areas in the sense that it is defined in the World Conservation Strategy. Therefore, the focus will be on the management of a wide range of human activities to ensure the greatest sustainable benefit to present generations while maintaining the potential of the area to meet the needs and aspirations of future generations. In this context, conservation embraces a number of management concepts including preservation, maintenance, sustainable use, and restoration of the natural marine environment.
>
> (Parks Canada, 2003b: background)

Based on NMCA Policy, Parks Canada lays out the following steps in establishment of new NMCAs:

1. Identifying representative marine areas (candidate sites) takes into consideration:

    - geologic features (such as cliffs, beaches, and islands on the coast; and shoals, basins, troughs and shelves on the seabed)
    - marine features (tides, ice, water masses, currents, salinity, freshwater influences)
    - marine and coastal habitats (wetlands, tidal flats, estuaries, high current areas, protected areas, inshore and offshore areas, shallow and deep water areas)
    - biology (plants, plankton, invertebrates, fish, seabirds and marine mammals)
    - archaeological and historic features

2. Selecting a potential NMCA from the candidate sites identified involves looking at:

    - quality of regional representation
    - relative importance for maintaining biodiversity

- protecting critical habitats of endangered species
- exceptional natural and cultural features
- existing or planned marine protected areas
- *minimizing conflict with resource users* [italics added]
- threats to the sustainability of marine ecosystems
- implications of Aboriginal claims and treaties
- potential for education and enjoyment
- value for ecological research and monitoring

3. Assessing the feasibility of a NMCA requires the cooperation and support of:

   - other federal departments and provincial or territorial governments
   - local communities, regional stakeholders and Aboriginal peoples

   Extensive local consultations are undertaken. Working groups or advisory bodies may be set up to develop and assess proposals. Proposals may also be considered within other appropriate planning processes.

4. Negotiating an agreement

   If the feasibility study demonstrates support for the initiative, a federal/provincial or federal/territorial agreement will be negotiated to set out the terms and conditions under which the NMCA will be established and managed.

5. Establishment of a NMCA; under the *CNMCA Act*.

(Parks Canada, 2004a)

However, in the policy it is also noted that the establishment process and the above steps are not rigid, but that each situation is unique and the exact steps in creating a NMCA will reflect the individual circumstances of the candidate site (Parks Canada, 2003b).

3.1.1.2 Canadian Wildlife Service and Marine Wildlife Areas

The purpose of Environment Canada's protected areas is to preserve abundant and diverse wildlife populations in Canada, by ensuring suitable habitats exist (Environment Canada, 2003a). The Canadian Wildlife Service (CWS) branch of Environment Canada administers the network of protected areas, which includes National Wildlife Areas,

Migratory Bird Sanctuaries, and Marine Wildlife Areas (MWAs). The CWS identifies wildlife habitat of national ecological importance whose loss would have a direct impact on the Canadian population of one or more wild species (Environment Canada, 2003a).

MWAs were first recognized in a 1994 amendment to the *Canada Wildlife Act* (1985). Section 4 of this Act states:

> (1) The Governor in Council may establish protected marine areas in any area of the sea that forms part of the internal waters of Canada, the territorial sea of Canada or the exclusive economic zone of Canada.
>
> (2) The Minister may provide advice relating to any wildlife research, conservation and interpretation carried out in protected marine areas and may carry out measures for the conservation of wildlife in those areas.

For an area to be considered for designation as a MWA, "a site must contain nationally significant habitat for migratory birds, support wildlife or ecosystems at risk, or represent a rare or unusual wildlife habitat or biogeographic region" (Environment Canada, 2003a).

The first MWA in Canada will be the Scott Islands archipelago in British Columbia, which extends off the Northwest tip of Vancouver Island. This proposed MWA will protect more than two million seabirds that nest there each year, including 55% of the world population of Cassin's Auklets. The site is already an internationally recognized Important Bird Area (Environment Canada, 2003a). The CWS has several other candidate sites under study (Environment Canada, 2004a).

Regarding the need for cooperation and involvement, the MWA web page "invites partnerships in conservation, research, and education aimed at protecting marine wildlife and their habitats" (Environment Canada, 2004a). The CWS notes: "Marine Protected Areas depend on the initiative and participation of many people, providing an opportunity for community groups, individuals, interest groups, Aboriginal peoples, and

governments to work together to establish and cooperatively manage important wildlife habitats" (Environment Canada, 2004b).

3.1.2 Department of Fisheries and Oceans and Marine Protected Areas

The Canadian federal Department of Fisheries and Oceans (DFO) is responsible for establishment of Marine Protected Areas (MPAs) under the *Oceans Act* (1996). In 2002 DFO produced Canada's Ocean Strategy, the policy framework needed to implement the goals laid out in the *Oceans Act*. This new policy will work in conjunction with DFO's current Marine Protected Areas Policy.

a) Introduction to MPAs

DFO's states that "threats to the biodiversity, productivity and ecological integrity of marine ecosystems must be addressed, not only because we value our oceans but also because coastal communities and regional economies depend on healthy productive oceans" (DFO, 2004a). MPAs are for the purpose of conserving and protecting "unique habitats, endangered or threatened marine species and their habitats, commercial and non-commercial fishery resources (including marine mammals) and their habitats, marine areas of high biodiversity or biological productivity, and any other marine resource or habitat requiring special protection" (DFO, 2004a).

Once a MPA policy was established in 1999, MPA pilot sites were announced, the first two being on the West coast off British Columbia, and the third at Sable Gully on the Scotian Shelf (DFO, 1998). In 2001, DFO committed to identifying thirteen potential MPAs (i.e. Areas Of Interest) (DFO, 2001). To date, twelve Areas of Interest (AOI) have

been set up as part of the MPA Program; currently nine are listed by DFO (DFO, 2004b). The purpose of the AOI proposals is: "to facilitate the evolution of the national process for establishing MPAs, to protect certain areas that need early protection and management, and to evaluate and demonstrate the effects of MPAs in marine conservation and protection" (DFO, 2004b). The list of AOIs include: Basin Head in eastern P.E.I.; Bowie Seamount off B.C.; Eastport, Newfoundland; Gabriola Passage, in the Gulf Islands off B.C.; Gilbert Bay, Labrador; Leading Tickles, Newfoundland; Manicouagan in the St. Lawrence Estuary; Musquash Estuary in the Bay of Fundy; and Race Rocks off B.C. (DFO, 2004b).

Currently there are two established MPAs in Canada. The first was the Endeavour Hydrothermal Vents (approximately 100 km^2), which was designated in March 2003. It is located approximately 250km Southwest of Vancouver Island as part of the Juan de Fuca Ridge System. The hydrothermal vents lie in water of 2,250m depth, and the MPA was designed to ensure their protection and that of the unique ecosystems associated with them (DFO, 2004c). The second is the Gully MPA (2,364km^2), which was designated in May 2004. It is located 200km off Nova Scotia, east of Sable Island, on the edge of the Scotian Shelf. The Gully contains important coral communities, shallow and deepwater fish, whales and dolphins, and a resident population of rare northern bottlenose whales. An ecosystem approach was applied for the design of the MPA, which contains three management zones, "each providing varying levels of protection based on conservation objectives and ecological sensitivities" (DFO, 2004c).

b) MPA Legislation – the *Oceans Act*

In May 1994, the National Advisory Committee on Science and Technology's report to the Prime Minister identified the need for development of an oceans strategy, and to establish this within a legal framework; there was call for a Canadian Oceans Act. The *Oceans Act* received Royal Assent in the House of Commons on December 18, 1996, and came into force on January 31, 1997.

The *Oceans Act* (1996) has three main sections: Recognizing Canada's Oceans Jurisdiction; Oceans Management Strategy; and Consolidation of Federal Responsibilities for Canada's Oceans. The legislation on MPAs is found in part II, section 35, which reads:

> (1) A marine protected area is an area of the sea that forms part of the internal waters of Canada, the territorial sea of Canada or the exclusive economic zone of Canada, and has been designated under this section for special protection for one or more of the following reasons:
>
> a) the conservation and protection of commercial and non-commercial fishery resources, including marine mammals, and their habitats;
> b) the conservation and protection of endangered or threatened marine species, and their habitats;
> c) the conservation and protection of unique habitats;
> d) the conservation and protection of marine areas of high biodiversity or biological productivity; and
> e) the conservation and protection of any other marine resource or habitat as is necessary to fulfill the mandate of the Minister of Fisheries and Oceans.
>
> (2) For the purposes of integrated management planning, referred to in section 31 and 32, the Minister of Fisheries and Oceans *will* lead and coordinate the development and implementation of a national system of Marine Protected Areas on behalf of the Government of Canada. [italics added]
>
> (3) The Governor in Council, on the recommendations of the Minister of Fisheries and Oceans, may make regulations
>
> a) establishing marine protected areas, subject to subsection 35(1); and
> b) prescribing measures that may include but not be limited to
>
> (i) the zoning of marine protected areas

(ii) the prohibition of classes of activities within marine protected areas; and
(iii) any other matter consistent with the purpose of the designation.

In part II, section 29 reads:

> The Minister, in collaboration with other ministers, boards and agencies of the Government of Canada, with provincial and territorial governments, and with affected aboriginal organizations, coastal communities, and other persons and bodies…*shall* lead and facilitate the development and implementation of a national strategy for the management of estuarine, coastal, and marine ecosystems in waters that form part of Canada, or in which Canada has sovereign rights under international law. [italics added]

In the *Act* (1996) it is explained that a national oceans strategy should be based on three principles: sustainable development, integrated management, and the precautionary approach. This requirement of the Minister of Fisheries and Oceans has been met with DFO's 2002 national strategic policy, Canada's Ocean Strategy.

c) MPA Policy

DFO addresses MPAs in two policy documents. The most recent is Canada's Ocean Strategy (DFO, 2002a), which DFO developed in response to clause 29 of the *Oceans Act* (1996). This is "the Government of Canada's policy statement for the management of estuarine, coastal, and marine ecosystems" (DFO, 2002a: p.v). "Three policy objectives or outcomes have been identified for the advancement of oceans management activities: understanding and protecting the marine environment, supporting sustainable economic opportunities, and international leadership" (DFO, 2002a: p.12). It is within the first objective that MPAs are addressed. Here in the Ocean Strategy DFO responds to specific goals set out in the *Oceans Act* (1996): the creation of a national network of MPAs, and the establishment of marine environmental quality guidelines. In

the Strategy three requirements for future success are acknowledged: the first is "new approaches to collaboration across and between governments"; the second is "new ways of doing business for those using ocean resources"; and the third is "active engagement of Canadian communities, organizations, and citizens" (DFO, 2002a: p.14). The policy outlines DFO's intent to implement the federal activities identified in the Strategy (2002a) over a four-year period.

More specifically, DFO also has a Marine Protected Areas Policy and National Framework for Establishing and Managing Marine Protected Areas. These policy documents are somewhat older and should be considered to work in partnership with the newer Ocean Strategy. The MPA Policy (1999) outlines the objectives, goals, program overview, and a code of practice, as well as the process of developing a national system of marine protected areas to meet the Minister's legislated mandate in section 35(2) of the *Oceans Act* (1996). The objective of MPAs outlined here is "to conserve and protect the ecological integrity of marine ecosystems, species, and habitats through a system of Marine Protected Areas, as per the Oceans Act" (1999: p.7). The goals of MPAs are as follows:

- to proactively conserve and protect the ecological integrity of each MPA site
- to contribute to the social and economic sustainability of coastal communities by providing for uses which are compatible with the reasons for designation
- to further knowledge and understanding of marine ecosystems

(DFO, 1999: p.7)

Some of the key points outlined in the program overview are as follows:

- management plans for individual MPAs developed with involvement of local resource users and interested and affected parties
- MPAs differ from one another, from no-take zones to sustainably managed zones – flexible approach needed to meet a range of conservation and protection requirements

- MPAs established and developed within the context of integrated management planning

(DFO, 1999: p.7)

When Canada's Ocean Strategy and this MPA Policy function together they are intended to provide viable guidelines for MPA establishment, management and success.

DFO's Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada (2002b), is their first step along the way to fulfilling the objectives laid out in Canada's Oceans Strategy. This document calls for the identification of areas of interest, for marine protected areas to be established; and not just for those falling under the *Oceans Act* (DFO), but also for National Marine Conservation Areas (Parks Canada), and Marine Wildlife Areas (Environment Canada). Acknowledgement, in this document, of the need for a coordination network between DFO and other federal government departments, is significant for future cooperation on marine conservation initiatives.

The Government of Canada's policies require that Parks Canada's NMCAs and NMCA Policy (2003b) must function within DFO's policy framework, set out in Canada's Ocean Strategy (2002a). Within the Ocean Strategy, the *Oceans Act* (1996), and subsections 9(1) and 9(2) of the *CNMCA Act* (2002), there is a call for coordination between different departments within the federal government. Therefore, Parks Canada will have to work closely with DFO when establishing NMCAs, as these will be part of the national system of marine protected areas.

3.1.3 Summary and Comparison

The three types of federally managed marine protected areas in Canada are summarized in Table 1 below. It should be noted here that as Canada's marine protected areas programs progress and expand, more substantial comparison between the three will be possible.

Table 1: Summary and comparison of Canada's federal marine protected areas programs: NMCAs, MWAs, and MPAs.

	NMCAs	MWAs	MPAs
Purpose	1) protect representative marine areas 2) zoned in order to combine conservation with sustainable human use and enjoyment	Protect significant wildlife and migratory bird habitat, and wildlife or ecosystems at risk.	Protect special or unique marine habitats and species, as well as marine resources and their habitats.
Federal Department	Environment Canada – Parks Canada Agency	Environment Canada – Canadian Wildlife Service	Department of Fisheries and Oceans
Legislation and Policy	*Canada Marine Conservation Areas Act* (2002) and the NMCA Policy (Parks Canada, 2003b)	*Canada Wildlife Act* (1994)	*Oceans Act* (1996) and Canada's Oceans Strategy (DFO, 2002a); and the MPA Policy (DFO, 1999)
Existing	Two Marine Parks: 1) Fathom Five (112km^2) 2) Saguenay – St. Lawrence (1138 km^2) None yet under the *CNMCA Act* (2002)	None; first will be Scott Island, B.C.	1) Endeavour Hydrothermal Vents, B.C. (100 km^2) 2) The Gully, N.S. (2364 km^2)
Proposed	Four – one in Atlantic Canada, the Magdalen Islands (5000 km^2)	Some, but none officially released yet.	Nine – six in Atlantic Canada

On paper DFO's MPAs and Parks Canada's NMCAs appear quite similar; however, there are three key differences between them. One is that Parks Canada is mandated to incorporate sustainable recreation (or "enjoyment") and education into

NMCAs design and establishment; this is not the case with MPAs. The second difference, is that MPAs are far less structured in terms of their design on the water. Compared to NMCAs, MPAs do not have clear guidelines established in legislation or regulations. For example, a zoning pattern for NMCAs is laid out in the *CNMCA Act* (2002), but the *Oceans Act* (1996) does not do this for MPAs. Because MPAs are not designed to protect 'representative' marine areas, they can be much smaller in size compared to a NMCA, thus reducing the potential for conflicts with users in some areas. The third distinguishing factor is that Parks Canada's NMCAs are designed be part of a larger national system of representative marine conservation areas, and thus relies on the systematic delineation of marine regions around the country. On the other hand, DFO has not established a national system for conservation or a strategic system plan, and therefore MPAs are not designed to fill a specific spot in a larger national network of marine protected areas.

3.2 Public participation in marine conservation

3.2.1 Introduction

Generally, people are either excited or wary about having a protected area on their doorstep (either terrestrial or aquatic). Much of the wariness comes from the concern that having a protected area in their community will mean they might lose their rights to resource extraction, and land/ocean use. Several existing examples (both terrestrial and aquatic) show that early consultation and involvement of local communities and other concerned groups can facilitate agreements and compromises to alleviate these concerns, and benefit community members and user groups (Dearden, 2002; Dempsey et al., 2002).

Until recently, Parks Canada used only biophysical characteristics as the primary selection criteria for marine parks, and the process for marine park establishment was "essentially top-down and centre-out" (Walters and Butler, 1995: p.205). Only late in the process would the public become involved, and in the opinion of Walters and Butler (1995) "even then, the likely goal of such consultation would be to sort through and fine tune what are essentially government designed and managed initiatives" (p.205). Fortunately, Parks Canada has learned somewhat from previous initiatives, and have in some ways amended their process to be more inclusive from the beginning.

3.2.2 How the public can be involved

Currently, there are a few standard mechanisms already in existence for public involvement in marine protected area establishment, which may or may not be the best practices to follow in the future. DFO has identified some of these strategies for engaging the public, such as: the release of documents; meetings with individuals; presentations to organizations; and pilot projects at the community level (Fenton et al., 2002). Discussion documents generate interest, spread information, and provide opportunity for feedback; information sessions can answer questions and get direct feedback. Meetings may be held with individuals, or as large roundtable events in order to: disseminate important information; generate discussion on the issues; and establish cooperation and consensus. Further outreach sessions with certain stakeholder groups may also serve to identify and clarify specific issues, and thus develop trust in these smaller, less formal settings (Fenton et al., 2002). Fenton et al. (2002) note that involving local community members as liaison workers is beneficial as it removes some of the suspicion usually afforded to

government representatives. With the information gained through public involvement initiatives, proposals can be amended and the process can begin again if necessary (Fenton et al., 2002). A number of lessons have been learned regarding public involvement in the early stages of MPA establishment; "foremost are open and relaxed dialogue, face-to-face meetings, plain language descriptions and the incorporation of local perspectives" (Fenton et al., 2002: p. 1414).

The public can also be involved as an equal partner, with government and community working together through all stages of site selection and proposal development. One example of this type of public involvement is the Atlantic Coast Action Program (ACAP), which was launched in 1991 (see Chapter 4). Participants from all segments of government and the community are required to form committees that essentially become "community based round-tables on the environment and economy" (Ellsworth, 1995: p. 197). Here, members must commit to reconciling their expectations, identify their common ground, and demonstrate their shared commitment to developing a consensus-backed agenda, which will focus government programs and resources on community priorities (Ellsworth, 1995). If for example, establishment of a marine protected area is a community priority, then the ACAP committee works with government to reach this goal.

3.2.3 Where does 'public consultation' fit into NMCA legislation and policy?

In the *CNMCA Act* (2002), section 10 details the obligation of the Minister to consult with the public "in the development of marine conservation area policy and regulations, the establishment of any proposed marine conservation area and the modification of any marine conservation area". Section 11 makes the Minister responsible for establishing Management Advisory Committees for each NMCA, and describes the roles of these committees. Within the Administration section is detailed the requirement for consultation in developing management plans for new NMCAs:

> The Minister shall, within five years after the marine conservation area is established, *in consultation* with relevant federal and provincial ministers and agencies, with affected coastal communities, aboriginal organizations, aboriginal governments and bodies established under land claims agreements, and with other persons and bodies the Minister considers appropriate, prepare a management plan for the marine conservation area that includes a long-term ecological vision for the marine conservation area and provision for ecosystem protection, human use, zoning, public awareness and performance evaluation, which shall be tabled in each House of Parliament. [italics added] (*CNMCA Act*, 2002: subsection 9(1))

NMCA Policy notes that "the objectives for these areas [NMCAs] are unlikely to be achieved without the cooperation, support and continued involvement of those directly affected by their establishment" (Parks Canada, 2003b: p.47). The *CNMCA Act* (2002) details the role public consultations must play in new policy development; therefore, any such future process would be a good opportunity for Parks Canada to re-affirm and further their commitment to public involvement.

3.2.4 How presence or absence of public consultation has affected the success of marine conservation area establishment: Parks Canada case studies

3.2.4.1 Unsuccessful

a) West Isles

In 1985 Parks Canada began a feasibility study of a proposed Marine Park in the West Isles area of the Bay of Fundy (Parks Canada/Tourism New Brunswick (PC/TNB), 1985). Since the mid 1970s the area had been considered one of unique and special natural underwater features and high productivity, and thus biophysically a natural candidate for protection at the time it was being considered (Walters and Butler, 1995). The feasibility study was to consist of three phases, which all included public involvement, but phase II was to be the one of extensive public consultation. However, Parks Canada never got that far; there is no phase II report. Walters and Butler (1995: p.208) state: "the process which Parks Canada followed in attempting to establish a park in the West Isles dramatically compounded the potential for conflict". Both the problematic and positive aspects of the process are summarized in Table 2.

Table 2: Summary of the constructive and detrimental aspects of public consultation throughout the West Isles Marine Park proposal and feasibility study.

Constructive	Detrimental
• Public interest in initial pilot study resulted in feasibility study (PC/TNB, 1985) • Public concerns raised in pilot study addressed in feasibility study (PC/TNB, 1985) • Some local support because: - Park could help mitigate negative local effects of regional development - protecting sensitive local environment - increase in property value - expanding local economy (PC/TNB, 1985) • Feasibility criteria address major local concerns that were brought to table at public meetings	• Extensive public consultation planned late in process (phase II) (PC/TNB, 1985) • Results of phase I "issue identification process" separated into government issues and public issues (not given equal weight in decision making process) (PC/TNB, 1985) • No advisory committee (PC/TNB, 1985) • Public consultation only through open houses and general public meetings (PC/TNB, 1985) • Didn't acknowledge or address communities concerns and questions (community members, personal communication) • Lack of local support (many issues) (PC/TNB, 1985) • Socio-economic impact study done without local involvement (The DPA Group Inc., 1985) • Overall, lack of trust and community participation (Walters and Butler, 1995) • Political support of federal and provincial governments varied throughout the process (Neil Munro, personal communication)

b) Bonavista Bay

In 1990, an extensive literature search was carried out to identify representative marine area candidate sites within Parks Canada's South Labrador Shelf marine region off the northeast coast of Newfoundland (now known as the Newfoundland Shelf region) (Mercier, 1995). A subsequent re-examination of this study ranked Bonavista Bay first; however, it also revealed shortcomings and deficiencies in the initial study. Therefore, a follow-up "experts" workshop was held in 1993, "to identify an area providing the best representation of the characteristic marine features" of this region (Mercier, 1995). This was a workshop of "scientists and specialists", involving academics, and federal and provincial government representatives only (Mercier, 1995). The workshop reaffirmed

the recommendation that Parks Canada should focus their efforts on the general area around Bonavista Bay (Mercier, 1995).

Subsequently, Parks Canada's 1997 State of the Parks Report identified Bonavista Bay as a proposed NMCA. A joint federal-provincial feasibility study was launched (Parks Canada, 1997), which was said to be in response to the groundfish collapse. This area was praised by Parks Canada for containing a wide diversity of habitat types, from deep waters to tidal marshes. It included an offshore island bird colony, and diverse marine life including many marine mammals and fish, which have supported a fishing-based economy there for hundreds of years (Parks Canada, 1997). Parks Canada's 1998 newsletter outlined their intent to establish a "Public Advisory Committee to lead the project through a locally-based process that will develop and then test public acceptance of a model for conservation and sustainable fisheries" (Parks Canada, 1998: p.7).

Parks Canada was not successful at Bonavista Bay. Jon Lien analyzed the failure of this initiative in great detail, and suggests that "many factors concerned with the human dimension of park establishment came together, acted in a synergistic way and made further development of the initiative difficult" (In Dearden, 2002: p.361). In March 1999 the committee voted against NMCA establishment and thus Parks Canada's feasibility study was discontinued due to lack of local support (Dearden, 2002). Both the problematic and positive aspects of the process are summarized in Table 3.

Table 3: Summary of the constructive and detrimental aspects of public consultation throughout the Bonavista Bay proposal and feasibility study.

Constructive	Detrimental
• Feasibility study • Advisory committee established (consisting of fisherman, aquaculture representatives, fish processors, members of economic development boards, and residents) (Dearden, 2002) • Consultation process - gave local control - free of hidden agendas - generated resources and support for process (Lien, 1999)	• Area of interest identified without local involvement (Mercier, 1995) • Goal not fitting with local needs at the time (Lien, 1999) • Lack of active participation by DFO fisheries managers and scientists (Lien, 1999) • Overall, lack of local support (bad timing!) - worry about economic impact from potential restrictions on fishing - worry that aquaculture incompatible with NMCAs (Dearden, 2002) • Ottawa did not provide resources at onset, and retained too much control (Lien, 1999) • Advisory committee given an impossible task (without enough "expert" support) (Lien, 1999) • Not enough resources (Lien, 1999)

3.2.4.2 Successes

a) Saguenay-St. Lawrence

In 1985 Parks Canada began a feasibility study for establishment of a marine park at the confluence of the Saguenay River with the St. Lawrence estuary. The methods used in this study were similar to that for the West Isles feasibility study (as described above); however, "the project was *initiated in response* to the sustained interest of the regional population, conservation groups and the scientific community in the creation of a national marine park" [italics added] (Parks Canada, 1988: p.6). These groups thought it would be the best way to protect the endangered Beluga Whale population in the area, and would help develop the regional tourism industry (Parks Canada, 1988). Parks Canada had long been interested in the area for the same reasons, as it has "exceptional characteristics" (Dionne, 1995: p.189). A coordinating committee was established in

1990 to aid in legislative development, and relatively late in the process an advisory committee was established (in 1992). The delayed involvement of the public is one reason establishment took more than a decade. In 1998 the *Saguenay-St. Lawrence Marine Park Act* (1997) came into force, providing the legislative framework required for establishment of this new marine conservation area, and its co-management with Quebec's provincial government (Parks Canada, 1998). Many of the reasons for this proposal's success are summarized in Table 4.

Table 4: Summary of the constructive and detrimental aspects of public consultation throughout the Saguenay-St. Lawrence Marine Park proposal and feasibility study.

Constructive	Detrimental
• Public initiation of process (Parks Canada, 1988) • Conservation groups (NGOs, etc.), local activist (Leone Pippard) and scientist involved from the start - information to local communities about conservation, and generated support (Parks Canada, 1988) • After first public consultation some elements re-examined (Parks listened to public concerns) and addressed in further studies (Parks Canada, 1988) • Communities express a "keen interest" in taking an active role in management (Parks Canada, 1988) * key in development of management plan (Parks Canada, 1995) • Second round of public consultation regarding legislative development (Dionne, 1995) • Throughout process public became more and more involved, and more effective techniques were used * a lot of improvement was seen throughout the process	• Only used a couple types of consultation mechanism initially (Parks Canada, 1988) • Only 2 months of public consultation initially (Parks Canada, 1988) • Although considered public input, government still made all final decisions initially (Parks Canada, 1988)

b) Lake Superior

The feasibility study for a marine conservation area in western Lake Superior, Ontario, began in 1997. A regional committee made up of members of the local

community and stakeholders was established as a constant connection between the public and government, and to develop recommendations as to whether to proceed or not (Parks Canada, 1998). After two years the committee "sailed past a landmark…unanimously endorsing the proposal for Lake Superior's national marine conservation area" (Lake Superior Newsletter, 2001: p.1). The report included details on the forming, managing and operating of the project, and should be seen as an "important milestone", providing "a well researched, consensus-based platform for discussion between the federal and provincial governments" (Lake Superior Newsletter, 2001: p.1). Overall, public support for the NMCA proposal has resulted in continued work on NMCA establishment in the area, which will be finalized in the near future. The main successes of this process are summarized in Table 5.

Table 5: Summary of the constructive and detrimental aspects of public consultation throughout the Lake Superior Marine Conservation Area proposal and feasibility study.

Constructive	Detrimental
• Immediate public involvement in feasibility study (no study officially conducted previous to this) (Parks Canada, 1998) • Immediate establishment of a Regional Committee (Parks Canada, 1998) * unanimous support from committee • Long public consultation process using a variety of mechanisms (Parks Canada, 1998) • Equality between governments and public • Public involvement and control over intergovernmental discussions and decision making (Lake Superior Newsletter, 2001) • Comprehensive report addresses many important issues (Lake Superior Newsletter, 2001) • Government commitment of continuous public involvement	• A government idea; not initiated by the public (Parks Canada, 1998)

3.2.4.3 Comparisons

In all the early studies (PC/TNB, 1985; The DPA Group Inc., 1985; Parks Canada, 1988) it is clear that public consultation is considered simply a phase of marine park establishment, and not as part of the entire process, with the public playing as big a role as government. Many of the early documents similarly recommend that if there is enough local support, then an intergovernmental agreement (federal and provincial) will set out terms and conditions of establishment, as well as regulations and management plans. Instead, based on the case studies discussed above, future initiatives should propose that if there is enough interest and support from *both* government and the public, then advisory committees should continue their cooperative efforts and draft a proposed establishment plan, which could then be evaluated, discussed, and revised with involvement from all interested parties.

Table 6 is a compilation of the qualities identified through analysis of the case studies that are required for successful marine protected area establishment using co-operation between the conservation agency and the public (Fenton et al., 2002; Lien, 1999; Walters and Butler, 1995). Here the four case studies can be easily compared, and the failings of two of them become obvious. In my opinion it is clear that the public should not just be "consulted" in the traditional manner of producing discussion papers and holding public meetings for people to voice their suggestions, comments, and concerns (e.g. West Isles); this is only one type of consultative tool. Instead what should occur is the involvement of community members and oceans-use representatives from the beginning. For example, in the case of Bonavista Bay "the experts workshop was judged a success and an extremely effective technique for national marine conservation area

Table 6: Summary of the presence or absence of important qualities (of public involvement in NMCA establishment) in four Canadian case studies. [Under the Saguenay-St. Lawrence the ½ designation refers to the fact that there was considerable evolution in the public involvement process here, throughout park establishment, and although there were many areas lacking in the beginning, by the end much of this had been addressed and incorporated, and was working well.]

Quality	West Isles	Bonavista Bay	Saguenay-St. Lawrence	Lake Superior
Case-by-case treatment of each proposed area (recognize uniqueness)	√	√	√	√
Public initiation of the *process* (may not always be the public's idea first, which is okay)	×	×	√	√
Early involvement of public	√	√	√	√
Involvement of non-government intermediaries	×	×	√	√
Advisory committee established	×	√	√	√
Public involvement in *design* of process	×	√	½	½
Continuous involvement in decision making throughout	×	√	½	√
Government and public treated as equals in process	×	√	½	√
Similar goals	×	×	√	√
DFO involvement	×	×	N/A	N/A
Appropriate timing	×	×	√	√
Education	×	×	½	√
Observable benefits from conservation well communicated before study	×	×	√	√
Trust	×	×	½	√
Local empowerment	×	√	½	√
Trusted expert support and assistance available to committee	N/A	×	√	√
Resources available	×	×	½	√
Involvement in management	×	√	√	√
Accepting local answer	N/A	√	√	√
Long-term government commitment to communities	×	√	√	√

identification/selection studies" (Mercier, 1995: p.248); however, this was later shown not to be the case. Although it may be a useful tool for identifying areas of biophysical interest, alone it was not sufficient for 'area of interest' identification because it did not involve the community.

Advisory committees should be established that work *with* governments to run the public consultation/education process using a variety of mechanisms (e.g. Bonavista Bay, Saguenay-St. Lawrence, Lake Superior). This has been a more successful technique because it means the community members are doing the community consultations. Informed local people are often much better at explaining the benefits and potential costs of protected areas, and can show their peers that feasible alternatives to what was originally proposed can be developed for and by them. This process is often more appropriate, instead of asking community members to trust government representatives.

However, even if Parks Canada shows great commitment and flexibility, all the best techniques are used, and the public is given complete control, sometimes the chosen site may still not be viable; this was the case in Bonavista Bay. There, the biggest failure was not a lack of effort on the part of Parks Canada, but instead that the goals of a NMCA did not fit with community goals in the area at the time, which were largely economic. Because education was lacking, and the observable benefits of conservation – including increased employment and tourism revenue, as well as protection and sustainable management of resources in the area – were not communicated early enough to the public, not enough community support and interest were generated before the feasibility study began. Jon Lien (1999) concludes that the Bonavista Bay initiative was a failing up-hill battle from the start.

In areas where there is upfront support, such as in the case of the Saguenay-St. Lawrence, it is simpler to address public worries/needs/concerns as they arise since the climate is in general more positive. In doing so, commitment and trust is felt by all involved, and adds to the forward momentum of the project. The above case study analyses demonstrate that it is easier to please a public that is aware of the benefits of conservation and want to see it in their community. Therefore, the importance of early public education and the involvement of conservation groups, to generate public initiation of the process, deserves emphasis. Clearly the public and the government must be working towards similar goals, so they both have a stake in seeing establishment through.

At the present time, some communities (such as Bonavista Bay) are unable to support establishment of a NMCA in their area. I believe this must be respected, as was the case at Bonavista Bay. Parks Canada has made a commitment to protect all twenty-nine natural marine regions in Canada, since currently there are still twenty-three with no promise of representation in the near future, the regions where success is more likely at present should be focused upon. The regions currently not capable of being supported locally can be saved until such time as public attitudes, needs, and other necessary attributes of success are in place. In the meantime, I think it is essential to generate a local support network in these communities, as was indicated by the case studies above. Through education and expansion of community-based conservation groups, local goals can be fostered that are in line with, or at least support, government conservation initiatives. In addition, Parks Canada can also benefit from early involvement of local communities because they "have much to offer in terms of traditional knowledge, active stewardship and guidance for management" (Fenton et al., 2002: p.1414).

4. The Bay of Fundy

The Bay of Fundy is known globally for its high tides, and its rich and diverse marine life. The Bay of Fundy is highly productive, especially at the mouth, which is responsible in many ways for the extensiveness of biodiversity found there. It contains many ecologically important areas, as well as rare and unique features. This high level of diversity has supported human life in the area for thousands of years, including the Passamaquoddy, Mi'kmaq, and Maliseet peoples. More recently, the Bay of Fundy has been both a home and source of economic livelihood for many fishing communities along the New Brunswick and Nova Scotia coasts. Not only are fish and shellfish populations important for humans, but we also use the Bay as a source of power, a passageway for ships, an environment for marine aquaculture, and a destination for tourism and recreation. Human activity in the Bay has over time resulted in various levels of degradation, on shore, along the coasts, and in the Bay itself. Several conservation initiatives have been undertaken around the Bay of Fundy that attempt to preserve a part of this natural wonder for future generations.

In this chapter I will briefly describe the biophysical features of the Bay; significant natural areas; the Aboriginal context; current human use patterns; and conservation initiatives around the Bay of Fundy. This will not be an in-depth study of the Bay of Fundy, but is intended to create a context for looking at NMCA establishment there.

4.1 Natural History

4.1.1 Biophysical Features

The Bay of Fundy is a 270km long, funnel-shaped embayment. It is 80km wide at the mouth and has two narrow extensions at its head, Chignecto Bay and the Minas Basin (Parks Canada, 2004d). It is less than 150m deep and generally less than 50m depth. The bottom relief is mainly irregular, "characterized by shoals, channels, reefs, islets and islands, particularly at its mouth" (Parks Canada, 2004d). At the head of the Bay salt marshes and mudflats up to 5km wide are common, while the rest of the Bay is mostly dominated by low-lying rocks shores, interspersed with beaches and low-eroding cliffs. In some places cliffs up to 200m occur (Parks Canada, 2004d).

4.1.1.1 Fish populations

The Bay of Fundy has a high diversity of fish, with over a hundred species typically found in the Bay. Buzeta et al. (2003) note: "geographic location seems to have a great influence on diversity" (p.13). Finfish communities can be divided into pelagics (those that live away from the bottom in the water column) and demersals (those that live on or close to the bottom; also called "groundfish"). Some of the more common pelagic species in the Bay include herring, mackerel, and assorted sticklebacks. Some of the more common demersal species include cod, pollock, redfish, haddock, halibut, winter and witch flounder, sand lance, red and silver hake, and assorted sculpins (Parks Canada, 1995). The most common shark species in the Bay of Fundy include the spiny dogfish, great white shark, basking shark, thresher shark, and porbeagle (Grand Manan Whale and Seabird Research Station (GMWSRS), 2004). Common skates and rays include the little skate, winter skate, smooth skate, barndoor skate, and thorny skate (GMWSRS, 2004).

There are also a few vulnerable fish species occurring in the Bay of Fundy and the Saint John River system, including short-nose and Atlantic sturgeon, and the Atlantic salmon (Buzeta et al., 2003). There are two distinct populations of Atlantic salmon in the Bay of Fundy. The Outer Bay population is migratory, traveling long distances to the waters of Labrador and Greenland. The Inner Bay of Fundy population does not leave the Bay, and many of the rivers in the Inner Bay have been declared endangered as surveys have shown wild Atlantic salmon have totally disappeared from them (Atlantic Salmon Federation, 2004).

4.1.1.2 Marine mammals

Marine mammals in the Bay of Fundy include several species of seals (Pinnipeds) and whales (Cetaceans). One species of seal is common, the harbour seal, one is increasing in numbers, the grey seal, and two are sporadic visitors: hooded and harp seals (GMWSRS, 2004). Twelve species of toothed whales have been sighted in the Bay of Fundy, many of them rare or unusual; the most common are the harbour porpoise and the Atlantic white-sided dolphin (GMWSRS, 2004). More common are the large baleen whales, especially the right whale, finback whale, minke whale, and the humpback whale; sei whales and blue whales have also been seen (GMWSRS, 2004). Whales are most often found in the mouth of the Bay, and are present in higher numbers from June to October, when fish and **zooplankton** (e.g. euphausiids or krill, and copepods) are most abundant (Parks Canada, 1995).

Right whales are present in the waters of Atlantic Canada from June to December, with the Bay of Fundy being a primary nursery and feeding ground. Mother-calf pairs and juveniles are the most commonly sighted (in the mouth of the Bay). The North Atlantic right whale is the most endangered large whale in the world, with a population between three hundred and three hundred and fifty individuals. Right whales are not aware of ships, and in the Bay of Fundy are in danger of life-threatening collisions. Right whales are also very susceptible to entanglement in fixed fishing gear, such as gill nets or lobster traps; this is mainly because of how they feed, with their mouth open, skim-feeding (GMWSRS, 2004; Kraus and Brown, 1992).

4.1.1.3 Seabirds and shorebirds

The Bay of Fundy supports hundreds of species of seabirds and shorebirds, including: loons, grebes, shearwaters, herons, egrets, swans, geese, birds of prey, plovers, sandpipers, and many, many more (GMWSRS, 2004). Important concentrations of gulls, terns, cormorants, phalaropes, dovekies, razorbills, black guillemots, common murres and sea ducks occur in the Bay at various times of the year (Parks Canada, 2004d). Along the shore, “from the huge herons and cranes to the tiniest of songbirds, the Bay is considered an ornithologist's paradise, particularly during the spring and fall migrations” (Ferguson, 2004). It is a critically important migratory staging area for millions of birds every year, plus an important summering and wintering area for others (Parks Canada, 2004d). For example, in July the mudflats of the Upper Bay of Fundy are an essential feeding-ground stopover for the semipalmated sandpiper, with 75-95% of the world population staging there each year on their way from Arctic breeding grounds to where they winter in South America (Parks Canada, 2004d, Environment Canada, 2002). The birds need to double

their weight during this one, ten to twenty-day stopover in their otherwise non-stop 4000km flight south (Ferguson, 2004; Environment Canada, 2002).

4.1.1.4 Invertebrates

A huge variety of invertebrate species is found in the Bay of Fundy, with high biodiversity of benthic invertebrates in the Outer Bay, and reduced invertebrate diversity in the Inner Bay (Buzeta et al, 2003). Buzeta et al. (2003) note "areas with unusually high benthic diversity almost always exhibit high productivity" (p.10). Exceptionally high productivity at the mouth of the Bay may result from the high benthic biodiversity there.

Over eight hundred species of benthic invertebrates have been identified, dominated by molluscs (e.g. clams, scallops, periwinkles, and squids), polycheates (e.g. worms), crustaceans (e.g. lobster, crabs, and krill), and echinoderms (e.g. sea urchin); many of these are critically important food sources for other animals in the Bay. The most common invertebrates include lobster, green crab, toad crab, sea scallop, shortfin squid and softshell clam (Parks Canada, 1995).

4.1.1.5 Geology and associated benthic communities

The "combination of the benthic community and the geology is the **biotope**" [bold added] (Buzeta et al., 2003: p.11). Several important biotopes exist in the Bay of Fundy (Participant #9). The first example is the Scotia Shelf Drift in the middle of the Bay of Fundy, which is important because "it's the only unmodified sediment area in the Bay" and there are bryozoan species living there that do not occur anywhere else (Participant #9). Another example is the LaHave Clay area in the lower part of the Bay, which is important because a particular type of benthic community is associated with it;

although not very productive, it nevertheless supports a number of demersal species (Participant #9). A final example is the **bioherm** communities in the upper and outer Bay of Fundy. These are long, straight rows of horse mussel reefs on rippled sand. These mounds can be between 2 and 3m high, up to 30m wide, and from tens to hundreds of metres in length. The horse mussel reefs are important because they make a significant contribution to secondary productivity in the Bay, are relatively rare globally, and are some of the largest in the world (Participant #9).

4.1.1.6 Phytoplankton and seaweeds

Planktonic algae (or **phytoplankton**) contribute to the high level of productivity in the Bay of Fundy, and are a very important food sources for hundreds of animal species (Buzeta et al., 2003). Macroalgae (or seaweed) mats (or communities) are essential habitat. They are both a refuge and food source for many marine species, especially some invertebrates that feed on the algal fronds (Bay of Fundy Ecosystem Partnership (BoFEP), 1996a). There are many seaweed species present along the coasts of the Bay of Fundy, including dulse, rockweeds, Irish moss and kelps (GMWSRS, 2004).

4.1.1.7 Salt marshes

Hunter and Associates (1982 In Buzeta et al., 2003) suggest that intertidal and shallow subtidal areas such as mudflats, marshes, and estuaries, significantly contribute to productivity in the Bay of Fundy. This inshore production is probably more important than phytoplankton production offshore. Salt marshes (i.e. coastal wetlands periodically flooded by salt water) are a very fertile environment, home to numerous species of

insects and birds (Ferguson, 2004). Low salt marshes around the Bay are flooded twice daily, and the products of their above ground production are carried away in the tides to be distributed throughout the Bay (Buzeta et al., 2003). Salt marshes are critically important and play a major role in the Bay of Fundy ecosystem; however, they are becoming increasingly rare (Ferguson, 2004; Buzeta et al. 2003).

4.1.2 Significant Areas

Over time different authors have attempted to identify areas of conservation significance in the Bay of Fundy using a variety of techniques. However, many of these studies are focused on one particular area, or use limited information to identify particular areas of importance. More recently there has been a renewed interest in applying more rigorous techniques for area-identification, and in producing a more complete picture through consideration of the entire Bay of Fundy. Two recent studies by King (2004) and Buzeta et al. (2003) are summarized in Table 7. They both identified the area South of Brier Island, NS, as having the highest, or one of the highest conservation values, as well as the West Isles and Passages (part of the Fundy archipelago), and outer Bay of Fundy, Georges Bank, and Browns Bank. Also, a recent study by Lotze and Milewski (2002) on the Quoddy region (see Figures 7a and b) identified critical habitats in the area as: i) the West Isles archipelago; ii) the Grand Manan archipelago; iii) Maces Bay; and iv) The Wolves.

Table 7: Comparing the results of two recent studies that identified areas of ecological or conservation significance in the Bay of Fundy.

Study	**King (2004)**	**Buzeta et al. (2003)**
Methods	- Areas of high conservation value in the entire Scotia-Fundy region identified using a three-track framework, first created by Noss et al. (1999; 2002); which includes the protection of: 1) representative samples of each habitat or ecosystem; 2) viable populations of focal species; 3) special elements. - Biodiversity data layers were mapped under the three-track framework and analyzed using GIS software - Multiple stages in the overlay analysis ➢ Included a protected area gap analysis ➢ Eventually identified areas of high conservation value	- Ecologically significant sites in the Bay of Fundy identified through scientific literature, or suggested by the scientific community and academics, as well as local experts, including representatives from various agencies and communities - Includes information collected during workshops, which convened community members having local ecological knowledge - Focus is on areas of general ecological importance, including habitat of both commercial and non-commercial species, and on areas critical to certain life stages (e.g. juveniles), of life processes (e.g. spawning) - Rated each site against 7 different criteria, including those used for protecting and managing MPAs (the *Oceans Act* (1996)) and those used for protecting and managing marine resources (IUCN, 1988)
Results	- 12 general areas of high conservation value identified - "The results [of the final overlay] indicate that Sable Island Bank [Scotian Shelf] and the area south of Brier Island are the areas of highest conservation value in the region" (King, 2004; p.144) (Figure 2) - Other high-ranking areas include: ➢ The Outer Bay of Fundy (Figure 3) and also Georges Bank and Browns Bank on the Scotia Shelf.	The following sites exhibited at least 6, or all 7, of the criteria: 1) Brier Island, NS ➢ Off the tip of Digby Neck (Figure 4) 2) West Isles, NB ➢ Along the East coast of Deer Island, from the Western Passage to Letite Passage (Figure 5) 3) The Passages, NB ➢ Little Letite and Letite Passages off the northeast tip of Deer Island (Figure 5)
Extras		Overlaps with a map identifying "Marine Natural Areas of Canadian Significance in the Bay of Fundy" (Parks Canada/ Tourism New Brunswick, 1985) included in the report, which also identified Brier Island and the West Isles (Figure 6)

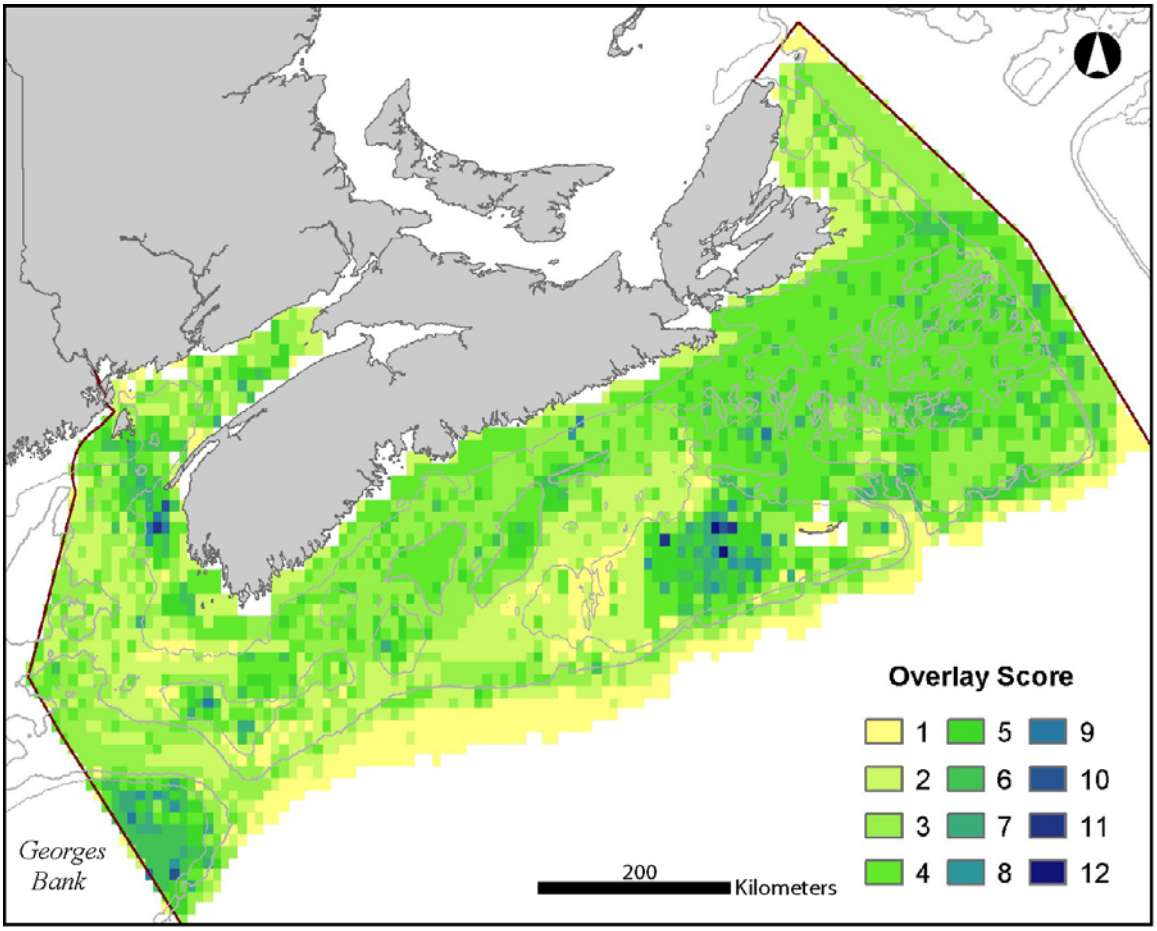

Figure 2: Map: This map represents the results of the synthetic overlay analysis and displays areas of high conservation value that were identified by applying the three-tracked conservation planning framework proposed by Noss et al. (1999a) in the Scotia-Fund region. The overlay combined all un- and underrepresented benthic and pelagic representation, focal species and special element conservation features. Note that the highest possible score for this overlay is 33.

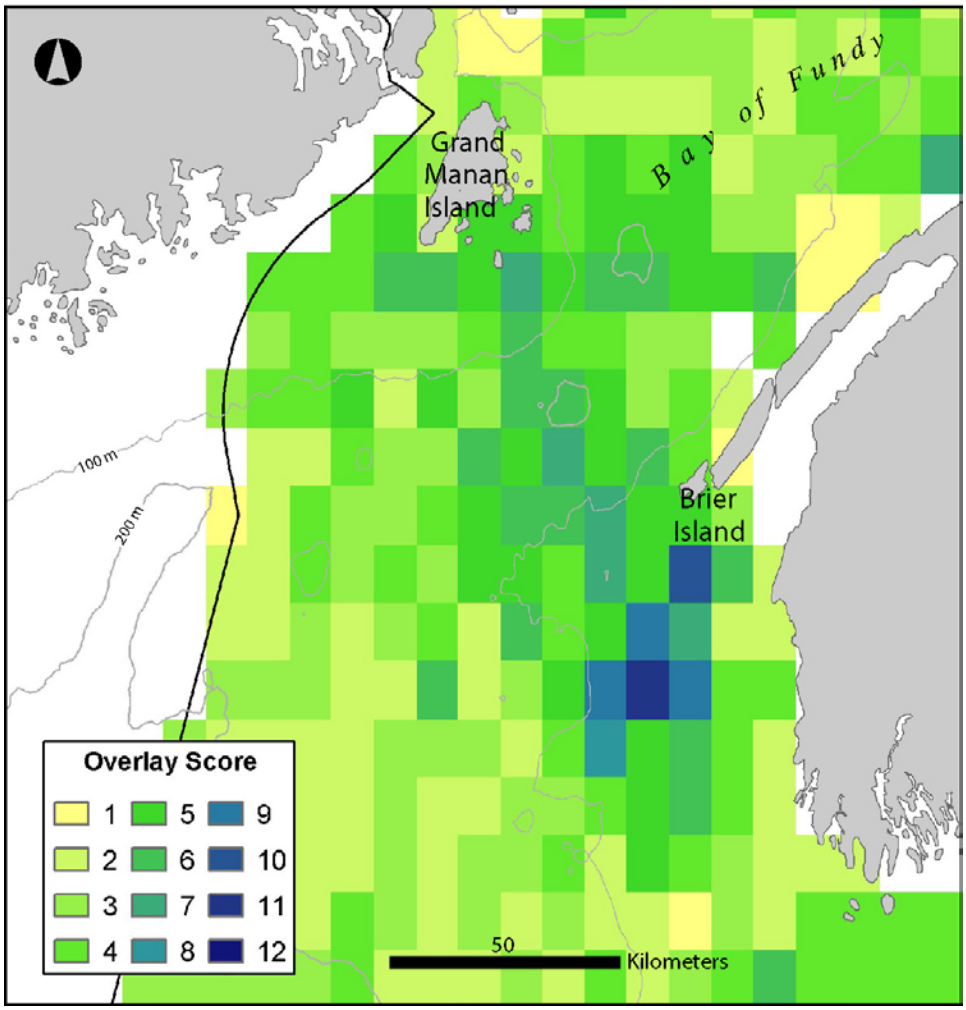

Figure 3: Map: The outer Bay of Fundy and the area south of Brier Island were identified as areas of high conservation value.
© King, 2004

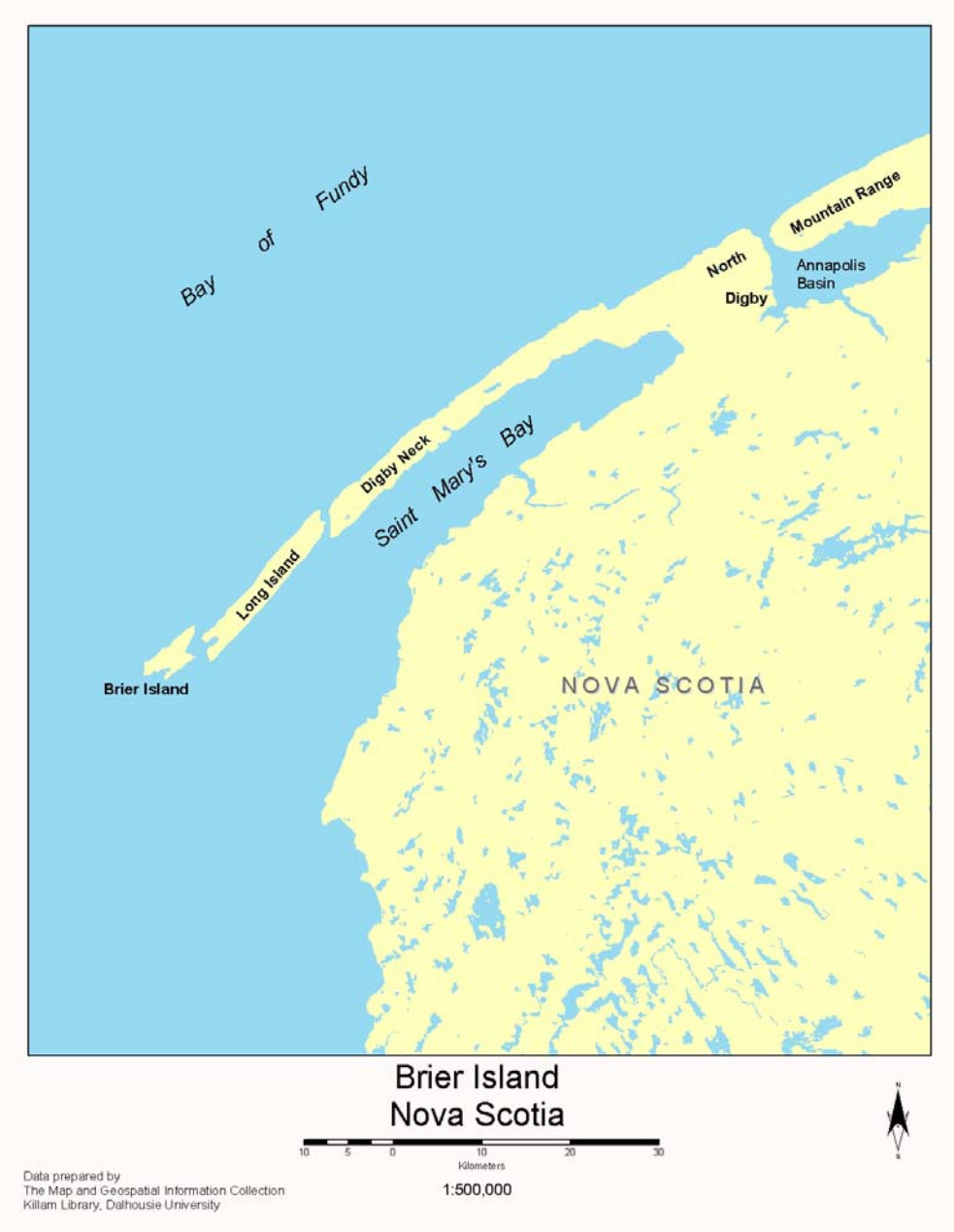

Figure 4: Map showing Brier Island, Nova Scotia.

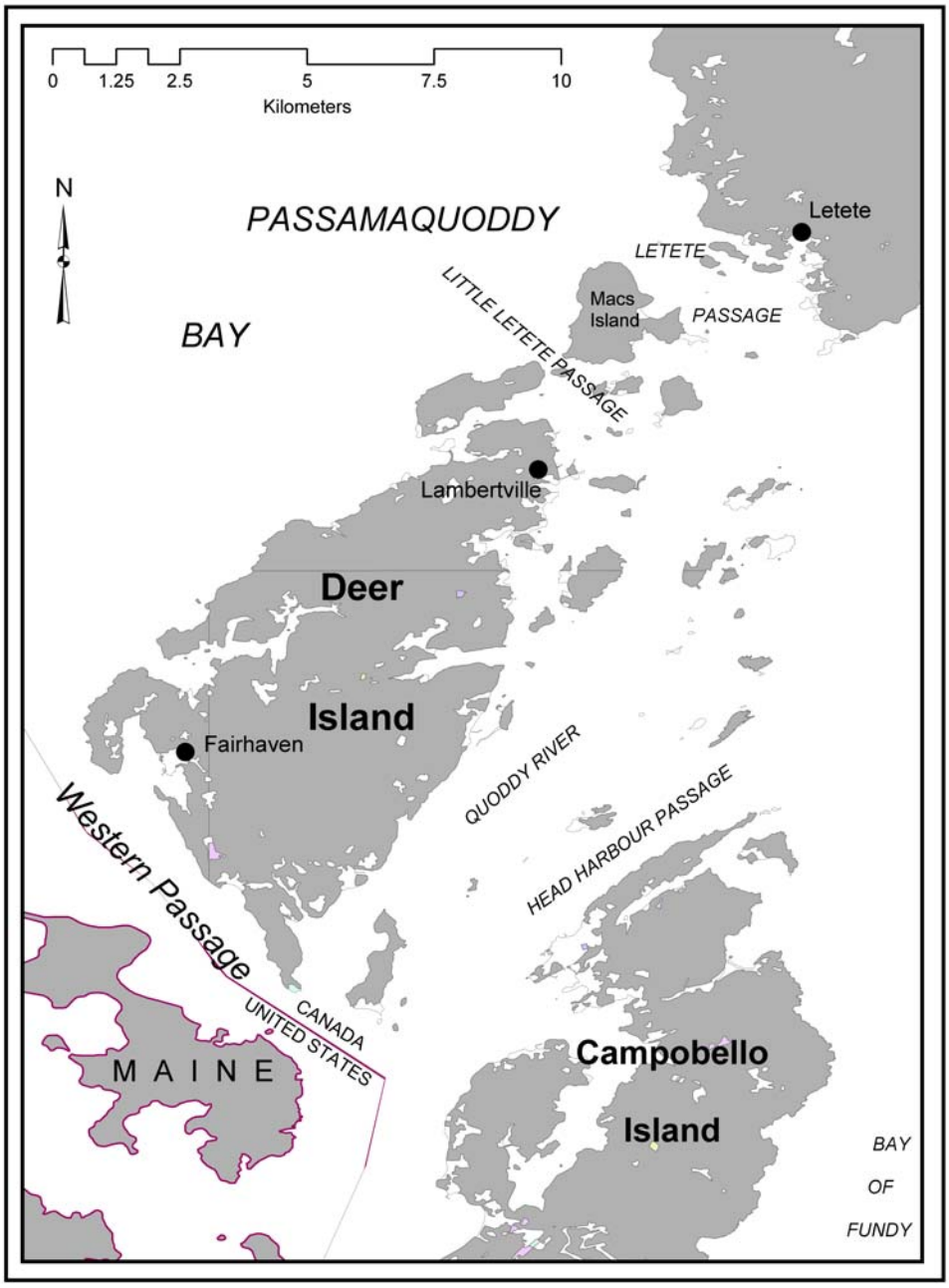

Figure 5: Map of the Fundy Archipelago, New Brunswick; including the West Isles and the Passages.

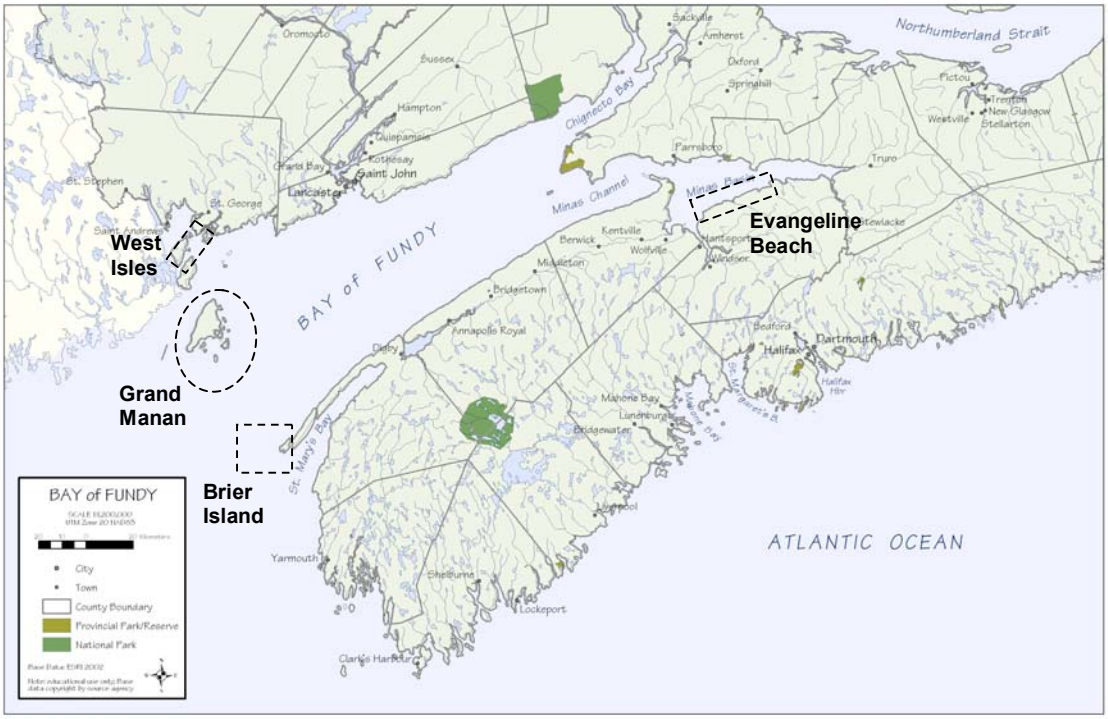

Figure 6: Re-creation of a 1985 Parks Canada/Tourism New Brunswick map showing marine Natural Areas of Canadian Significance in the Bay of Fundy.[**]

[**] It should be noted that this figure is re-created from a map in Parks Canada/Tourism New Brunswick's West Isles feasibility study (1985), in which they identify a Natural Area of Canadian Significance in the upper Bay as "Evangeline Beach". Today, this area is known instead as the Noel Shore, and Evangeline Beach is located on the opposite side of the Avon River estuary.

Figure 7a: Map showing Lotze and Milewski's (2002) study area in the outer Bay of Fundy (marked with a frame).

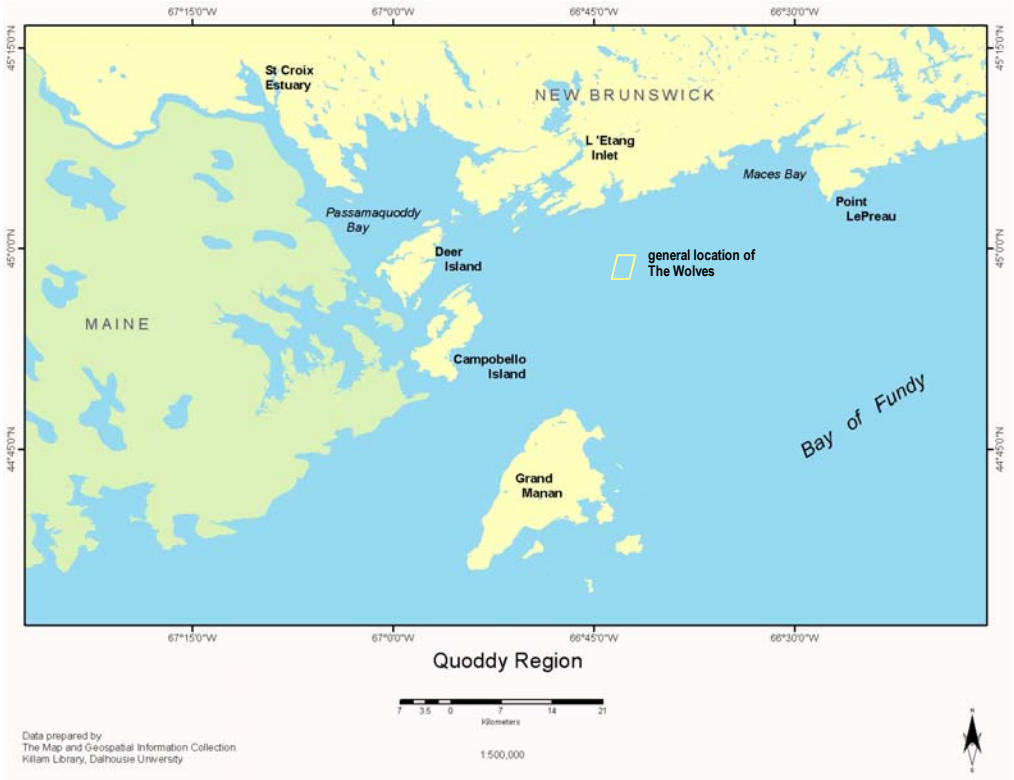

Figure 7b: Map of the Quoddy Region, New Brunswick.

Graham et al. (2002) published a report that identified local groundfish stocks and spawning grounds in the Bay of Fundy by documenting (through interviews) the knowledge of individual fishermen around the Bay. This study identified places such as i) the Northeast Banks; ii) The Shipping Lane; iii) Yankee Banks; iv) The Gravelly; v) Saint Mary's Bay; vi) Passamaquoddy Bay; vii) The Bulkhead; viii) The Wolves; ix) the New Brunswick Shore; and x) Scots Bay as places where they had frequently found developing and spawning groundfish over the years. The importance of these areas for conservation is summarized by Graham et al. (2002):

> Local stocks need to be identified so they can be protected against overexploitation. Current management boundaries may not reflect the distribution of local groundfish populations within the larger stock complexes. Some local populations, particularly those that spawn close to shore or at times of year when they are easy to harvest, are vulnerable to overexploitation. Figuring out where groundfish spawn in the Bay of Fundy is essential for protecting these areas and the fisheries that they support (p.53).

4.2 Human History

4.2.1 Aboriginal context

4.2.1.1 Current distribution of First Nations around the Bay of Fundy

The land around the Bay of Fundy, which today is New Brunswick to the North and Nova Scotia to the South, was originally part of the traditional territories of the Mi'kmaq and Maliseet peoples (McMillan, 1988); as well as the Passamaquoddy peoples around Passamaquoddy Bay, NB (Passamaquoddy representative, personal communication). Currently in New Brunswick there are nine Mi'kmaq and six Maliseet bands (Research Institute for the Study of Man (RISM), 2004a). Of the Mi'kmaq bands in

New Brunswick only Fort Folly is directly located on the Bay of Fundy, along the Petitcodiac River, which flows out of Shepody Bay at the end of Chignecto Bay. The Maliseet bands are located along the St. John River, which flows into the Bay of Fundy at St. John (RISM, 2004a). In Nova Scotia there are currently thirteen Mi'kmaq bands, with four existing along the Bay of Fundy (beginning with the furthest South): Bear River, Annapolis Valley, Glooscap, and Millbrook (Nova Scotia Department of Aboriginal Affairs, 2002). Many status and non-status Aboriginal people also live off reserve in the Maritimes.

The Passamaquoddy people in New Brunswick remain an anomaly. Currently the federal government does not recognize Passamaquoddy people as a First Nation in Canada, and thus they have no land (e.g. no reserves) or rights (e.g. no fishing licences). Although the Canadian Department of Indian and Northern Affairs does have extensive documentation of the presence of Passamaquoddy people, who, in the past, occupied three reserves in Canada (Passamaquoddy representative, personal communication), they were not registered as First Nations when the government began this program in 1951 (Union of New Brunswick Indians representative, personal communication). Because they were not registered, the government removed Passamaquoddy people from their historic reserve lands in order to acquire it for industry and development, the majority of this land is now owned by the "Irving conglomerate" (Passamaquoddy representative, personal communication). Currently in Canada the Passamaquoddy people live spread-out across their traditional territory in New Brunswick and Marine. They currently have a land-claim around St. Andrews, NB.

4.2.1.2 Current fishing agreements

In 1982, the Canadian constitution recognized existing Aboriginal and treaty rights. Section 35(1) of *The Constitution Act* (1982) states: "the existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed". "Court decisions such as *Calder, Sparrow,* and *Delgamuukw* and modern land-claims agreements have further delineated the Aboriginal peoples' role in the resource and environmental policy arena" (Doyle-Bedwell and Cohen, 2001: p.169). The September 1999 *Marshall* decision protects Mi'kmaq rights to a commercial fishery for eels, to make a moderate livelihood, and confirms Mi'kmaq 1760-1 treaty rights to hunt, fish, and sell the commodities (Doyle-Bedwell and Cohen, 2001). Unfortunately, after the Supreme Court released its decision there was much controversy over the interpretation of the 1760-61 Mi'kmaq treaty and how broadly it applied, particularly with respect to the lobster fishery (Doyle-Bedwell and Cohen, 2001). Mi'kmaq people suffered "violence and threats by non-native fishers" (Doyle-Bedwell and Cohen, 2001: p.179). Between 1999 and 2000, meetings of Atlantic chiefs, DFO, non-native fishers, and the Minister of Fisheries, were unsuccessful at developing a framework for conservation and limits acceptable to everyone involved (Doyle-Bedwell and Cohen, 2001).

Eventually, in February 2001, DFO launched their longer-term response to the *Marshall* decision (DFO, 2003a). DFO retains regulatory control of the fisheries in exchange for money, boats, gear, training, and assistance in expanding First Nations' access to the commercial fishery in the Maritimes (consistent with the *Marshall* decision) (DFO, 2003a). As well, DFO is committed to increasing fishing-related economic development opportunities for First Nations, such as aquaculture, eco-tourism, and new

facilities (RISM, 2004b). In summary, each Atlantic Mi'kmaq band underwent negotiations with DFO representatives to establish their fishing rights in the various Maritime regions. Since no new fishing licences could be created, DFO had three years to acquire the agreed-upon licences (by purchasing them from other fisherman), and to transfer them to the entitled First Nation. These licences are permanent, and therefore will be held by the First Nation forever (Millbrook First Nation representative, personal communication).

However, the Atlantic Policy Congress of First Nations Chiefs found the template unsatisfactory. The congress felt the agreement would negatively impact future treaty rights rulings and advised bands not to sign. Some people believe that since the licences are communal, economic benefits will be realized by only a few members of the First Nations community (RISM, 2004b). Also, some First Nations community members feel that when you sign an agreement with DFO you have signed away your treaty rights, you are now just the same as every other licence holder regulated by the department (Passamaquoddy representative, personal communication).

However, currently DFO is continuing its attempts at establishing long-term agreements with all First Nations in the Atlantic Canada. To date DFO has successfully negotiated agreements with thirty-one of the thirty-four Atlantic bands affected by the *Marshall* decision. Of these twenty-two have signed long-term agreements with DFO. Of those bands that have not successfully negotiated agreements with DFO, only Bear River, NS, is on the Bay of Fundy. For example, a summary of some First Nations fishery licences in the Bay of Fundy and Nova Scotia (in 2002) can be found in Appendix 5. It should be noted that numbers for the Bay of Fundy are only for the large commercial

fisheries, i.e. scallop, lobster and sea urchin. Licences are also held across the Bay of Fundy region for a variety of other species, such as snow crab, groundfish, tuna, swordfish, and herring. As well, harvesting of clams (from the shore) is carried out extensively around the Bay of Fundy by Aboriginal people, as are other Mi'kmaq traditional fisheries, but these are not accounted for in the table in Appendix 5 (DFO representative, personal communication).

At this point it is important to acknowledge that because the Passamaquoddy people are not recognized as status Indians (under the *Indian Act*) in Canada, they do not qualify for Aboriginal fishing licences, nor are they considered to have a traditional right to fish (even though they are included in the Covenant Chain of treaties); thus, they are not part of DFO's long-term response to the *Marshall* decision. Passamaquoddy individuals with licences have been further excluded from the industry as DFO purchased licences from them to give to other First Nations as part of their long-term agreements. This has led to conflict between First Nations, pitting some against others (Passamaquoddy representative, personal communication), since only status Indians on reserve lists get access to the fisheries. A Passamaquoddy representative sees DFO's involvement in Aboriginal fisheries as significantly contributing to the breakdown of the traditional native governance structure for fisheries, with individuals folding under monetary pressure from the government.

4.2.1.3 Aboriginal involvement in marine conservation initiatives

Peepre and Dearden (2002) note "First Nations have emerged as the most dominant force influencing the establishment of national parks in Canada over the last

decade" (p. 324). It follows therefore that First Nations are also a critical component in the establishment of NMCAs in Canada. Although we have had relatively little experience with this specific process, important lessons can be learned from successful marine examples discussed below. What this means for a NMCA initiative in the Bay of Fundy can then be explored.

An example of successful Aboriginal involvement in conservation planning and management can be seen in the establishment process for Gwaii Haanas National Park Reserve. Gwaii Haanas is located in the southern portion of the Haida Gwaii archipelago, and in 1988 was designated as a National Park Reserve. A turning point came in 1993, when the Gwaii Haanas Agreement was signed. It set out the terms and conditions of co-management between the Canadian Government and the Haida Nation: "all actions related to the planning, operation and management of Gwaii Haanas will respect the protection and preservation of the environment, the Haida culture, and the maintenance of a benchmark for science and understanding" (Peepre and Dearden, 2002: p.343). Overall, the involvement of First Nations in Gwaii Haanas park management is relatively high, with Haida and government making up the park management board, and is an example of co-management that could be applied to a NMCA (Jones and Guénette, 2000). Also there has been a high level of training offered to Haida people to help them qualify for jobs within the park, and they are also involved in the staff selection process (Peepre and Dearden, 2002; Jones and Guénette, 2000).

The coastal and marine environments adjacent to Gwaii Haanas will in the near future be designated as a NMCA under the *CNMCA Act* (2002). The success in establishment there is in no small part due to the positive planning process for its land-

based counterpart. “Gwaii Haanas is an example of successful co-management of a terrestrial area that could be applied to an MPA” (Jones, 1998: p.320). Since the establishment of Gwaii Haanas National Park Reserve, the Canadian government, B.C. government, and the Council of the Haida Nation have intended to also establish a NMCA in the area as well (Parks Canada, 2003c). The marine environment here supports many important biological systems, as well as the traditional Haida harvest of marine species and commercial fisheries (including herring roe-on-kelp or K'aaw, salmon, halibut, rockfish, geoduck clams, and red sea urchin) (Parks Canada, 2003c).

Pre-establishment, there is still a need for further public consultation. As well, negotiations will continue between the Council of the Haida Nation and the federal government, to determined how the NMCA Reserve is to be planned and managed. “Once established, the marine conservation area will be co-operatively managed by the Government of Canada and the Council of the Haida Nation” (Parks Canada, 2003c: p.1). In summary “a high level of consultation resulting in a negotiated agreement and co-management system is one way to address [Aboriginal] interests in MPA design and implementation” (Jones, 1998: p.319).

The Lake Superior NMCA program provides another example of a successful establishment process involving First Nations from the start. The regional committee, made up of members of the local community and stakeholders, included First Nations representatives (Parks Canada, 1998). “An Aboriginal perspective has brought a more holistic approach to the proposal and influenced commitment, credibility and trust for the process” (Regional NMCA Committee, 2001: recommendations p.1). The Regional

Committee (2001) recommended that: 1) existing treaties and rights be recognized and affirmed, and traditional uses be respected; 2) First Nations be represented on the management board; 3) Parks Canada would prepare a Memorandum of Understanding with First Nations to explore common interests; 4) cooperation between Parks Canada and First Nations to achieve economic and employment opportunities related to the NMCA; and 5) First Nations be allowed continued use of their cultural and spiritual sites, and be consulted in the management of these sites. The Lake Superior model shows an acknowledgement of past mistakes and an incorporation of recommendations; its success makes it a positive example for future NMCA establishment proposals.

4.2.1.4 Aboriginal references in the *CNMCA Act*

There are approximately fifteen references to Aboriginal issues in the *CNMCA Act* (2002), to Aboriginal people, Aboriginal rights and treaty rights. In the preamble the *Act* (2002) states that in developing NMCAs the federal government must "*involve* federal and provincial ministers and agencies, affected coastal communities, Aboriginal organizations, Aboriginal governments, bodies established under land claims agreements and other appropriate persons and bodies in the effort to establish and maintain the representative system of marine conservation areas" [italics added], but it doesn't explain *how* they are to be "involved". Subsection 2(2) defines Aboriginal rights, and states: "For greater certainty, nothing in this Act shall be construed so as to abrogate or derogate from the protection provided for existing Aboriginal or treaty rights of the Aboriginal peoples of Canada by the recognition and affirmation of those rights in section 35 of the *Constitution Act, 1982*". In subsection 4(2) the *CNMCA Act* explains that, similar to on-

land, if NMCA establishment is being pursued in an area that is subject to an outstanding claim in respect of aboriginal rights, then the NMCA will be referred to as a "Reserve" until the claim is settled (such as Gwaii Haanas National Marine Conservation Area Reserve).

In the section of the Act focused on administration the inclusion of Aboriginal ecological knowledge in scientific research and monitoring is mentioned (subsection 8(3)). Subsection 9(1) refers to management plans, and notes the need (i.e. "The Minister *shall* consult" [italics added]) to involve the Aboriginal community; subsection 10(1) notes the need to consult with the Aboriginal community; and subsection 11(3) notes the need for Aboriginal involvement on area advisory boards. Section 19 of the Act suggests (i.e. "The Minister *may*…" [italics added]) involving Aboriginal governments' in enforcing the Act.

4.2.1.5 Where to go from here…what does this mean for the Bay of Fundy?

Historically there has been little communication between Parks Canada and the Mi'kmaq at Fundy National Park on the Bay of Fundy (Peepre and Dearden, 2002). This lack of involvement in the past will no doubt affect how First Nations in the region would react to any future NMCA proposal for the area. However, Mi'kmaq representatives *are* now partners in the Fundy Model Forest project, which is another federal government initiative (Peepre and Dearden, 2002). Hopefully this collaborative effort will be a positive experience, and help to resolve past conflicts while building trust for future cooperation. Jones and Guénette (2000) note "an approach that provides incentives to

First Nations to participate in MPA policy, planning, design and implementation is more likely to be successful in the long term than one that is imposed" (p.1427).

Hopefully the negotiating and signing of long-term agreements with DFO for fishing licences will mean that First Nations around the Bay of Fundy can begin to become more self-governed in terms of the fishing industry, without continual government interference. For example, although DFO retains regulatory and management responsibility over fisheries, the First Nation has control over quota allocations within the band. If these long-term agreements function successfully, this could be a significant step forward for government-Aboriginal relations. As tension is reduced, resentment will fade, and trust may be re-established over time. Since continued dislike or suspicion of government, due to past conflicts with DFO, could translate into a more difficult consultative/negotiation process for Parks Canada, a more positive relationship with DFO would be significant in NMCA establishment.

However, it may be difficult to elicit the support of the First Nations that have not signed long-term agreements with DFO. There may be high levels of dissatisfaction, anger, resentment and suspicion in some of these bands, or at least in some of the individual members, resulting from a long negotiation process that did *not* end with an agreement. A representative from Indian Brook First Nation (personal communication) explained that they did not think they should be forced into this process in the first place; that they had a traditional right to fish and DFO shouldn't have the power to control that. Therefore, any sort of government initiative may be met with similar opposition if it is at all seen to be the same sort of process, and/or attempting similar objectives. Thus, a

NMCA proposal for the Bay of Fundy should not be promoted by Parks Canada alone, but instead be a community-led initiative, with everyone holding equal "veto" powers.

It is not acceptable to consider a few Aboriginal participants in the process as representing the views of the entire community (Jones and Guénette, 2000). Instead, collaborative methods, such as those used in the Gwaii Haanas initiatives, were identified as positive examples of cooperative planning and a consensual process (Jones and Guénette, 2000), and thus may be a good model to follow. Also, it is unacceptable to only involve First Nations at the outset, and then have Parks Canada complete the establishment process once there is 'buy-in' from the Aboriginal community. Instead, it must be a more involved process for success. The Government of Canada does have a fiduciary responsibility to consult, as decided by the courts; however, what is not clear is what would constitute 'consultation' in this context.

Jones and Guénette (2000) note: "co-management agreements and local involvement in planning and design are several ways of addressing First Nation's underlying interests and optimizing perceived benefits" (p.1427). Thus, another way to increase First Nations support for NMCA establishment in the Bay of Fundy is to commit early to their continual involvement in the functioning and management of the NMCA. As well, members of First Nations must be part of the NMCA staff, in a management role, as tour guides, interpreters and educators, or in administrative capacities. For example, at Gwaii Haanas National Park Reserve members of the Haida First Nation sit on management boards, were given training for different park employment opportunities, and were involved in the park staff selection process.

It is important to acknowledge that the entire province of Nova Scotia is currently under a land-claim (which only applies to crown land in this case), and there is a signed Memorandum of Agreement between the provincial and federal government and the thirteen First Nations' chiefs to: define, recognize and implement Treaty and Aboriginal Rights; and work within the Mi'kmaq-Nova Scotia-Canada Tripartite Forum. This will probably take between fifteen and twenty years to accomplish. As the land-claim involves some coastal and seabed components, it will play a role in determining how affected Mi'kmaq people respond to any NMCA proposal in the Bay of Fundy (Participant #26). However, even though Aboriginal title has not yet been cleared on these Mi'kmaq lands, *Marshall* helped to establish *when* the Mi'kmaq people must be consulted with respect to fishing regulation in their traditional territory (Doyle-Bedwell and Cohen, 2001). Because of the outstanding land claim, a NMCA in the Bay of Fundy might be referred to as a 'Reserve' according to subsection 4(2) of the *CNMCA Act* (2002).

In the Bay of Fundy, it is critical for First Nations to have continued access to traditional resource harvesting areas (and species) (Jones and Guénette, 2000). The reliance on traditional fisheries and other marine resources, for food and income, is still significant for many First Nations. Therefore, any threat to this lifestyle would be of high priority and concern. Many Aboriginal community members feel that since they did not cause the problems currently threatening the marine environment, they should not have to 'pay the costs' economically (Jones and Guénette, 2000). In B.C., First Nations representatives expressed concerns surrounding increased tourism and recreation within

conservation areas at the expense of traditional Aboriginal resource harvesting, as well as the related increases in development, noise, pollution, and overall disturbances (Jones and Guénette, 2000). Although in NMCAs non-destructive tourism and recreation are encouraged, they too, like all other human uses, will be strictly managed and monitored. Again, partnerships and co-management with First Nations could help identify how to address this concern, particularly in the Bay of Fundy, where whale watching, tourism, and boating are important industries. Instead, this could be a positive opportunity for increased First Nations involvement and employment, as volunteers, guides, interpreters, or educators at the NMCA.

In summary, Jones and Guénette (2000: p.1434) outline specific requirements for successful Aboriginal involvement in marine conservation initiatives, these include: a recognition that marine protected areas do not effect everyone equally, and that concerns of local people need to be acknowledged as real and accounted for in planning and implementation; participation and buy-in by local people is critical for success; accounting for Aboriginal rights and treaties early in the process, and being consistent; amending policy and legislation to enable establishment of joint management agreements (already part of *NMCA Act*), and creating joint management boards; consistent policy for co-management; and weighing benefits and costs before proceeding.

It should be noted that First Nations are not simply one of a number of stakeholders with interest in access to the Bay of Fundy. They are distinct from other user groups because Aboriginal rights, treaty rights, Aboriginal title, and the fiduciary relationship between government and Aboriginal peoples, have all been acknowledged

and defined somewhat by the Supreme Court of Canada (Doyle-Bedwell and Cohen, 2001). As well, Aboriginal and treaty Rights are constitutionally protected under section 35 of *The Constitution Act* (1982), which delineates them from stakeholder or user groups. The Government of Canada has both a legally identified duty to consult, and is required to obtain the consent of Aboriginal peoples when developing environmental policy (Doyle-Bedwell and Cohen, 2001). These crown responsibilities, as well as Aboriginal and treaty rights, will play a fundamental role in any future NMCA establishment process in the Bay of Fundy.

4.2.2 Current human use patterns

4.2.2.1 Natural resource extraction

a) Commercial fishing

Commercially important pelagic species in the Bay include Atlantic salmon, bluefin tuna, mackerel, and herring. However, "many traditional [inshore] fisheries for hake, salmon, mackerel and herring that sustained communities for over a hundred years, no longer exist" (Graham et al., 2002). Commercially important groundfish species include cod, haddock, pollock, winter flounder, halibut, hakes, cusk, redfish, monkfish, and hagfish (GMWSRS, 2004). Pelagics are caught using mobile gear, such as long-lines and mid-water trawls (e.g. purse seines for herring), and fixed gear, such as gillnets and traditional herring weirs. Groundfish are most often caught using mobile gear, such as bottom trawls/draggers or long-line; however, they may also be caught using gill nets, bugging (i.e. lures on hooks), and handlining (baited hooks) (Grand Manan Tourism Association et al., 2004).

Commercially important invertebrate species include lobster, scallops, sea urchins, common periwinkles, soft-shelled clams, quahogs, pink (red) shrimp, Jonah crab, and squid (GMWSRS, 2004). Lobster and crab are most often caught using baited traps or pots; scallops and urchins are harvested using a specialized drag for each species (Grand Manan Tourism Association et al., 2004). Soft-shelled clams are dug for on beaches, while other species, such as the propellor clam, the Simpson surf clam, and the mahogany clam are harvested using a clam dredge. Periwinkles are handpicked off the rocks; squid are harvested using either weirs or jigs; and shrimps are harvested using a mid-water trawl (Grand Manan Tourism Association et al., 2004).

Globally the Northwest Atlantic makes up Major Fishing Area 21 (Food and Agriculture Organization of the United Nations (FAO), 2004), within which the Bay of Fundy and half of the Scotian Shelf make up commercial fishing area 4X (Figure 8). For some species the Bay of Fundy area is further divided into smaller management units: for example, there are different fishing areas with varying rules associated, for scallops (Figure 9a), lobster (Figure 9b), and herring (Figure 9c). Within these areas fishing activity is limited by various seasonal and spatial closures for different species and gear types. One example is several herring fishery closures (or restrictions) on mobile gear in areas with traps and weirs; these were put in place to minimize conflict between different gear types. Another example is a herring fishery closure in Scots Bay, inner Bay of Fundy (Figure 10), which was put in place to protect the spawning stocks from harvesting pressure, to maintain population diversity.

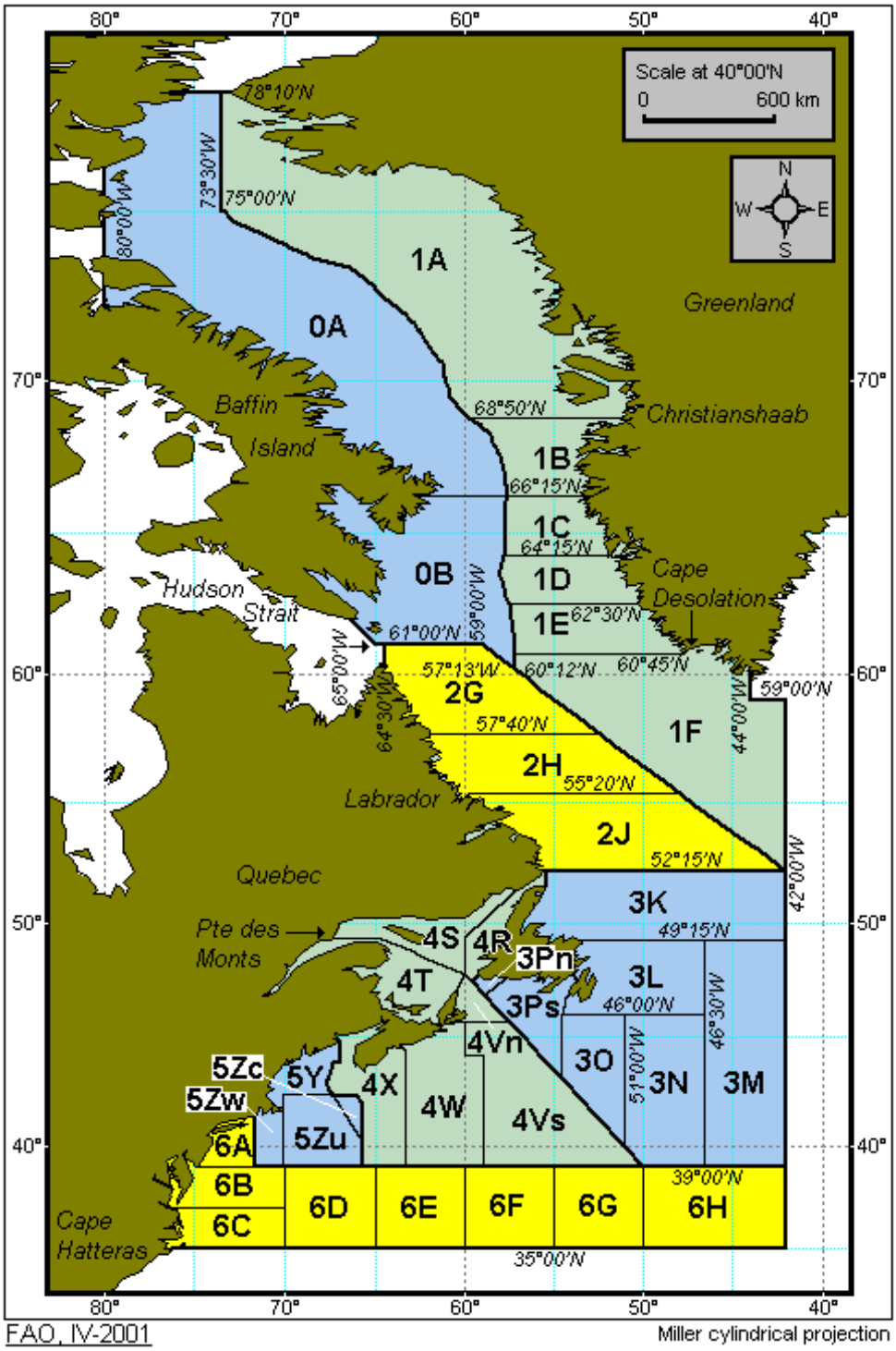

Figure 8: Map of the Northwest Atlantic (Major Fishing Area 21) corresponding to the NAFO Convention Area.

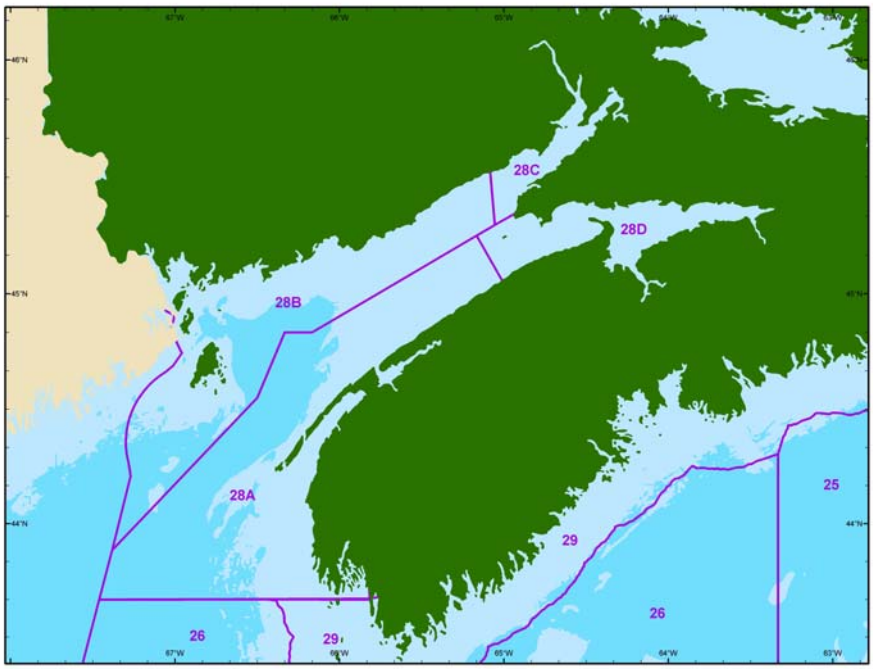

Figure 9a: Scallop Fishing Areas in the Bay of Fundy.
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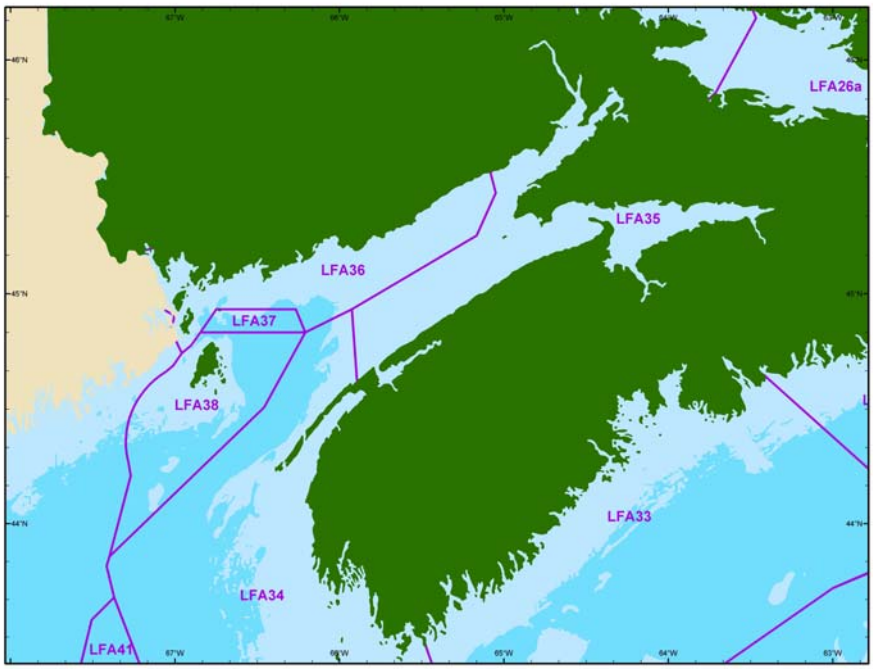

Figure 9b: Lobster Fishing Areas in the Bay of Fundy.
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Figure 9c: Herring Fishing Areas in the Bay of Fundy.
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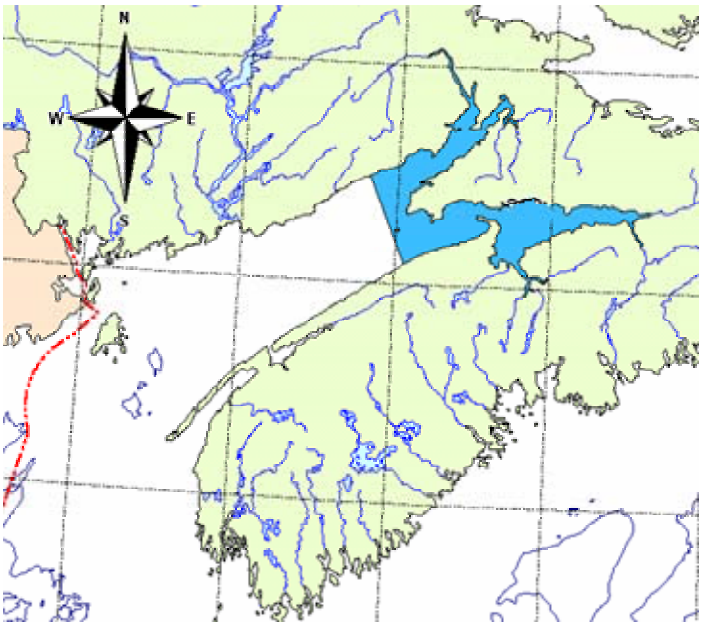

Figure 10: Draft map of a herring fishery closure in Scots Bay, inner Bay of Fundy – put in place to maintain population diversity by protecting spawning stock from harvesting pressure.
© DFO Oceans and Coastal Management Division (not officially verified by Fisheries Management), 2000

b) Seaweed harvesting

Macroalgal species (or seaweeds) that are commonly harvested include dulse, rockweed or knotted wrack, laver or nori, Irish moss, sea lettuce, kelp, and alaria (GMWSRS, 2004). Dulse is collected by hand, dried, and eaten locally. However, Irish moss is racked up in large quantities so a gelatinous material called "carrageenan" can be extracted from it. This is used locally to make a tasty "seaweed pudding". It is also added to many processed foods, and other commercial products, to make them smooth, to keep them from separating and to control the growth of ice crystals during freezing" (BoFEP, 1996a).

The rockweed industry is commercially important in Nova Scotia and expanding in New Brunswick; it is most abundant along the Southwest shore of Nova Scotia, and around the mouth of the Bay of Fundy (BoFEP, 1996a).

> For centuries this rockweed was collected for use as an agricultural fertilizer, mulch and soil conditioner. Nowadays, the seaweed's growth-promoting compounds are extracted to produce a liquid "foliar feed" that can be sprayed directly on the crops. Thousands of tons of such extracts are produced annually in the region for export to more than 25 countries. Rockweed is also processed into kelp meal, a nutritious feed for livestock. Another important commercial use involves extracting gelatinous organic compounds called "alginates". These have similar properties to carrageenan, and serve as a stabilizer and thickener in thousands of commercial products ranging from paints, to cosmetics to puddings. (BoFEP, 1996a)

Traditionally rockweed was harvested by hand at low tide, or from a small boat when the tide was in; however, more modern and efficient technologies now exist (BoFEP, 1996a).

c) Aggregate mining

Currently aggregate mining around the Bay of Fundy is limited to on-land sources of rock. For example, granite rock from around the Bay is brought to Bayside, NB,

crushed near the wharf, and exported to the United States and Caribbean Islands for road building, etc. (Participant #36). However, there has been commercial interest in the recent past, in a few large fields of submarine sand "dunes" or waves, formed by the powerful tidal currents. One such area in Scots Bay southwest of Cape Split, termed the Cape Split Sand Wave Field, contains approximately 35 million cubic meters of coarse sand and fine-grained gravel (Fader and Miller, 1994 In BoFEP, 1996b). Figure 11 shows where in the Bay these deposits are located. A "trailer suction dredge" is most often used to recover these submarine sand and gravel deposits, "as the ship criss-crosses an area it excavates trenches in the seafloor" (BoFEP, 1996b).

d) Oil and gas exploration

Currently there is a moratorium on oil and gas exploration in the Bay of Fundy. However, even without the moratorium there would likely be little interest in the Bay of Fundy, explained a Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) representative. In the past there have been four seismic surveys shot in the Bay of Fundy. The first in 1973 by Mobil (about thirty-five lines which covered virtually the entire Bay), and then in 1980, '81, and '82 by Chevron, who concentrated on the New Brunswick side of the Bay. In total only two wells have been drilled in the Bay of Fundy, one called Chinampas N37 in 1975, and the other called Cape Spencer N1 in 1983 by Chevron and Irving. Both wells were abandoned immediately, and so the chances of a company wanting to go back and explore the Bay of Fundy again are very remote (CNSOPB representative, personal communication).

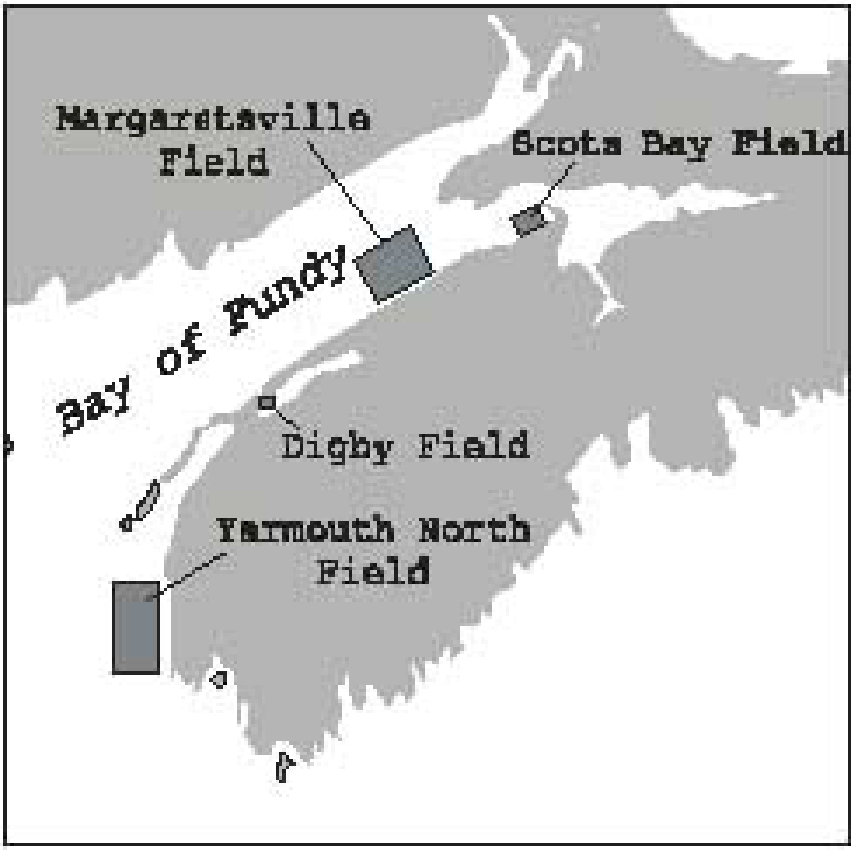

Figure 11: Map of areas in the Bay of Fundy where large undersea deposits of sand or gravel are located.
© Fader and Miller, 1994 In BoFEP, 1996b

4.2.2.2 Aquaculture

On the Nova Scotia side of the Bay of Fundy the aquaculture industry is basically limited to St. Mary's Bay and the Annapolis Basin (Figure 12) (Nova Scotia Department of Agriculture and Fisheries, 2004a). In St. Mary's Bay six site licences have been issued, and two more are proposed; all sites are less than 22 hectares in size. The primary species being farmed in sea pens there are Atlantic salmon and rainbow trout; however, there are also licences for eel, flounder, striped bass, yellowtail flounder, cod, crownfish, haddock, pollock, sole, and Arctic charr. The two proposed sites are for Atlantic salmon and Steelhead salmon. There are also two invertebrate farms, producing European oysters, blue mussels, sea scallops, or soft-shell clams. At the head of St. Mary's Bay there is a very large (1682.03 hectare) Bay Quahog site leased by Innovative Fishery Products Inc. (Nova Scotia Department of Agriculture and Fisheries, 2004b).

In the Bay of Fundy off Gullivers Cove, NS, there is a sea urchin site. In the Annapolis Basin licenses for seven sites have been issued, with no new sites currently being proposed; all sites are less than thirteen hectares in size. The primary species being farmed in sea pens there is Atlantic salmon; however there are also licences for steelhead salmon, halibut, Atlantic cod, haddock, European oyster, American oyster, and sea urchin. Innovative Fishery Products Inc. also owns the largest site in the area (98.5 hectares), where they farm European and American oysters, bay scallop and sea scallop. (Nova Scotia Department of Agriculture and Fisheries, 2004b).

On the New Brunswick side of the Bay of Fundy aquaculture is a much bigger industry; there are many more sites, for both finfish and shellfish (Figure 13) (New

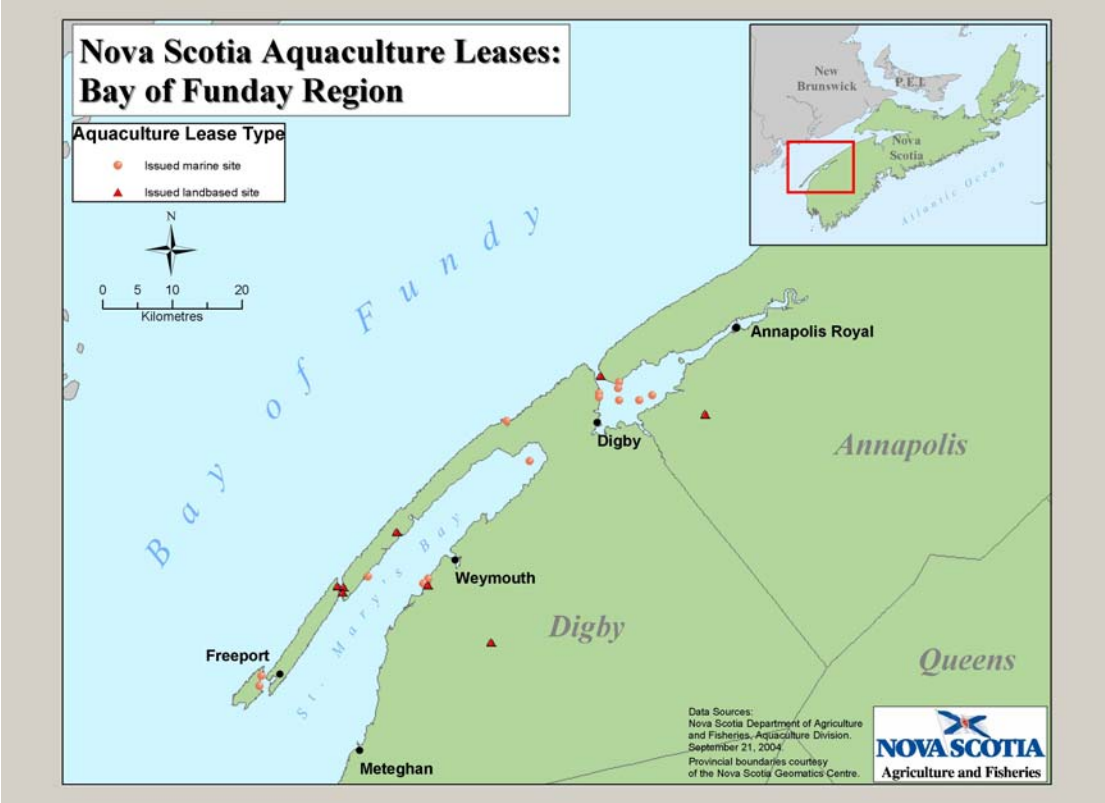

Figure 12: Map of Nova Scotia Aquaculture leases in the Bay of Fundy region. © Nova Scotia Department of Agriculture and Fisheries, 2004a

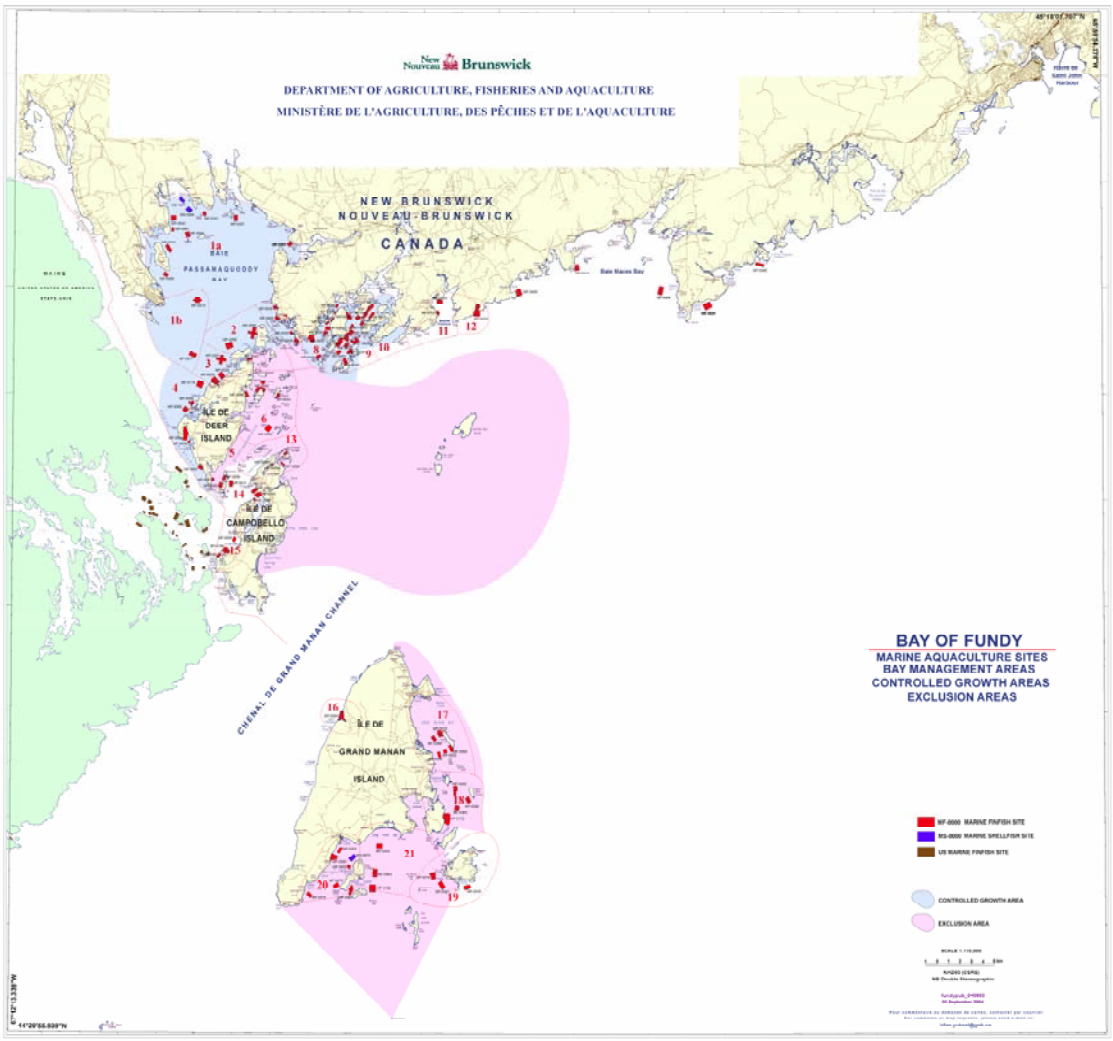

Figure 13: New Brunswick Bay of Fundy marine aquaculture sites, bay management areas, controlled growth areas, and exclusion areas.

Brunswick Department of Agriculture, Fisheries and Aquaculture, 2004). Salmon farming is the largest food production business in New Brunswick, with ninety-six farm sites; virtually all the farms are located in Charlotte County (the southwestern part of the province). "The industry generates about $270 million dollars in annual sales, and employs 4,000 people throughout the province of New Brunswick, most of them in Charlotte County; in fact a quarter of all the people in Charlotte County work in salmon farming" (Participant #22).

4.2.2.3 Tourism and recreation

a) Whale-watching and birding

Whale-watching and bird viewing have become increasingly popular activities in the Bay of Fundy, attracting thousands of tourists annually to both Nova Scotia and New Brunswick (Ferguson, 2004). Most operators combine seeing whales with viewing other marine life, such as seals and birds. On the New Brunswick side of the Bay of Fundy there are around fifteen different whale-watching operators; most of these operators are located in the Quoddy region (Tourism New Brunswick, 2003a). On the Nova Scotia side there are approximately eight different operators, most of whom are located along Digby Neck (Nova Scotia Adventure Tourism Association, 2001).

Birding is very popular in the Upper Bay of Fundy. Birding enthusiasts come to witness the great flocks of birds stopping in the area during their migration, especially the semipalmated sandpiper at Mary's Point (a small part of Shepody National Wildlife Area) (Majka and Christie, 2004; Macdonald 2000a). Birding is also a popular activity in other wildlife refuges along the Bay of Fundy coast, including the Machias Seal Island,

Grand Manan National Migratory Bird Sanctuary, and Chignecto National Wildlife Area. In these areas the viewing is usually managed to protect the birds from too much human disturbance (Macdonald, 2000a and b).

b) Boating (yachting) and kayaking

Sea Kayaking is a popular activity on the Bay of Fundy, with two outfitters in both New Brunswick and Nova Scotia. Personal boating and yachting are also popular on the Bay of Fundy. On the Shubenacadie River people can go "tidal bore rafting", which is basically white-water rafting on the incoming Bay of Fundy tides at the mouth of the river (Nova Scotia Department of Tourism, Culture and Heritage, 2004).

c) Hiking, biking, and camping

Hiking and biking are popular activities in and around the Bay of Fundy, either on managed or groomed trails, such as in the Provincial Parks, Fundy National Park, or as part of the New Brunswick Trail Network (Tourism New Brunswick, 2003b), as well as on unmanaged trails, such as Cape Spilt. People also enjoy walking along the many tidal beaches around the Bay of Fundy. Camping is also a very popular activity, both in the Parks and in privately owned campgrounds. Also, recreational and sport fishing takes place in and around the Bay of Fundy, and on its tributaries.

d) Historical sites and lighthouses

There are several National Historic Sites (NHS) around the Bay of Fundy, which attract many visitors each year; these include:

Port Royal NHS, NS
Melanson Settlement NHS, NS
Fort Anne NHS, NS
Grand Pre NHS, NS
Fort Edward NHS, NS
Fort Beauséjour NHS, NB
Monument-Lefebvre NHS, NB
Carleton Martello Tower NHS, NB
St. Andrews Blockhouse NHS, NB
St. Croix Island International Historic Site, NB

There is also Roosevelt-Campobello International Park on Campobello Island, located along the Canada/U.S. border, administered by a joint Canada/U.S. commission (National Park Service, 2004). Tourists also enjoy visiting the historic lighthouses scattered along the Bay of Fundy coast and on the islands.

4.2.2.4 Tidal power generation

The Bay of Fundy tides range between 6m (at the mouth of the Bay) to 16m (at the head of the Bay), and tidal currents range between 7-18 km/hr in some areas (Parks Canada, 2004d). The tides are a "vast repository of potential power, equal to the output of 250 large nuclear-power plants" (Thurston, 1990: p.20); however, harnessing this power has proven difficult. In 1984, North America's first modern tidal-power plant was completed at Annapolis Royal, NS. It uses the largest Straflo™ turbine in the world to produce more than thirty million kilowatt hours per year – enough to power four thousand homes (Nova Scotia Power, 2004). There is a lot of potential for electrical generation in the Bay of Fundy, particularly in the Minas Basin and Cumberland Basin, where tidal plants could generate more electricity than is currently produced in Nova Scotia. However, there are many concerns about the environmental impacts of new barrages on the Bay of Fundy ecosystem; therefore, further tidal power development is not viable until more studies are carried out (Nova Scotia Power, 2004).

4.2.2.5 Shipping

The original traffic separation scheme (TSS) came into effect in 1983, for the purpose of "separation of traffic between the southeastern entrance to the Bay of Fundy and the Port of Saint John, New Brunswick and organizes the traffic through an area extensively used for fishing" (Transport Canada, 2002a: p.1). This ship traffic lane is for both domestic and foreign vessels, and more than eight hundred vessels use the TSS annually. Traffic to the Port of Saint John represents the vast majority of traffic in the Bay of Fundy, with six hundred vessels passing through the port each year. Oil tankers are the main vessel type using the TSS; however, bulk carriers, tugs, cruise ships, container ships, and government vessels also frequent the TSS (Brown, 2003). Three other ports have regular but far less frequent traffic: Bayside, NB; Eastport, Maine; and Hantsport, NS (Brown, 2003).

Unfortunately, after the establishment of the TSS, research began to show that it ran through the middle of critical North Atlantic Right Whale Habitat, where the risk of a ship colliding with a whale was greatest (Figure 14). It therefore posed a significant threat to the recovery and viability of this endangered population. The routes to Bayside and Eastport also pass through the middle of the area with highest Right Whale density (Brown, 2003). Therefore, in 2002 the Canadian government submitted a proposal to the International Maritime Organization to amend the TSS, moving it outside the area with highest Right Whale density (Figure 15), "while maintaining the same level of safety [for ships] provided by the existing TSS" (Transport Canada, 2002a: p.2). The new TSS would significantly reduce the likelihood of ship-whale interactions and therefore reduce the number of ship-strikes resulting in serious injury or death of Right whales (Transport

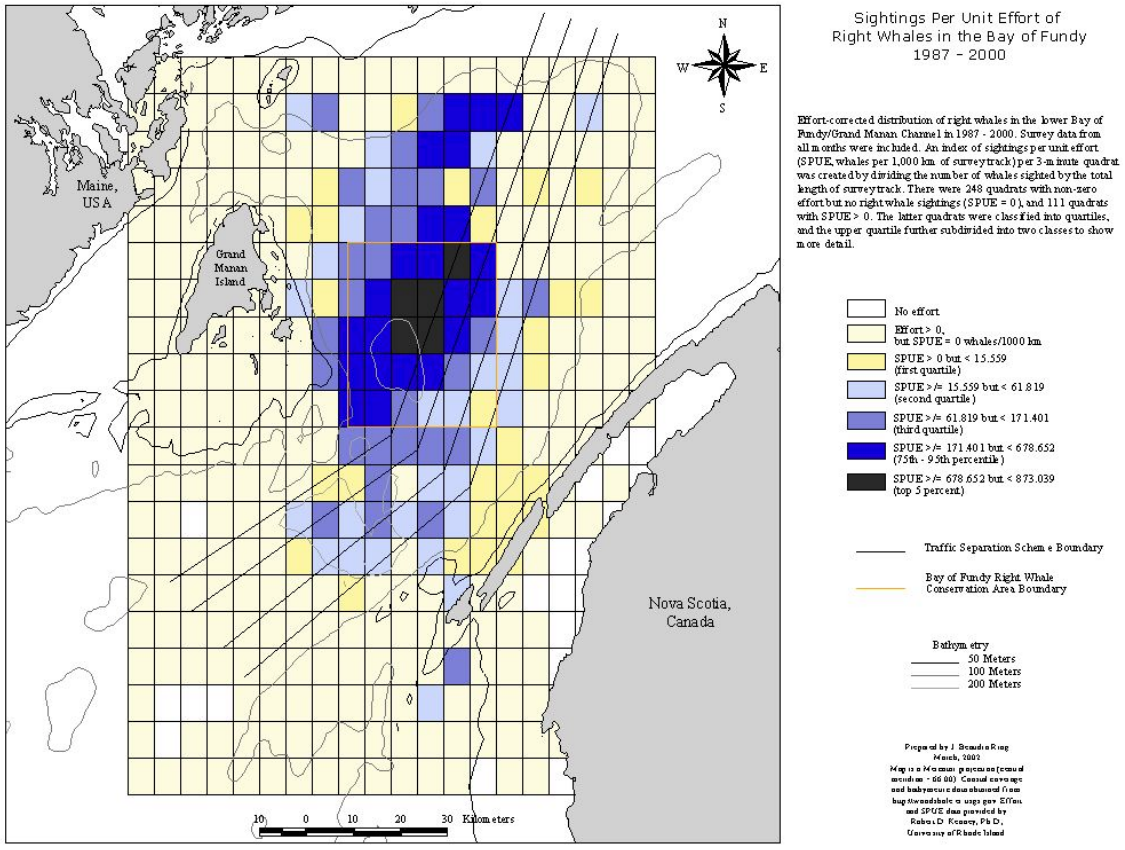

Figure 14: Chart showing the effort corrected distribution of Right whales and the existing traffic lanes.
© Brown, 2003

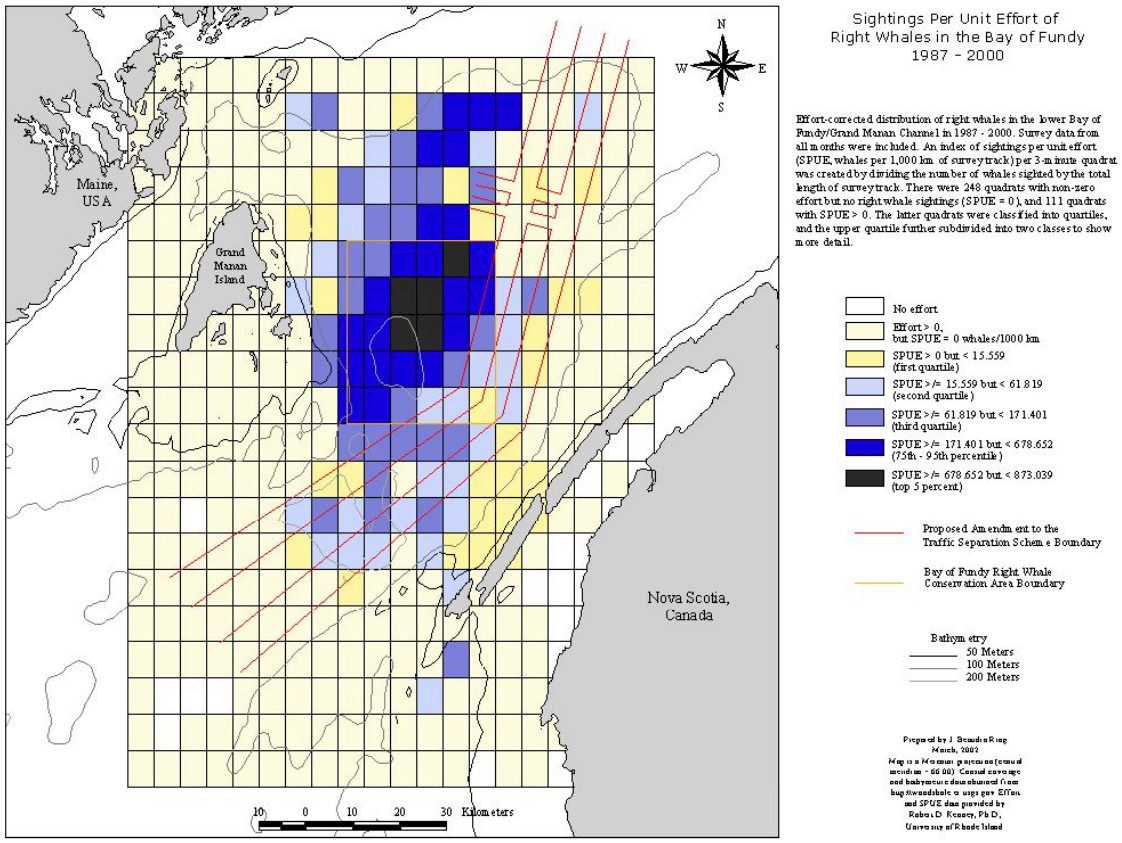

Figure 15: Chart showing the effort corrected distribution of Right whales and the amended traffic lanes.
© Brown, 2003

Canada, 2002a). The IMO approved and adopted the proposed amendments in December 2002, which officially came into affect on July 1st, 2003 (Transport Canada, 2002b).

4.3 Other recent marine or coastal national conservation initiatives in the Bay of Fundy

4.3.1 Right whale conservation areas

In 1993, after vocal lobbying by academic researchers and a regional research organization, East Coast Ecosystems, in Nova Scotia, the Canadian Government designated seasonal (June-October) Right Whale Conservation Areas in two critical habitats suggested by Kraus and Brown (1992) (Figure 16) (Percy, 1996). The two conservation zones are:

> **Right Whale Conservation Area #1:Grand Manan Basin, Bay of Fundy.** This area is important to the right whales for feeding and is where mothers bring their calves. Threats: Collisions with ships, entanglement in fixed fishing gear. (GMWSRS, 2004)
>
> **Right Whale Conservation Area #2: Roseway Basin: located between Browns and Baccaro Banks southern Scotian Shelf.** This area is important to the right whales for feeding and mating. Threats: Collisions with ships, entanglement in fixed fishing gear. (GMWSRS, 2004)

As was recommended by Kraus and Brown (1992) this conservation initiative involves alerting vessels to the presence of whales in the area and issuing voluntary guidelines for subsequent vessel conduct (Percy, 1996). In 1996 Percy states: "recognising these areas is a promising small step in protecting the whales but is likely to be only minimally effective. More stringent regulation of vessel operations will be needed to successfully reduce the threat of fatal collisions". The increased protection Percy is calling for

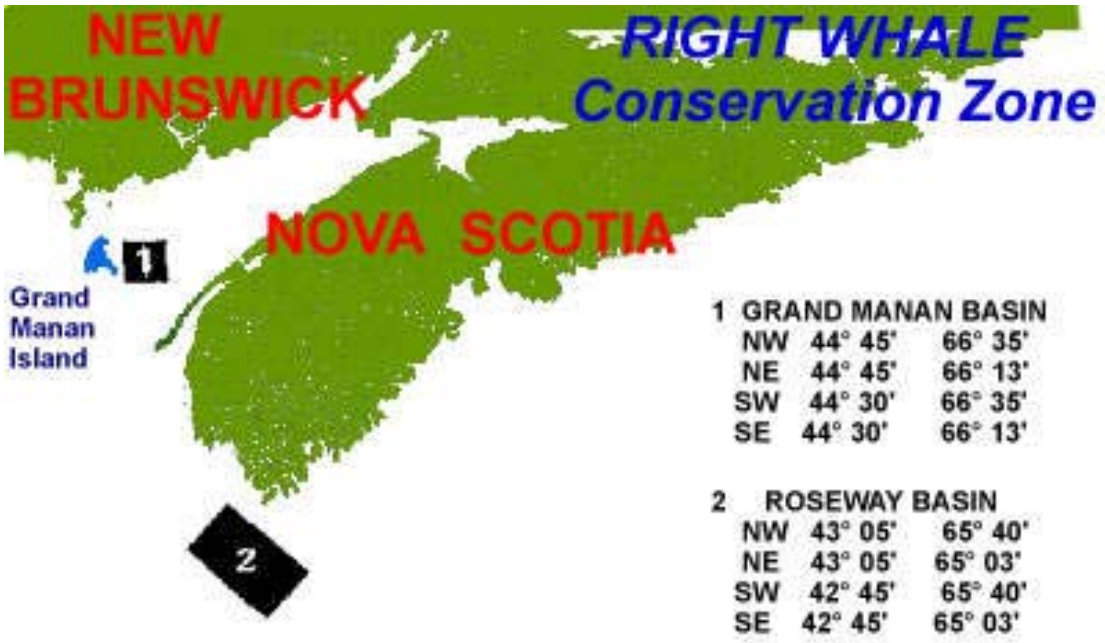

Figure 16: Map showing seasonal Right whale conservation zones.

fortunately came in 2003, when the TSS was officially moved out of an area at the mouth of the Bay of Fundy with high Right whale densities (as was discussed above).

4.3.2 Proposed Musquash MPA

In the mid-1990s the Conservation Council of New Brunswick (CCNB), in partnership with U.S. organizations, completed a survey of all estuarine habitat in the Gulf of Maine, from Cape Cod, Massachusetts, to Yarmouth, NS. This project identified many of the estuaries as highly impacted, and not functioning properly with respect to fisheries production. The Musquash estuary, West of Saint John Harbour, was virtually the only one not significantly impacted (Participant #13). With these results CCNB went to the Fundy North Fishermen's Association (FNFA), looking for their support in protecting the Musquash estuary from future destruction. Representatives from the two organizations collaborated, and negotiated the conditions under which both would support MPA establishment in the Musquash area. The two joined forces and together pushed the agenda forward (Participant #13). A key provision in the proposal was that the existing small-boat fishery be allowed to continue within the estuary, which includes about twelve boats engaged in a trap-based Lobster fishery. Also, an area was delineated at the mouth of the estuary as a special scallop zone, where for six weeks each winter six boats could drag for scallops at the present level, with no increase in either time or scale to be permitted (CCNB, 2000).

In 1998 CCNB submitted a formal proposal to DFO, based on the one agreed upon by the joint CCNB-FNFA committee, nominating the Musquash Estuary as a MPA under the *Oceans Act* (1996) (CCNB, 2000). CCNB's Musquash MPA Campaign

Coordinator then carried out community and stakeholder consultations; "collected biological, cultural, and anthropomorphic information about the area" (CCNB, 2000); worked to have GIS established for Musquash; made presentations; and worked with all levels of government to move the project along (CCNB, 2000). The campaign coordinator also established a local MPA planning committee made up of landowners, agency stakeholders and community members, who further refined the CCNB-FNFA proposal. This committee should be involved in future development and implementation of a management plan for the MPA (CCNB, 2000). In the MPA, traditional uses would be allowed to continue, and only activities that would lower the present environmental standard of the estuary or change the nature of the marsh would be prohibited (CCNB, 2000).

In 2000 DFO announced the formal acceptance of Musquash as an Area of Interest (AOI) for MPA establishment. Further ecological, technical, and socio-economic assessments followed to support the development of a Management Plan, which will then go out for public consultation. Following this DFO will make a final decision on the designation of Musquash as a MPA (CCNB, 2000).

Unfortunately not much has happened since DFO's announcement in September 2000. They have been very slow on their side of things, completing the management plan, for example. Therefore the Musquash MPA has yet to be designated (Participant #13). Recently CCNB released a postcard campaign addressed to Geoff Regan, Minister of Fisheries and Oceans, urging him to proceed with designation of the Musquash MPA in 2004 (CCNB, 2003).

4.3.3 Biosphere Reserve Projects

A brief explanation of Biosphere Reserves can be found in the Canadian Biosphere Reserve Association (CBRA) newsletters:

> The International MAB (Man and the Biosphere) Program was created in 1971 to provide a scientific basis for addressing human needs in harmony with nature. A major tool of MAB is the biosphere reserve, an area that is designated by UNESCO as representative of one of the world's major ecosystems and seen to be important to the Biosphere. Each biosphere reserve is intended to serve as a demonstration area for the conservation of biodiversity and for sustainable development. A reserve will contain one or more protected core areas, a buffer area (normally) and a surrounding zone of cooperation. Major activities include: research, monitoring, education, training and coordination. Local participation is an essential element of a functioning biosphere reserve, and in Canada many reserve activities are coordinated, on a voluntary basis, by local residents. These local committees also share information and experience with a worldwide network of over 400 biosphere reserves. (CBRA, 2004).

4.3.3.1 Southwest Nova Biosphere Reserve Initiative

The idea for a biosphere reserve in southwestern Nova Scotia was mainly discussed only in scientific circles during the 1980s (Southwest Nova Biosphere Reserve Association (SWNBRA), 2003). The idea broadened during the late 1990s thanks to increased contact, and discussion on research and sustainable development between the forestry companies and agencies in the area. An association of research organizations was established to share information on the area, and a Master's thesis on the potential of a biosphere reserve in the area was completed (SWNBRA, 2003). In 1999 a committee from Queens and Annapolis Counties formed to develop a proposal, with Kejimkujik National Park and the Tobeatic Wilderness Area as the core protected area in the biosphere reserve (SWNBRA, 2003). This was done in partnership with government agencies, community businesses, educators, and private citizens (Higgins, 2001). In

December 1999 an area was officially proposed as a biosphere reserve, with the support of Queens County (approximately 7,000 residents) and the three forestry companies operating in the area (CBRA, 1999).

In 2000 the Southwest Nova Biosphere Reserve Association was incorporated, and a proposal presentation made to the CBRA (CBRA, 2000). After much research this volunteer association put together an extensive nomination document, which was submitted to UNESCO for final nomination in July 2001. In September 2001 the SWNBRA were informed that the application had been accepted (SWNBRA, 2003). Since then the job of the Association has been to work in all five western counties of Nova Scotia, "to garner further support, invite public involvement, and develop strategic and cooperation plans", via on-line or mailed surveys, workshops, and presentations (SWNBRA, 2003). In July 2004 the SWNBRA had an official dedication ceremony for the Southwest Nova Biosphere Reserve (Participant #30); Figure 17 is a map of the area.

The SWNBRA (2003) notes:

> there are no land-use or management changes associated with the designation of 'Biosphere Reserve', the designation simply acknowledges beneficial land use already occurring in the region. Lands serving a 'buffer' function for the core areas of the Biosphere Reserve are managed either by provincial (Department of Natural Resources) or private jurisdiction (e.g. N.S. Power and Bowater Mersey Paper Company), according to a voluntary commitment to support the goals of sustainable development and conservation.

The Southwest Nova Biosphere Reserve represents both coastal and inland ecosystems; however no coastal areas are captured in the core or the buffer areas. It also protects cultural heritage and history in the area, particularly that of the Mi'kmaq peoples, including several significant archaeological sites in the region (SWNBRA, 2003).

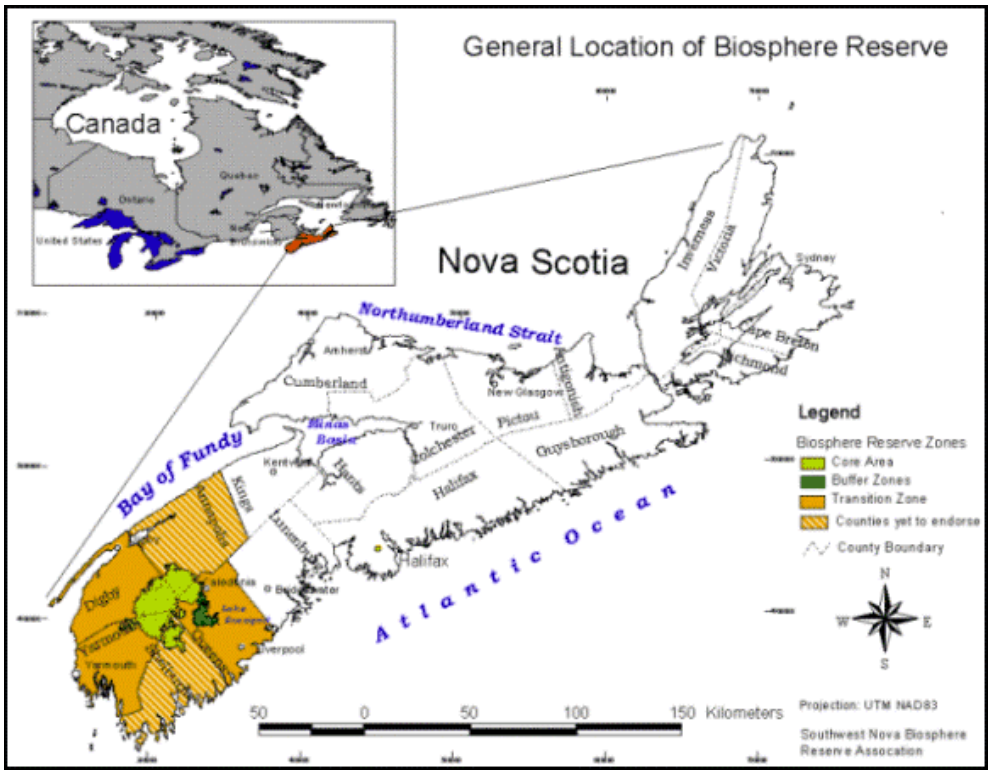

Figure 17: Map of Nova Scotia showing the location of the Southwest Nova Biosphere Reserve.

4.3.3.2 Upper Bay Biosphere Reserve Initiative

In the late 1990s another biosphere reserve was proposed for the Maritimes. The Bay of Fundy Biosphere Reserve Project was initiated by the Bay of Fundy Ecosystem Partnership (BoFEP) and the Bay of Fundy Product Club. This was to be a dual-province reserve, encompassing both the Nova Scotia and New Brunswick parts of the Upper Bay of Fundy. Documentation was prepared and distributed to the CBRA, and in 2000 the Bay of Fundy Biosphere Reserve concept was presented to the CBRA; it was met with positive feedback (Young, date unknown).

The project then initiated an outreach and consultation phase with target resource users, coastal communities, First Nations, industries, scientists, governments, and managers. Initial meetings with stakeholder groups were held in the Chignecto Bay and Minas Basin regions (Young, date unknown). In the Spring 2001 there was a timed electronic discussion on the biosphere reserve proposal through the Fundy Forum list serve (Young, 2001).

Although initial response to the Bay of Fundy Biosphere Reserve proposal was positive and the project initially was progressing fairly well, there was a sudden increase in resistance to the idea, "to the point that it was almost a little scary" (Participant #6). This stemmed mostly from residents' fear that they were going to lose their rights, to the land, to fish, and so on. This resistance resulted in the abandonment of the Nova Scotia part of the proposal. The project is now being pursued only on the New Brunswick side of the Upper Bay of Fundy.

The New Brunswick Fundy Biosphere Initiative's planning group held its first general stakeholders meeting in July 2003, to discuss benefits of the proposed biosphere reserve, and recommendations for effective communication (Etheridge, 2004). Over forty different organizations or groups took part, and "the consensus of this very diverse group was one of optimism for the project. Participants gave the planning group the "go ahead" to complete preliminary terms of reference and a strategy plan for the Biosphere Initiative" (Etheridge, 2004: p.2). These were to be presented at the next general stakeholders meeting. The Initiative's staff and steering committee are currently working on broadening the stakeholder based in New Brunswick, and increasing awareness of the Initiative (Etheridge, 2004). Etheridge (2004) notes: "designation of a UNESCO biosphere reserve in Canada brings with it no jurisdictional control over resources or activities. Cooperation is essential to success" (p.2).

4.3.4 Atlantic Coastal Action Program

In 1991 Environment Canada initiated the Atlantic Coastal Action Program (ACAP) in response to the urgent need for restoration of damaged coastal environments, "as a means of mobilizing local communities to address their own environmental and developmental challenges" (Environment Canada, 2003b). It is a community-based program that relies on local involvement and support (Environment Canada, 2003b).

There are fourteen ACAP sites across Atlantic Canada and four in the Bay of Fundy (Figure 18). Each site is an incorporated, non-profit organization, with its own Board of Directors, full-time paid coordinator, and office (Environment Canada, 2003b). Some funding comes from Environment Canada, but most resources come from

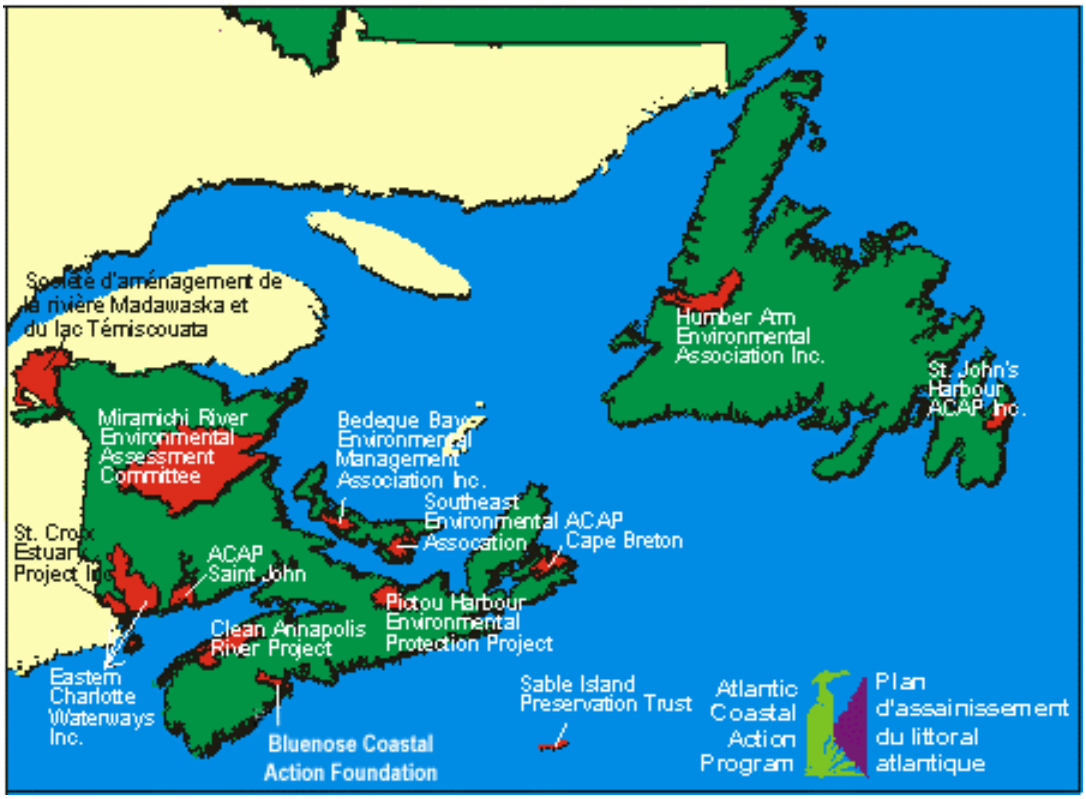

Figure 18: Map of ACAP sites in Atlantic Canada.
© Environment Canada, 2003b

community stakeholders, through volunteer labour, in-kind contributions, and financial support (Environment Canada, 2003b). "The fundamental basis for ACAP is the recognition that local communities are the best and most effective proponents for effective action leading to sustainable development" (Environment Canada, 2003b).

Of the four ACAP sites around the Bay of Fundy one is in Nova Scotia around the Annapolis Basin and the Annapolis River Watershed: Clean Annapolis River Project (CARP) was formed in 1989 and joined ACAP in 1991. CARP is focused on the conservation, restoration and sustainable use of the freshwater and marine ecosystems of the Annapolis River and its watershed (CARP, 2003). There are three sites in New Brunswick: the St. Croix Estuary Project, Eastern Charlotte Waterways Inc., and ACAP Saint John (Environment Canada, 2003b). The St. Croix Estuary Project (SCEP) was established in 1992, and is unique as it is located on an international river and "represents the interests of both Canadian and American residents of the St. Croix Valley" (SCEP, 2002). Eastern Charlotte Waterways Inc. (ECWINC) was incorporated in 1993, and their focus is to address environmental issues that could impact the economic, ecological, and social standards of Eastern Charlotte County communities (ECWINC, 2001). ACAP Saint John was formed in 1992, and their ultimate goal is to improve the environmental health and integrity of the Saint John River estuary and parts of the Saint John River watershed, with a focus on sustainable development (ACAP Saint John, 2001).

4.3.5 National Wildlife Areas and Migratory Bird Areas

The Canadian Wildlife Service (CWS) operates National Wildlife Areas (NWAs) under the *Canada Wildlife Act* (1985). NWAs do not have a specific marine focus;

however, there are three coastal NWAs around the Bay of Fundy (Figure 19): Shepody in New Brunswick; Boot Island and Chignecto in Nova Scotia (Environment Canada, 2004c). Shepody NWA was established in 1980 and is 621.0 hectares in size. It contains part of Mary's Point Ramsar (i.e. Wetland of International Importance), part of Shepody Bay West IBA (Important Bird Area), and part of Bay of Fundy WHSRN (Western Hemisphere Shorebird Reserve Network) (Environment Canada, 2004d).

Boot Island NWA was established in 1979 and is 144.0 hectares in size. It contains part of Southern Bight-Minas Basin Ramsar, part of Southern Bight Minas Basin IBA, and part of Bay of Fundy WHSRN. Chignecto NWA was established in 1982, and is 409.6 hectares in size. It contains part of Chignecto Ramsar, part of Upper Cumberland Basin IBA, and is within Amherst Point MBS (i.e. Migratory Bird Sanctuary) (Environment Canada, 2004e).

Migratory Bird Sanctuaries (MBAs) are also operated by the CWS, and are established under the *Migratory Bird Convention Act* (1994). Again MBAs do not have a specific marine focus, however there are three coastal MBAs in the Bay of Fundy (Figure 20): Amherst Point in Nova Scotia (as was mentioned above); Grand Manan and Machias Seal Island in New Brunswick (Environment Canada, 2004f). Amherst Point MBA was first established in 1947 and is currently 429.0 hectares in size. It overlaps with Chignecto NWA, and contains part of Chignecto Ramsar and part of Upper Cumberland Basin IBA (Environment Canada, 2004g). Grand Manan MBA was first established in 1931 and is currently 250.0 hectares in size. It is part of Grand Manan/Kent Islands IBA. Machias Seal Island was first established in 1944 and is 622.0 hectares in size. It is part of the Machias Seal Island IBA (Environment Canada, 2004h).

Figure 19: Map of National Wildlife Areas around the Bay of Fundy.
© Environment Canada, 2004d and e

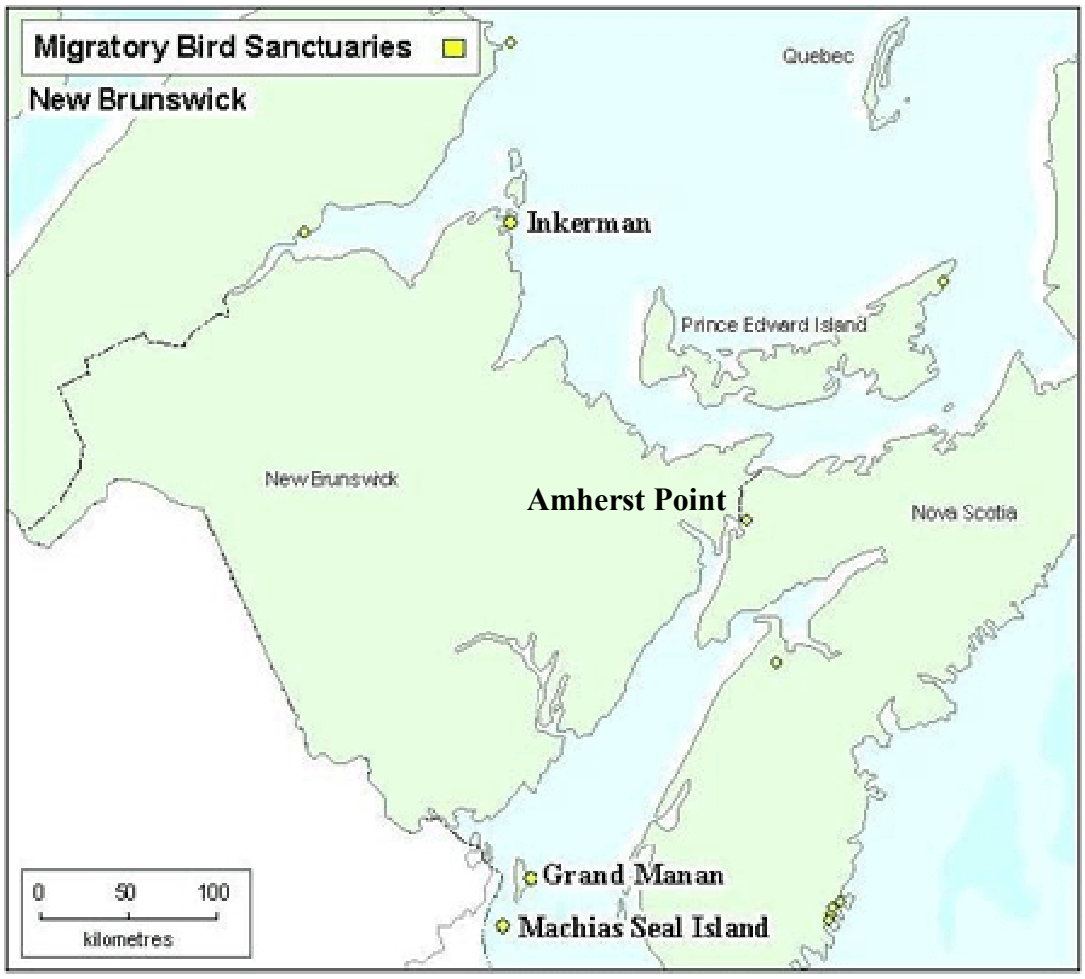

Figure 20: Map of Migratory Bird Sanctuaries around the Bay of Fundy.
© Environment Canada, 2004g and h

4.3.6 Nature Conservancy of Canada

For forty years the Nature Conservancy of Canada (NCC) "has been working to protect Canada's most threatened natural habitats and the endangered species that call them home" (NCC, 2001a). They do so through the outright purchase of ecologically significant areas (i.e. land securement), donations, and conservation easements. They then ensure permanent stewardship of the land as a nature preserve (NCC, 2001a). The NCC is a non-profit, non-advocacy organization. Currently the NCC is working on a campaign for upper Bay of Fundy coastal areas particularly important to shorebirds. At present, they work cooperatively with the CWS at Shepody NWA and with the New Brunswick Federation of Naturalists at the Sandpiper Interpretive Centre at Mary's Point (part of Shepody NWA).

To date NCC has secured property in four coastal areas around the lower Bay of Fundy: Brier Island, NS; Musquash River Estuary, NB; Simpson Island, NB; and Pendelton Island, NB (NCC, 2001b). The NCC has been involved with Brier Island since 1987, and currently owns and maintains 1,200 acres of this coastal island (NCC, 2001b). In New Brunswick, NCC has secured 774 acres in Musquash, the most recent of which includes a 403 acre donation of pristine land from J.D. Irving Limited, which encompasses almost one quarter of the western shoreline of Musquash Harbour. The NCC's goal is to secure 3,000 acres in the Musquash Estuary by 2007 (NCC, 2004a).

Simpson Island is a 55 acre (22 hectare) property just east of Deer Island, part of the Fundy Isles Archipelago, and was acquired by the NCC in 2000. In 2003, NCC announced a new protected area on Pendelton Island (299 acre/121 hectares), also part of the Fundy Archipelago and one of the largest uninhabited islands in the area (NCC,

2003). Currently, as part of NCC's Fundy Isles initiative, a half-million dollar campaign is underway for the ongoing protection and stewardship of Simpson and Pendleton Islands (NCC, 2004b).

4.3.7 Inner Bay of Fundy Atlantic salmon conservation and recovery initiative

In 2000, in response to the severe decline in inner Bay of Fundy Atlantic salmon population, the Inner Bay of Fundy Atlantic Salmon Recovery Team was established. It is made up of relevant federal and provincial government members, as well as interested stakeholders and aboriginal peoples from the inner Bay of Fundy area (DFO, 2003b). To date a draft Recovery Strategy has been developed, and the Team has moved on to the Action Plan, or implementation, stage. "The short-term goal of the Recovery Strategy is to reestablish wild self-sustaining populations as required to preserve the remaining genetic diversity of the lineage of iBoF [inner Bay of Fundy] salmon. The long-term goal is to re-establish wild iBoF salmon populations in all salmon producing rivers and streams within the iBoF" (DFO, 2003b).

Current focus is on determining why the inner Bay of Fundy population has declined so steeply, and on preserving the remaining genetic stock. A number of projects have already been completed, and others are underway (DFO, 2003b). The Team is also collaborating with the New Brunswick Fundy Biosphere Initiative (Etheridge, 2004).

5. Results and Discussion – Location

"The Bay of Fundy is really a natural wonder of the world…the tidal flow, the biodiversity, all of these things make it a really unique place, of which people in the area are very proud" (Participant #22).

In general participants felt that the Bay of Fundy is a special, and biologically significant area in need of protection. Real Robichaud, from the Tourism Industry Association of New Brunswick, expressed this opinion: "the Bay of Fundy is unique in the world, and so therefore I think this [NMCA establishment in the Bay] is long overdue, and I think we really need to be protecting our natural environment, land, and sea, and somehow the Bay of Fundy".

Virtually all participants expressed a concern over various impacts on the health of the Bay of Fundy environment, including: land-based industrial effects and inshore eutrophication; tidal barriers; overfishing; and threats from development and natural resource extraction in the future. Only one participant thought the Bay of Fundy is still "perfectly healthy"; however, later on in the interview, during our discussion, this participant acknowledged a number of human impacts on the Bay.

Because of the increasing effect of humans on the Bay of Fundy environment, some participants felt NMCA establishment in the Bay needs to be addressed in a timely fashion to help mitigate some of these environmental impacts. For example, Hugh Akagi, Chief of the Passamaquoddy Peoples, notes that: "there's no place now where the fish are safe; it used to be that the creatures were safe, they could find their haven where we did not have access to them, but we have so much technology nowadays". Therefore, a

NMCA in the Bay of Fundy could replace lost natural refuges for fish, so that stocks could be maintained and fishermen could continue to make their livelihood from fishing in the future (Participant #24). The idea that marine protected areas are a useful tool in protecting fish populations from overexploitation resulting in long-term viability of fisheries, is supported widely in published studies (Pomeroy, 2003; Charles, 2001; Roberts et al., 2001; Murray et al., 1999; Ballantine, 1995; Novaczek, 1995; Shackell and Lien, 1995).

Some participants felt that because of increasing environmental awareness in the broad Bay of Fundy community, and the acknowledgement of human involvement in the fisheries crisis, there is a greater likelihood of successful NMCA establishment in the Bay of Fundy today compared to a couple of decades ago. In addition, one participant noted that one rarely gets an opportunity like this one, to have so much foresight and "do it right". This participant therefore concluded that Parks Canada should take advantage of this situation and use the recommendations of the broad Bay of Fundy community, identified in this thesis, to move forward with an appropriate process (Participant #1). However, a few participants were less optimistic; one called NMCA establishment in the Bay of Fundy "a long shot. It would take a miracle and a miracle worker, and you couldn't make any mistakes" (confidential). Professor John Roff thinks it is time for Parks Canada take some initiative in marine conservation, and an ex-fisherman now involved in aquaculture stated that although it would be a long, hard process, "it's doable [in the Bay of Fundy], I'm sure" (Participant #21). The question is in what region?

A few participants addressed the question of scale and size required for a NMCA to capture a representative area of the Bay of Fundy. Some felt that to be functional a NMCA should incorporate the entire Bay of Fundy. In other words, the entire Bay of Fundy would be managed as a zoned NMCA, with some smaller areas of high conservation significance being delineated as no-take zones within it, and the rest of the Bay being zoned to allow various human uses to continue in different areas. These participants noted that larger areas are more effective biophysically, protecting more space and species, and more fair socio-economically, with any sacrifices being spread out more between communities and industries (Participants #3, 6, 13 and 14).

Janice Harvey, of the Conservation Council of New Brunswick, suggested that in theory a no-take zone could run down the middle of the Bay along the provincial boundary, incorporating the delineated Right whale conservation area. She suggested that in some ways this is a favourable option because there is less reliance on resource extraction in the middle of the Bay, and therefore a no-take area away from the inshore could be bigger while being less controversial. In this scenario resource extraction in the inshore would be allowed to continue but be sustainably managed. Participant #3 felt that a NMCA would only be effective if everything, including land-based and marine industries, were managed together.

However, participants also noted that the larger the area, the harder it would be to manage. Although in an ideal world incorporating the entire Bay of Fundy in a NMCA may indeed be the best option for representative protection, it would be almost impossible to establish in practice in the Bay of Fundy today (Participants #3, 6 and 13). Participants acknowledged that this concept is not a logical suggestion for the present, as

it would take an enormous coordinated effort requiring a complete overhaul of not only the entire fisheries management strategy in the Bay of Fundy, but consensus on a management plan for every industry and user; neither of which are part of Parks Canada's mandate. Also, restricting a no-take area to the middle of the Bay would miss affording the highest level of protection to the areas of highest conservation significance identified by King (2004) and Buzeta et al. (2003), which for the most part are closer to shore (see Table 7). Also, the new Traffic Separation Scheme (TSS or shipping lanes) runs through a large portion of the middle of the Bay of Fundy (see Figure 15), and it is debatable whether this would be appropriate in a no-take zone.

Thus, a specific region in the Bay of Fundy needs to be identified for potential NMCA establishment, one where there is *both* conservation significance and social interest. Janice Harvey explains, "you look for opportunities and take advantage of opportunities as they come along. If there's no opportunities then why stir the pot?". The Parks Canada Agency will not be able to approach a community and expect to be met with open arms, the community needs to be ready to accept, or at least consider, this type of project. Therefore, identifying *where* social interests are the most supportive of this idea indicates the location *where* Parks Canada might want to further discussions on NMCA establishment in the region.

Figure 21 provides a map of the Bay of Fundy with the three regions of inquiry that emerged during the research roughly outlined; each is discussed below.

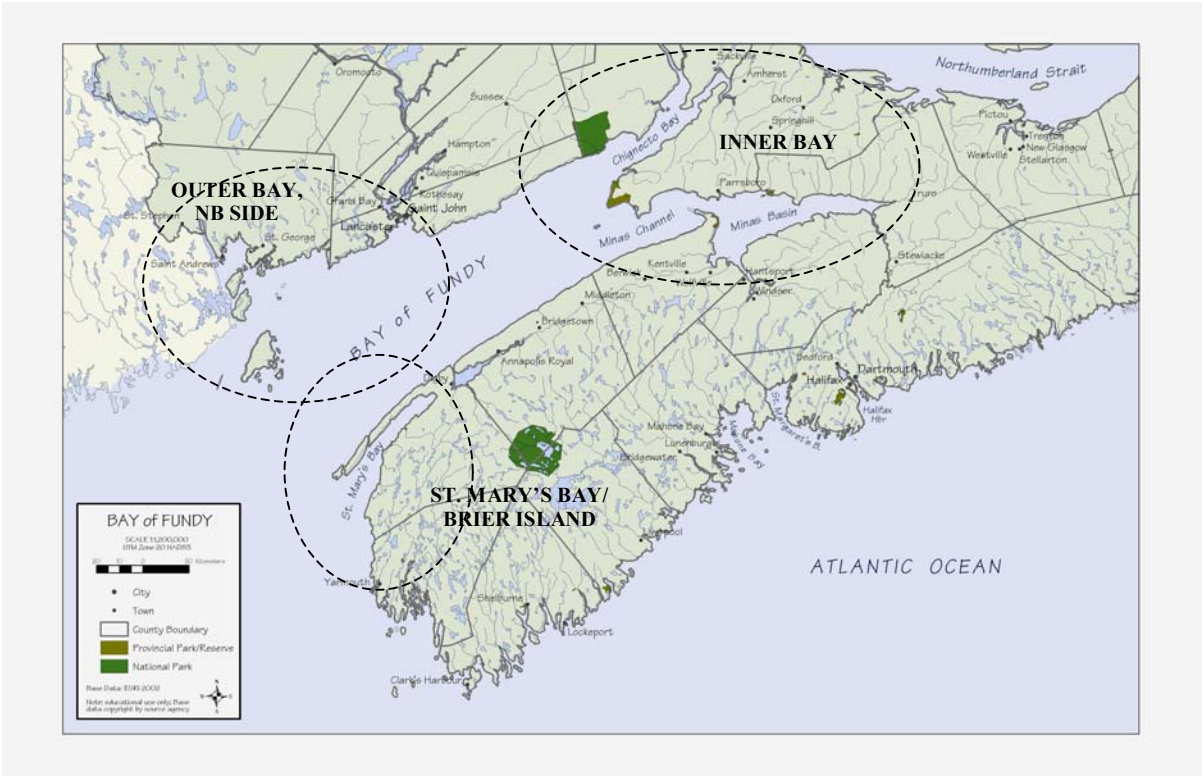

Figure 21: Map of the Bay of Fundy, with the three regions of inquiry that emerged during the research roughly outlined.

5.1 Outer Bay of Fundy, New Brunswick Side

In general, there has been more conflict around Parks Canada initiatives in New Brunswick (e.g. West Isles Marine Park proposal and Kouchibouguac National Park) than in Nova Scotia, and people remember it (Participants #6 and 28). Therefore, successful NMCA establishment on the New Brunswick side of the Bay of Fundy is at a disadvantage from the start. It is obvious that it would be futile to look at establishment around Saint John harbour, it's far too industrialized (Participant #9), the entire province relies too heavily on the activities and industries operating there (Participant #29), and the Saint John Port Authority is in the middle of building a new cruise ship terminal to better accommodate and attract more cruise ships to Saint John in the future (Participant #29). All of this would likely be at odds with increasing conservation through NMCA establishment in the area. Although, Saint John harbour probably does require better management, this is not the primary role of a NMCA. It would be inappropriate to pursue NMCA establishment in this area.

There is widespread consensus, in both published literature and participants, of the unique and special nature of the Quoddy Region and its conservation significance (King, 2004; Buzeta et al., 2003; Lotze and Milewski, 2002; Participants #4, 7, 9, 12, 13 and 18). Unfortunately this region has already been significantly impacted by humans (Participants #13 and 18), and is still under major threats, especially from land-based activities and unregulated development along the coastlines (Participant #37). Unfortunately, there is also a general feeling that NMCA establishment would not be successful in this region of the Bay of Fundy. Janice Harvey believes reactions to

discussions on NMCA establishment in the Quoddy region would be "uniformly negative" and "there would be no significant player in support, local player or community in support of such a proposal, that's my general feeling". Participants suggested that only local, community-based, small-scale initiatives were appropriate in this region, and should only be pursued as the opportunities present themselves.

Participants noted that for some community members the negative memories of the West Isles Marine Park initiative are still too fresh, even twenty years later (Participants #1 and 34), and it would be difficult for Parks Canada to overcome these feelings (Participant #28). During the West Isles proposal the community was completely polarized by the process, and nobody wants to see that again (Participant #11). These bad memories of Parks Canada are confounded by the fact that the communities in this region have virtually no working relationship with Environment Canada; therefore, there would be increased wariness and distrust of a NMCA program there, because the community has no positive experiences on which to gain faith (Participant #13).

In discussion with study participants it is clear that there would be little support from the traditionally conservation-minded community, whose involvement is critical for success. The conservation community is concerned about the impacts of simply shifting users; for example, decreasing the impact of fishing activity on an area, only to increase tourism and its potential environmental impacts (Participants #1 and #6). Participants also had "reservations about marine protected areas [in general], especially no-take zones" (Participant #11). Some felt that the NMCA model, with its zones of protection (especially the no-take area), just would not work in this inshore region of the Bay of Fundy (Participants #1 and 13).

In addition, the conservation community in this region already have their own system and models for marine and coastal conservation – CCNB's numerous initiatives in the area including the Quoddy campaign, NCC's Fundy Isles initiative, and the three functioning ACAP sites – which they feel are more appropriate for the area, and which they are promoting. These programs' goals and objectives do not necessarily mesh well with those of a NMCA. There are also a number of smaller local-level conservation initiatives in the area, including community groups working towards coastal and watershed protection, and restoration. With this high level of conservation work already going on involving the communities in the region, it does not appear that they would be in a position to become engaged in another project or be supportive of another initiative (Participant #34).

There has already been a successful proposal for a government-legislated Marine Protected Area (under the *Oceans Act*) in this region, the Musquash Estuary MPA. This was an intense, community-based initiative. It took several years and many person-hours since the late 1990s, and has still not been officially designated by DFO. This slow legislative process is frustrating for the community (Participant #13). For these reasons it is very unlikely the community would be interested in, or support going through another intensive process so soon afterwards (Participants #1 and 13).

Also, one of the primary reasons why the Fundy North Fishermen's Association agreed to support the Musquash initiative in the first place was they were told that by agreeing to this project, it would reduce the likelihood that another conservation initiative would be pursued in the area in the future. With a Musquash MPA established, government would be less likely to approach them looking for support of another

proposal in the same region in the future, which appealed to the fishermen at the time (Participant #18). Therefore, it is unlikely they would be in favour of discussing NMCA establishment there as well. In addition, because of everything that has happened in fisheries, fishermen are "paranoid" now about losing their opportunity to make a living (Participant #18). Also, DFO is still active in the region, and as part of their *Oceans Act* program, is continuing to look for other areas of conservation significance on the New Brunswick side of the Bay of Fundy. As well, they are engaging in a multigovernmental integrated management initiative in the region (Participant #1).

Another setback for NMCA establishment on the New Brunswick side of the outer Bay of Fundy is that there is too much human activity going on there (Participant #1). Janice Harvey notes "you couldn't have a no-take zone there [in the Quoddy region] without shutting down something big; big time". There are too many user groups and a high reliance on resource extraction (Participant #36). As well, there is fighting within and between groups (e.g. between weir fishermen and the aquaculture industry); therefore, it would be difficult to come to an agreement or consensus (Participant #4).

The aquaculture industry is very large and pervasive in this region (see Figure 13) (Participants #8 and 22). Some participants feel this has had a major environmental impact on the area (Participant #4). Currently, no new sites are being proposed in the Quoddy region, although they are up the shore between Blacks Harbour and St. John (Participant #22). Therefore, in this region it would be difficult to find a pristine area of high conservation significance that is not currently being influenced by aquaculture, or which would be big enough to afford adequate protection to a representative area.

Also, in the Quoddy region the aquaculture industry and related businesses are primary employers (Participants #22 and 36). Many people shifted to aquaculture after the fisheries crisis. This includes a relatively large migration from Newfoundland after the traditional-fisheries collapsed, to the aquaculture industry and its related spin-off jobs in New Brunswick (Participant #36). It should be reemphasized here that growth and popularity of the aquaculture industry in this region of New Brunswick was one of the contributing factors to the abandonment of Parks Canada's West Isles initiative in the mid-1980s (see Chapter 3). Those employed in the aquaculture industry are quite protective of it, and would therefore be extremely wary of pursuing NMCA establishment in the region, concerned that it would limit future growth of the industry. The industry is already quite sensitive to any negative stereotyping or media, and feels it has been unfairly targeted by the environmental community and others in the past (Participant #22). There is near consensus among participants that there would be strong upfront opposition to NMCA establishment in this region from the aquaculture industry.

5.2 Inner Bay of Fundy

Many participants agreed that the upper Bay of Fundy is in desperate need of more protection. Especially, better management of land-based industries and coastal development, which are currently not being adequately regulated (Participants #6 and 25). Much has already been destroyed by tidal barriers (Participant #13). The upper Bay of Fundy is a nursery for many fish species (Participant #32), and fish stocks have been depleted there (Participant #33). The inner Bay of Fundy Atlantic salmon population has severely declined (Participant #14), partly due to very low smolt survival in the Minas

Basin, the cause of which is unknown (confidential). There is a need to protect salmon-river estuaries (Participant #14). There are also a number of rare and threatened salt marshes in this region (Participants #6 and 7). The upper Bay of Fundy provides important habitat for threatened shorebirds, and bait worm harvesting is impacting on coastal mud flat environments in the region (Participant #6).

Parks Canada's Fundy National Park, on the New Brunswick side of the inner Bay of Fundy, has a positive working relationship with communities in the region, including Alma Fishermen's Association (Participant #13). Fundy National Park may be a natural location from which to extend protection out into the marine environment (as was done at Gwaii Haanas in B.C.). The communities around Fundy National Park are accustomed to high levels of tourism because of the Park, and also because of Hopewell Rocks, a tourist 'hot spot' nearby (Participant #28). Also, Environment Canada is much more visible in this region of the Bay of Fundy because of their offices and on the ground projects there, compared to the Nova Scotia side of the outer Bay (Participant #13).

Unfortunately, an attempt at creating a joint Nova Scotia/New Brunswick UNESCO biosphere reserve in the inner Bay was recently abandoned because of community resistance to the idea (Participant #6). Some members of the conservation community also had concerns about the project. There were a couple reasons for these doubts: first, the process used was not inclusive enough, and the conservation community was not involved from the beginning; second, the proposal was too dependent on promoting tourism and this might negatively impact on sensitive coastal environments in the region (Participant #6). As the project proposal evolved, it transpired that the local

community was not well informed and therefore became resistant. Eventually the project coordinator removed herself from the project after receiving threats from a few community members (Participant #6). The Nova Scotia portion of the initiative was subsequently abandoned. Trust was lost because people on the Nova Scotia side were misinformed and thus became increasingly concerned, which would make any NMCA initiative in the region disadvantaged from the start. People in the region will no doubt be quite wary of any new conservation projects and therefore would likely be strongly resistant to NMCA discussions upfront.

The New Brunswick portion of the proposal is continuing since there was not the same concerns or resistance experienced on this side of the border (Participant #30). Therefore, it would not be appropriate to go into this area with a NMCA proposal while the Fundy Biosphere Initiative is being pursued. People may become overwhelmed and confused, as well as frustrated by the different projects, terminology, and potential restrictions in their region, which could result in them opposing both. Also, the Fundy Biosphere Reserve establishment team would likely be concerned about the potential impact on their project of pursuing discussions on NMCA establishment in the region; they would likely be opposed to a NMCA initiative there. Without working cooperatively in the region there would be little chance for success.

Not only is there the biosphere reserve being pursued on the New Brunswick side of the upper Bay of Fundy, but the NCC is in the process of developing a conservation plan for land-securement and stewardship of the upper Bay (both Chignecto Bay and the Minas Basin), with a focus on shorebirds. They are working extensively with local

communities in the area, and establishing stewardship committees in the region (NCC, 2001a; Participant #6).

There is concern within the conservation community in the region of the impacts of increased tourism associated with a NMCA, both on the sensitive coastal wetlands and mudflats in the upper Bay of Fundy (Participant #7), as well as the resulting impacts on shorebirds (Participant #6). One participant from the conservation community said they would not be supportive of NMCA establishment in the upper Bay of Fundy because of this. Tourism is already one of the biggest barriers to some conservation initiatives here, such as the impact of tourism on the semipalmated sandpiper, which feeds along the mudflats of coastal beaches often used by tourists for recreation (Participant #6). The upper Bay of Fundy is already an endangered habitat, and currently there is not enough known about human impacts on coastal wetlands; therefore, increasing tourism in the area may overall be detrimental to the region as opposed to beneficial (Participant #7). In general the communities in the upper Bay are sceptical of the perceived benefits of tourism on their communities and livelihoods (Participant #5).

There are also many local-level conservation initiatives going on in the inner Bay of Fundy region, particularly in relation to sustainable fisheries. These have been on-going for a number of years now and involve a variety of different communities and industries with an interest in or reliance on the region (Participants #5 and 19). One initiative of particular importance is an Integrated Management (IM) Plan developed by a local fisherman, which is now, after a number of years, getting some attention from DFO (confidential). Participants from the area believe that with the necessary government

support this IM plan would be very successful, and they want *this* to be implemented first, not some new government-style conservation program (i.e. NMCAs). It would not be appropriate for Park Canada to come into communities in this region with the idea of NMCA establishment in the inner Bay, instead community interests lie in trying to implement their own 'home-grown' ideas (Participants #32 and 33). It would be devastating if, by Parks investigating the upper Bay of Fundy for NMCA establishment, the IM Plan and other local conservation initiatives in the region were somehow derailed or undermined.

5.3 Outer Bay of Fundy, Nova Scotia Side

5.3.1 Supportive aspects in this region

In 1985 Parks Canada and Tourism New Brunswick (Buzeta et al., 2003) identified the area South of Brier Island, Nova Scotia, as a "marine natural area of Canadian significance" (see Figure 6). More recently, studies by King (2004) and Buzeta et al. (2003), using different techniques, have re-established this same area off Brier Island as having one of the highest conservation significances in all of the Bay of Fundy (see Table 7). Many participants agree that the area South of Brier Island, as well as St. Mary's Bay, are of high conservation value. For example, John Roff explains that in Northern waters we should be protecting species' nurseries and recruitment sites, and some local fishermen consider St. Mary's Bay to be an important spawning ground for lobsters in summertime (Participant #35). One participant did question however how 'pristine' St. Mary's Bay is now, because of how much human impact there has been there: hand-liner Terry Farnsworth wonders if there is enough to protect there anymore.

Although a bit better off compared to the inner Bay of Fundy population, Atlantic salmon in the outer Bay are also in trouble (Participants #14 and 25). Estuaries here are in need of protection because these are where many salmon smolts seem to be disappearing (Participant #14). John Roff notes that the coastal zone and wetlands all around the Bay of Fundy are in need of protection, and many local people are concerned about this.

Most people in the region acknowledge the Bay of Fundy marine environment has changed. For example, one fisherman states "it's a proven fact that there is a change", citing as evidence the fisheries crisis, the boom in the lobster fishery, the movement of fish stocks and lobster offshore, the reduction in Irish moss along the shore, and the increase in "slime" on rocks along the shore (Participant #16). Many participants are concerned about the various environmental impacts on the area. For example, there is concern about coastal impacts from land-based industries (Participant #16) and sewage (Participant #25), concern over the potential of an oil spill in the area due to poorly regulated oil tankers (Participants #16 and 21), concern over foreign invaders coming in ships' ballast water (Participant #3), and concern over aggregate extraction, particularly the proposed quarry on Digby Neck that many local residents are opposing (Participants #17 and 33). People are not only concerned about the impacts of the quarry on-land, they are also worried about the potential marine impacts, both from the extraction process itself (e.g. run-off from the quarry impacting lobster larvae and juveniles in the upper part of St. Mary's Bay (Participant #17)) and from the increased shipping activity required to remove the product. Participants see NMCA establishment as a possible tool or leverage point for increasing regulations of potentially damaging industries, and reducing the likelihood of new extraction activities being approved in the region.

In general, members of the community in this region want something done; they are looking for solutions to the environmental damages and mismanagement they have witnessed (Participants #19, 31 and 32). People in the region are always being told how special it is, and many conservation initiatives are happening here at the local level; they would likely be interested in discussing NMCA establishment further (Participants #3 and 31). Many community members in the region would support establishing a NMCA as long as it is designed to work (Participant #16), implemented through fair process, and well managed (Participant #21).

A multistakeholder community working-group has already been established in the St. Mary's Bay area (The St. Mary's Bay Working Group) to work on marine issues, and within this group there are some promoters of closed areas (Participant #19). Successful NMCA establishment would be much more likely in an area where there is a group like this already in place, working towards similar initiatives (Participant #19). A multi-government initiative is also active there involving the Annapolis/Fundy Field Team, called the Sustainable Communities Initiative. This group discusses and works on community issues in the area (Participant #19). In addition, a Stewardship Committee was established on Brier Island through the NCC, some members of which are very committed to conservation and stewardship, although unfortunately some others are not (confidential).

The first Bay of Fundy Marine Resource Centre (MRC) was established in this region (at Cornwallis Park near Digby), which works as a communications hub and coordinating body for various interests and community groups in the region (Participant

#32). It has been a very successful initiative and there are others now being established around the Bay of Fundy, including in Meteghan, which is on the French shore at the mouth of St. Mary's Bay (between Digby and Yarmouth). A Discovery Centre is being established in the community of Freeport on Long Island, Digby Neck, and this Centre has been working diligently within the community to generate support, and for the most part has been successful. They have taking a broad-community approach, bringing people and industries that usually "compete" together (Discovery Centre representative, personal communication). The increased tourism associated with a NMCA would help promote the Discovery Centre (Participant #35). This development provides an opportunity for Parks Canada to partner with a local organization in order to accomplish similar goals. The Bay of Fundy MRC in Cornwallis, the Discovery Centre in Freeport, and the new MRC in Meteghan are three well functioning and respected community organizations that may be able to help Parks Canada work cooperatively with the local communities.

Another group, with whom it would be logical and useful for Parks Canada to cooperate, is the Southwest Nova Biosphere Reserve Association, who recently established a UNESCO Biosphere Reserve incorporating the five counties of southwestern Nova Scotia (see Chapter 4) (Participant #30). The Biosphere Reserve does not include any coastal or marine areas in its core protected areas, but it would be a logical idea to extend the biosphere reserve into the marine environment (as proposed by Miller et al., 1999), which may be possible through NMCA establishment. Working cooperatively with the Association would also help lend credibility to the NMCA initiative, and this partnership may provide a positive communication network for Parks Canada in the region.

The Bear River First Nation (member of the Confederacy of Mainland Mi'kmaq) and the Acadia First Nation (member of the Union of Nova Scotia Indians) are the two aboriginal reserves in this region. Both have their own important fisheries, and are very concerned about the fishing methods employed by the large industrial fishing fleets. They are also worried about coastal environmental impacts on the Nova Scotia Bay of Fundy shoreline (Participant #26). These communities would likely be supportive of NMCA establishment in this region if they were involved from the start, as long as current land-claims were recognized, and they could continue their traditional fisheries (Participants #23 and 25). Not only is local band support important, but there would also need to be support from the entire Mi'kmaq nation. Slowly Mi'kmaq involvement in various government and industry initiatives in Nova Scotia has been increasing, and fortunately there are now appropriate processes available for collecting and integrating aboriginal knowledge and uses into projects (Participant #23).

Generally, people in this region are not nearly as wary of Parks Canada as they are of DFO, with whom many have had conflicts in the past around fisheries management; there is far less Parks Canada presence in the region (Participants #16, 32 and 35). As well, there have not been any failed Parks Canada initiatives in the region in the past, and thus there are not any residual negative feelings present, especially when compared to memories of the West Isles proposal in New Brunswick. Also, people in the region would not be as nervous about cooperating with Parks Canada, compared to DFO, who they distrust, and they feel has too much power (Participant #17). With DFO they

are often worried that they are only being paid lip-service, and that their concerns will not ever really be addressed. With Parks Canada they may feel less defensive and more able to compromise.

One fishermen believes that at the mouth of the Bay of Fundy exists one of the last viable groundfish stocks in the Maritimes, which is currently under threat from industrial fishing and heavy dragging, and therefore in need of protection (Participant #18). Many fishermen in this region recognize that there are areas where there should not be any activity whatsoever (Participant #16), and the fishing community in this region wants something done to protect the already diminished stocks they rely on. In addition, fishermen are getting increasingly better access to information, and are becoming more aware of problems in the marine environment and particularly fisheries (globally as well as nationally). They may therefore be more willing to work towards conservation in the Bay (Participant #16), and probably more so than they were twenty years ago around the West Isles proposal. For example, the Fundy-Fixed Gear Council (the community-based co-management board for groundfish in the region) is working to limit gillnet and long-line fishing in the Bay of Fundy to June and July only, moving out before the highest concentration of right whales come into their fishing area to reduce the potential of right whales becoming entangled in their fishing gear (Participant #16).

A lot of action is already going on in this region around fisheries (Participants #17, 31 and 33), which could fit nicely within a NMCA since it is not as advanced at the proposed new IM Plan in the inner Bay of Fundy. Also, through initiative like the Saltwater Networks' impacting policy workshops, members of the fishing community are

learning how to work with and around government, and how they can effectively influence policy decisions (Participant #33). Workshops and initiatives like these are beginning to empower the community, and take the mystery and frustration out of government initiatives; thus, fishermen involved it these would be more likely to support dialogue with Parks Canada on NMCA establishment in the region.

Some participants feel there are definitely certain fishing groups that would support NMCA establishment in this region for a variety of reasons (Participant #3). Many would see it as a chance to limit industrial dragging in the region (Participants #5, 17, 32, 33 and 34), which it may or may not do. Others would be supportive if they saw it as a way to increase monitoring and enforcement of regulations to eliminate illegal fishing going on, which is currently threatening stocks such as lobster (Participant #17).

Much of the traditional-fishing community in this region would be very supportive if it were a chance to change some current fisheries management practices, both for environmental protection and to create more jobs in the traditional fishery (Participant #33). For example, reinstating the original line banning big herring boats from going up to the inner Bay and fishing inshore grounds (Participants #32 and 33), most people would support this (Participant #35). Also eliminating the current by-catch and high-grading problems, which many feel led to the groundfish collapse (Participant #17): "until the point comes that whatever lands in my nets or on my hook, that I can bring them ashore, we're never going to conserve the stock" (Participant #16). In general, clearly defining the distinction between inshore and offshore fishing grounds and increasing enforcement to stop offshore vessels from 'fishing over the line'. Finally, increase protection of spawning grounds (Participants #16 and 33) and bring back the

year-round multi-species fishery (Participants #33 and 35). Parks Canada would have to ensure that local communities are aware that fisheries management is not in their mandate. DFO is responsible for managing fisheries within conservation areas, and therefore, to make any of these changes Parks Canada would need cooperation from DFO, which is not guaranteed. Parks Canada must avoid getting support from the fishing community by promising action on issues where they have no jurisdiction; their limitations must be clearly articulated and communicated up front.

Participants from the aquaculture industry in the region note that they too, like fishermen, are deeply tied to the health of the Bay of Fundy, and they are willing to compromise in order to ensure its long-term sustainability and productivity (Participants #20, 21 and 22). One participant notes that the aquaculture industry often implements stricter environmental guidelines than are required, and in some sectors of the industry, where policies and guidelines have not yet been established, they're working towards generating their own regulations using conservative measures (Participant #20). For example, in Nova Scotia the industry was involved in an environmental monitoring project with the Department of Agriculture and Fisheries (Participant #19). They are also currently involved in the provincial environmental assessment program (Participant #20). Recently a lot of progress has been made in the aquaculture industry to reduce and mitigate environmental impacts, including: better practices; less antibiotic use; and wiser site selection (Participant #8). The industry also recognizes the idea behind aquaculture exclusion zones, and is not opposed to these as long as they're based on good science and the industry is part of the decision making process (Participants #21 and 22).

Fortunately, aquaculture sites on the Nova Scotia side of the Bay of Fundy are in relatively high current areas, and thus have not had the same bottom deposition problems as has been seen in other places (Participant #19). There is also continuing research investigating the benefits of using multi-culture cage sites, where more than one species from different **trophic levels** are farmed together to help reduce environmental impacts and increase efficiency (Participant #19). It should also be noted that the large clam-aquaculture site in St. Mary's Bay uses species that are indigenous to the area, and does not put cages or feed into the environment; however, it does manipulate the substrate and put nets down to protect the seed (Participant #20). Generally bottom-culture such as this, for clams and for mussels, has very low impact (Participant #19).

In general the aquaculture industry has much experience working collaboratively with other user groups and community members (Participant #22). The aquaculture industry will however be defensive if they feel they are being targeted more than any other industry (Participant #22). One participant from the aquaculture industry said he was sure they would at least come to the table with an "open mind" (Participant #20). The aquaculture industry in this region is important to the local economy, but to nowhere near the same extent or size as on the New Brunswick side of the outer Bay of Fundy (compare Figures 12 and 13). The coastal communities on the Nova Scotia side are not as integrated in, or dependent on, the aquaculture industry. Therefore there is more flexibility in trying to integrate aquaculture into a NMCA without destroying the industry, while still providing for the necessary protection to make a NMCA in the region effective in conservation. However, establishing a core zone of protection where there are currently aquaculture sites functioning would not be appropriate.

5.3.2 Limitations in this region

The primary limitation to NMCA establishment in St. Mary's Bay/Brier Island region is if it is seen as a government initiative (Participant #16). Although Parks Canada has not experienced many setbacks in the immediate region in the past, their lack of presence in the area could also make for a challenge as people are unsure of how Parks Canada and DFO differ, and are often suspicious of government programs. For example, most people in the region do not understand the difference between NMCAs, MPAs, and fisheries closures; or that Parks Canada has virtually no power over fisheries management decisions (Participant #23). For example, one participant thought that a NMCA is not needed in the region because DFO is already implementing closed areas to protect stocks at important times of year (Participant #3). More importantly, there is still distrust of government in the region, especially because of bad experiences communities have had in the past, mainly with DFO, which has resulted in a lot of resentment (Participants #16, 17, 19, 32 and 33). Many people living in coastal communities in this region were genuinely, deeply, and significantly impacted by the fisheries crisis (e.g. family breakdown, violence, divorce, suicide), and they often blame the government for this. In some cases there is also tension and conflict between different industries, between fishermen and their communities, as well as within the fishing industry (e.g. between inshore and offshore fleets, and between different gear types) (Participants #3 and 33). One participant believes that a NMCA in the region would simply be adding another layer of bureaucracy, which will only increase conflict in the area (Participant #3).

Community members are frustrated with the traditional government 'one size fits all' approach: "that's what's the main problem is, that everything is done in Ottawa and is

like ‘one size fits all’; well, I’ve got a pair of gloves over there, would you like me to show you how they fit? The thumb, the end of my thumb is way out here, it’s ‘one size fits all’” (Participant #33). Some community members feel that even when they are involved in government programs it is only “token involvement” (Participant #3), that they are only really being paid lip-service and don’t really have any decision-making power in policy development (Participant #32). They feel that government programs are never bottom-up, they are never working for or with people in the communities but are instead trying to fill some hidden government agenda (Participants #17 and 33). For example, in discussions with one participant it was clear he felt every government program was eventually going to ruin his livelihood. Because of these feelings some community members in the region will likely be opposed to any discussion on NMCA establishment there; however, this would be the case in virtually any region.

Also, community members in the region are often wary of new things, especially those related to ‘conservation’ (Participant #32), because, as one participant notes, some government conservation initiatives do not appear to have worked (e.g. quotas and the cod moratorium) (Participant #21). In general the Brier Island community has not responded overly positively to conservation efforts here in the past, especially when they have involved ‘outsiders’ coming in (e.g. their opposition to the Discovery Centre proposal on the island) (two participants (confidential)). In the communities in this region there is a lot of conflicting information available (Participant #19), and not enough communication or information sharing between them, especially in showing how some conservation efforts are working.

Another limitation is that some people just do not see the need for a NMCA in the Bay of Fundy. Either they do not acknowledge any environmental degradation in the region, or they do not see how a NMCA could help mitigate these effects (Participant #3). There is no consensus that over-harvesting of any resource has caused some of today's environmental problems (Participants #16 and 20). Fisherman Hubert Saulnier, for example, notes that some areas of the ocean actually "thrive" off disturbance, such as Georges Bank. Also, the fear of restrictions being placed on activities or industries is often enough to result in up-front opposition to any initiative; some people would rather leave everything the way it is than lose access in the future (Participants #21 and 33). Some participants felt conservation areas were really only useful for protecting special or unique features in small areas (Participants #3 and 29). One participant felt that instead of using a strict government model, with different zones, etc., it may be better to look into other ways of protecting the marine environment through changes in management regimes (Participant #19).

Some others felt that the time and resources allocated to NMCA establishment would be better spent on fixing fisheries management (Participant #3). For example, even community-based fisheries management in this region is not focused enough on conservation because people are putting their economic interests first, and there are strong loyalties among gear types (Participant #16). One participant noted that conservation and community-based management are not the tradition or priority for people along the French shore (i.e. between Digby and Yarmouth), compared to Digby Neck (Participant #17). Participants also noted that the NIMBY principle (Not In My Backyard principle) is quite active in this region (Participants #16 and 20).

It is clear that in general, industries and communities in the region, particularly fishing, do not have a clear understanding of what a NMCA is, its purpose, or how it would impact them; therefore, discussions on the potential for NMCA establishment may be met with resistance initially. Since they have not been informed sufficiently of the causes of the environmental degradation they have witnessed, evidence need to be made available where possible. Community concerns, and the aforementioned limitations to successful NMCA discussion in the region, primarily result from a lack of communicating the potential benefits of NMCAs to communities and industries. This highlights the critical need in this region for information sharing, and increased awareness of the benefits of Parks Canada's NMCA program (for further discussion, see Chapter 6).

A limitation to successful discussions on NMCA establishment in this region is what some participants referred to as "greed", which currently is exhibited by some of the industries operating in the area, particularly fishing and fish processing (six participants (confidential)). For example, the lobster industry is quite lucrative at the moment; therefore, some fishermen would have a difficult time understanding the benefits of delineating a protected area where they do not fish, since they currently see their future as "very bright". For many fishermen, lobster is now their mainstay after being pushed out of ground fisheries by the collapse (confidential). However, there are examples of marine protected areas benefiting lobster fisheries in Newfoundland, and communicating this evidence to lobster fishermen in this region would be very beneficial. It is likely that similar instances of greed would be present in all regions of the Bay of Fundy, and

potentially within other industries; therefore, this should not be a significant deterrent to furthering discussions on NMCA establishment in this region, when compared to other parts of the Bay.

Although generally most participants felt the conservation community would likely support NMCA establishment in this area, there were some concerns expressed by members of conservation organizations about the potential impacts from increased tourism in the area (Participant #6). One participant was worried NMCA establishment may simply cause a shift in user groups in the area, without providing the sought after protection (Participant #1). Another participant expressed concern that establishing a NMCA may give the community a false sense of security, that it will solve all environmental problems in the region: "I certainly wouldn't want people to feel that because we have this, some sort of protected areas, that this is where you stop" (Participant #14).

Kenneth Paul of the Tobique First Nation notes that aboriginal communities will never forget losing much of their land to National Parks in the past; Parks Canada must recognize this if they are to cooperate in the future. Cooperative involvement of First Nations communities in the region would be critical for successful NMCA establishment. Unfortunately in some cases there exists some tension between aboriginal and non-aboriginal fishermen. Some non-aboriginal fishermen think too much power has been given to aboriginal fishermen through DFO's response to the *Marshall* decision (confidential). Also, there has been conflict in the past between First Nations bands over

access to the fishery (Participant #25). Many First Nations community members are also concerned about aquaculture and its potential environmental impacts, especially introducing non-native species into the Bay of Fundy environment (Participants #23 and 25).

There is also the question of how to integrate aquaculture with NMCA establishment. Although NMCA zoning allows for continued sustainable human use, aquaculture would no doubt be concerned about restrictions being placed on their activity (Participant #3). Also, that they would be unfairly singled out compared to other industries such as fishing and whale watching (Participants #21 and 22). Because there has recently been a lot of opposition and negative media targeting the industry, they are a little paranoid about restrictions on access, and therefore may be sceptical and cautious at first (Participants #20 and 22). Also they would want scientific proof and a risk assessment method applied for identifying exclusion zones in the NMCA, because they do not agree with using the strict precautionary approach (Participant #22). This would likely be a similar request of other industries. One participant notes that the large-scale operators, with bigger budgets, may be more willing to compromise compared to small-scale operators, who have less flexibility because they have less financial stability (Participant #14).

Also, participant #20 explains that there has been a little conflict between Parks Canada and the aquaculture industry (i.e. with Innovative Fishery Products Inc.) over restrictions on commercial clamming activity at the Kejimkujik National Park Seaside Adjunct. From the perspective of the clamming company, they felt government had acted

in a "heavy-handed" manner, where they would not even enter into discussions with the company. They felt that nobody at Parks Canada was considering the needs of the industry. It appears that Parks did not take the time to communicate the basis on which they made their decision, and why it was necessary to restrict this area to clamming while continuing to allow recreational human use (Participant #20). There was also conflict between clammers and Parks Canada over Parks' decision to close beaches in the Annapolis Basin to protect archaeological sites (Participant #19). Incidents like these make the aquaculture industry "nervous" about the idea of NMCA establishment in the region (Participant #20). Instead, Parks Canada needs to help develop in industry an awareness of the benefits of protected areas and an appreciation for their maintenance.

Some participants admitted that although there are many environmentally friendly aquaculturists out there, there are still those who are only "in it for the bucks", and they will likely harshly oppose any NMCA initiative (confidential). However, Nell Halse of the New Brunswick Salmon Growers Association says:

> frankly, anybody who lives in Canada appreciates having a Parks Canada, right? I mean we all enjoy National Parks, so I think people can be persuaded that there's a real value to setting aside an area and restricting usage; I think people are open to any kind of good case. That's often what, people often forget the people who work in the Salmon farming industry are from the community, they also go to campgrounds, they go on hiking on trails, they have families; they don't want to see garbage on the beaches either, for example.

6. Results and Discussion – Process

Most people interviewed were in agreement that if the process is good, and Parks Canada has 'done their homework', then in the end it is probable that a NMCA can be successfully established in the Bay of Fundy. There was consensus, however, that government processes used in the past have not worked in the Bay of Fundy. Michael Cox notes: "when people use the wrong process it really backfires on them". There needs to be a change (Participant #24), a move towards a more open and discussion-based process (Participant #9). "Don't make the plan and then come tell the people what's going to be" (Jim Thurber, Warden of the Municipality of Digby). If driven in a bottom-up manner instead of top-down, then destructive popular opposition is less likely to emerge (Participants #6, 18, 20 and 33). Outlined below are the significant components required for an effective NMCA establishment process in the Bay of Fundy. One fisherman likens it to assembling a puzzle: "it's kind of like putting a jig-saw puzzle together, you put the framework around and then you start putting the little pieces in, after a while it comes together and you've got a picture".

6.1 Identify a region

Parks Canada should first have a general region in mind within the Bay of Fundy before going to the public. The area selected must have clearly definable conservation significance (Participants #18, 20 and 21). It is important to identify a region because people will be suspicious as to government's intentions, or that there might be a hidden agenda, if a specific region is not identified at first (Participant #13); they can't be aloof

or noncommittal, that will make people nervous (Participant #21). Before drawing lines on the map however, it is important that the community, including local industries, approve the general principle of creating a NMCA (Participants #27, 28, 32, and 37). Specific boundaries should not be delineated when first meeting the public, because specific lines on maps raise fears for people who do not understand what they mean, as was seen in the Upper Bay Biosphere Reserve initiative (Participant #6). Many people will automatically assume that the lines identify places they will be banned from entering, and so people who rely on those areas for their livelihood are likely to become concerned and defensive. Instead, the local communities and user groups should draw NMCA zones and boundaries together, for a couple reasons: one, that these groups contain much important knowledge and experience that should be incorporated into zoning decisions (Fenton et al., 2002; Participant #5); and two, because if these groups are responsible for writing the rules then they will be much more likely to follow and enforce them (i.e. self-regulate) (Ellsworth, 1995; Participant #37).

In this thesis I have identified a region in the Bay of Fundy where public interest in discussing further the idea of NMCA establishment was the highest, the St. Mary's Bay/Brier Island region. It is an area where the timing would be appropriate and the goals of the community may fit with those of a NMCA – combining sustainable human use with protection of an important representative marine area. These are two important qualities for a successful NMCA initiative as identified by both participants and in published literature (as summarized in Table 6). Also important, both biologically and socially, is that the area being pursued have conservation significance. The region I have identified, particularly that part of it off Brier Island, has been identified in both recent

and past studies as being of significantly high conservation value (King, 2004; Buzeta et al., 2003; Parks Canada/Tourism New Brunswick, 1985).

6.2 Recognize the damage of past mistakes

In the Bay of Fundy, Parks Canada needs to recognize how much damage the fisheries crisis did to people, families, communities and lives (Participant #33). Government administrators need to be cognisant, respectful and understanding of this, and the resulting deep-seated distrust and scepticism of government (Fenton et al., 2002; Participants #15 and 28). For some fishermen and communities, past experiences with DFO have left them feeling frustrated and powerless (Participant #18). According to Participants #24 and 26, the same principle applies when working with First Nations, who have also been hurt by government processes in the past, and so also have significant concerns and wariness.

Parks Canada needs to be sensitive to the varied situations of people, their wants and needs (Participants #9 and 28), and not push a specific government agenda on communities (Fenton et al., 2002; Lien, 1999). Some participants stated that communities feel they have been let down in the past (Participant #28), and that it would be helpful for Parks Canada to clearly and openly review at the outset what the agency has learned from its own experiences, both the positive and constructive, as well as from the experiences of others (e.g. DFO, the Upper Bay of Fundy Biosphere Reserve proposal) (Participants #6, 7, 10, 23 and 28). For example, it would be important for Parks Canada to acknowledge what they have learned from the abandoned West Isles initiative, and address up front the main questions people have had previously (Participants #1, 11, 31 and 34). The lessons that come from mistakes should be presented in a useful and productive manner, and

Parks Canada needs to clearly describe in which way they will try to avoid any similar difficulties in the future. Fenton et al. (2002) agree, noting the importance of considering the effect of other 'issues', and how this can impact on the community's response to a conservation initiative. Unfortunately, in the region around St. Mary's Bay, Brier Island and the French shore some communities have been involved in frustrating DFO programs, and this has resulted in some general distrust of government. This would need to be acknowledged and addressed upfront before pursuing discussions on potential NMCA establishment.

6.3 Begin with building trust

The first, and likely most important, step is building *trust* in communities and beginning to empower them (Participants #18, 19, 33 and 35). This can only be accomplished through open communication (Participant #25), and by forming genuine partnerships with as many groups as possible in the area (Participant #6). Mary Kenneally-DesRoches, a fishing community member, explains: "there's so many bad things that have happened, it's a long road building trust". The process needs to be very open and non-secretive (Participants #15 and 18). Bill Whitman explains: "you really have to have the trust of everyone in the community, and the credibility with the community, before you can make something like this work. You can't come in and do two consultation meetings in the community, or something like that, and then go away and draft something up and just move ahead with it, it just doesn't fly". Fenton et al. (2002) were of similar opinion, stating: "trust is achieved over time and built on personal relationships. Key requirements are continuous contact, honesty, information exchange and meaningful dialogue…" (p.1419).

A NMCA initiative must clearly not be a government venture with a hidden agenda (i.e. trying to reach some goal other than those presented), and must be genuinely founded in good conservation principles (Participant #22). For example, although perhaps unjustified, some community members felt Parks Canada's West Isles proposal was really attempting to create a "tourist haven" in the region, for divers and others (Participant #18). Transparency and accountability in the process are very important (Participants #15, 18, 21 and 22). Some people involved in unrelated initiatives have felt governments were motivated by a desire for political success rather than for conservation as they claimed (Participant #21).

In general "the community wants to see things happen that improve the overall health of the community, [and] the economic well being" (Participant #19). It is important to recognize, however, that it would be virtually impossible to get one hundred percent support from the public for an initiative such as NMCA establishment (Participant #21). There will always be people who reject getting involved and then complain about the project in the end (Participant #1), or who refuse to make any sacrifices (Participant #18). This is to be expected, and those few individuals should not be considered a roadblock to success, so long as there has been broad community support established.

First Nations Community

> The thing that's hard is that for the longest time Parks Canada didn't consider anybody important except for what they wanted to do, and that's not whether they're a native community or whether they're a fishing community or whatever. But now Parks is trying to, sort of make amends for stuff that happened in the past. Some people have a hard time dealing with stuff that happens in the past but it always has to be acknowledged; and eventually if co-management is going to be the end goal, then we have to start working together now, to try to establish capacity on both sides. (Kenneth Paul, Tobique First Nation)

Because there has been some conflict between governments and First Nations in the past, there is a critical need to build trust. Hugh Akagi, Chief of the Passamaquoddy Peoples, notes: "trust, that has to be in place for something like this to work". During establishment it would be important to consider what traditional aboriginal uses occur(red) in the region of interest, and where significant areas are, as well as using traditional knowledge in the delineation of zones within the NMCA (Participants #23 and 26). Fortunately the Confederacy of Mainland Mi'kmaq, who have experience working with different bands, other organizations and governments, are often involved in this type of work, identifying significant areas. If a partnership was formed with them they would be able to contribute much valuable information (Participant #23).

Participants agreed that in general the First Nations community would support NMCA establishment in the Bay of Fundy *if*: they felt included and involved in an open and transparent process (Participants #23, 24 and 26); it was going to effectively protect an area they care about and/or rely on (Participants #24 and 26); *traditional* resource harvesting activities were allowed to continue everywhere outside of the zone of highest protection (Participants #23, 24 and 26); it is a fair and equal arrangement, with one industry not being unjustly allocated more access than another (Participant #24); they see employment opportunities and economic benefits for their communities, and real

financial resources being put into the project (Participants #24 and 26); and there is an early commitment to co-management in the future (Participant #26). The non-aboriginal fishing community and First Nations community would have to work hand-in-hand throughout the process for success (Participant #5).

In the broad St. Mary's Bay/Brier Island region is the Bear River First Nation. It is a small reserve, but one concerned about environmental protection, who would need to be deeply involved in a NMCA proposal (Participant #25). It would also be important to find out what other First Nation communities fish in the region, or have identified significant cultural areas there. As well, current agreements and the recent Nova Scotia land-claim would play an important role in NMCA establishment in the region.

Fishing community

> Even fishermen's groups [would be supportive], if it's protecting the fishery [and] giving the fish a chance to mature; those fish aren't going to stay within those lines that you draw on the map, they're going to eventually leave there and if we can give them a chance to multiply and spread out into the area, it's a benefit [to fishermen]. (Participant #35)

Participants agree that fishermen would likely accept the idea of NMCA establishment in the Bay of Fundy *if* it doesn't threaten their way of life (Participant #35), and fishing is allowed to continue within the NMCA (Participant #19). It must be justified and based on real science, including traditional knowledge from both First Nations community members and fishermen. The potential benefits of a NMCA to local fisheries must be clearly explained using examples from other areas where the establishment of marine protected areas has increased fisheries yields (Participants #13, 18 and 35). The extensive biological and environmental knowledge of local fishermen must be used in delineating the zones of the NMCA and identifying the area(s) of highest protection (Participant #5).

The process must be non-confrontational and avoid pitting different gear types against one another (Participants #16 and 18). "Fishermen feel that there's a double standard you know, one for them and one from everybody else" (Greg Thompson, fisherman); therefore, the process must be careful not to target the fishing industry. Eventually there will need to be an agreement between all groups, including those who are traditionally at odds with one another (Participant #36).

The region around St. Mary's Bay/Brier Island supports many commercial inshore fisheries of various gear types. Of growing importance to coastal communities in the region in recent years has been the lucrative lobster fishery, which unfortunately has also resulted in conflict between fishermen in the area. The inshore groundfishery in this region is also important, and is currently managed by a community based management board – the Fundy Fixed Gear Council.

6.4 Create a non-governmental establishment committee and enlist local leadership

Although Parks Canada must explain their legal mandate to establish a NMCA in the Bay of Fundy (Participants #16, 18, 20 and 25), they need to approach the community in a spirit of commitment to conservation (Participant #21), *but* doing so in ways compatible with community needs and aspirations (Participant #17). Martin Kaye of the Bay of Fundy Marine Resource Centre in Cornwallis, NS, notes: "somebody from the outside can't come in and push a new idea, it has to have grassroots support, right from the start". Creating a NMCA cannot be solely a government initiative, it needs to be a community-led process involving both industry and non-industry participants, in which Parks Canada is a team member and an equal (Participants #16, 27, 28 and 34). The

public should be involved from the beginning and throughout (Participant #6). Walters and Butler (1995) stated a similar conclusion: "local coastal residents must be active participants, from the earliest and at each successive stage, in the decision-making process that lead to the establishment and operation of a coastal protected area or other marine conservation initiative" (p.209).

It is critical however that a Parks Canada representative remain involved throughout, to provide support and act as a resource, to ensure there is clear understanding of the legal aspects and mandate of NMCAs, and to resolve any misconceptions about them, both on the establishment committee and in the public (Participant #27). Parks Canada would have to be flexible, and open to different ideas and opinions, even those that do not fit within what they had envisioned (Participants #1, 13 and 19). There needs to be room for creativity in both the process and the eventual design of the NMCA on the water. If a different approach would fit better with the interests of the community, but still reach the same outcomes and goals for a NMCA, then they would need to be willing to try it (Participants #19 and 35).

The Committee

The issue of how to bring all interested parties together to make this a joint initiative is a difficult but important one. Fenton et al. (2002) suggest: "one way which has proven successful in Atlantic Canada is to establish a committee that can represent key community interests" (p.1422). Many participants shared the opinion that using a non-governmental NMCA establishment committee, made up of community members, industry and other stakeholders, is probably the best approach (Participants #6, 19, 20, 27 and 33); "everyone should have a say" (Participant #21). The reason for using a multi-

interest/stakeholder committee of this kind is two-fold: to give as many people and groups the opportunity to participate; and to gather as much knowledge and experience together as possible, thereby avoiding duplication of work already done by other groups (Participant #25). Every effort should be made to ensure that all members of the committee are equal, and no one has a stronger voice, is more dominant, or has more power within the group than another (Participants #28 and 34).

Unfortunately, a few participants have in the past seen groups like this fall apart because of conflict, where some members are representing their industry's interests and not those of the group at large (Participants #9 and 24). However, the problem with not having broad representation on the establishment committee is that some people or groups will feel 'left out', and that the process was lead by someone representing only one viewpoint (Participant #24). Also, in a NMCA all users and activities will need to be managed together, therefore it is appropriate that decisions regarding NMCA establishment be made together (Participant #3).

It would take a major coordinated effort to pull together all the appropriate people (Participant #14), since the establishment committee would need to involve members from local groups and organizations, marine conservation scientists working in the region, as well as industry representatives, and high profile community members. Community members from local industries and organizations should be chosen or elected as 'representatives', but committed to working towards a common goal as part of a team (Participants #5, 6, 21 and 28). They must want to be there, and be willing to compromise; they need to be able to empathize with the other committee members (Participant #24).

It is critical that there is open and honest communication on the establishment committee (Participant #6), and that all viewpoints and concepts are clearly articulated and defined from the beginning (Participant #33). The importance of starting by educating the entire establishment committee on the nature of NMCAs, and how they can benefit communities and industries, cannot be overstated. The committee will never succeed in NMCA establishment unless all its members truly believe it to be a good option for them. Parks Canada would have to be very upfront and honest about who they are, what their intentions and goals are, and what jurisdictional and legislative powers they hold (Participant #17). It would be very important for the establishment committee to set out a terms of reference for the committee right at the beginning, which would define their goals, an agreement on how they plan to reach these goals (i.e. the decision making process), a commitment to compromise, and what to do if disagreements or conflict should arise. This will help the committee avoid getting bogged down in other issues or the interests of one particular group or industry (Participants #4, 5 and 19).

A well functioning establishment committee, with genuine cooperative involvement between affected community members and user groups, is much more appropriate than past 'consultation' processes where people have felt they only had one chance to contribute, and no real power to affect decisions (Participants #3, 11, 21, 28, 29 and 35). Darryl Goyetche of the Saint John Board of Trade put it this way:

> if a proposal were developed in isolation from people whose lives might be impacted, then that almost literally guarantees that some number of them will rise up in anger when they feel that their lives, or their livelihood, or their communities are threatened. So it's more than a communications exercise, if it's to be meaningful it has to engage people whose communities, and lives, and livelihoods will be impacted.

The establishment committee therefore provides an opportunity for real negotiation (Participant #34), involving bottom-up versus top-down decision-making (Participants #17, 28 and 29).

The establishment process should be carried out following steps identified by committee members, reflecting the interests of the community at large (Participants #11 and 27). Participants felt that rather than Parks Canada going to the general public immediately with the idea of NMCA establishment, it would be far more appropriate for the establishment committee to provide the public with information, as they know the industries and communities better and thus are best equipped to generate support for the initiative (Participants #11, 14, and 27).

The first steps for an appropriate process in working with First Nations communities on a NMCA establishment initiative, were identified by Kenneth Paul of the Tobique First Nation: 1) in the identified region find out which bands are affected, not only those in the immediate area, but any First Nations with fishing licences in the region, for example; 2) determine how the affected bands congregate (e.g. do they work together on an environmental committee or something similar?), what are the overarching/umbrella organizations? Use the umbrella organizations as the primary point of contact (Participant #23). The remainder of the process would have to be determined by aboriginal community members involved in the process, considering the context of the First Nations bands affected.

Participants further identified some important general things to consider and avoid, when working with First Nations communities to build trust and partnerships:

1) You can't just have a random community member as a 'representative' of First Nations; the Chief in Council or another organization must appoint 'representatives', and this can sometimes be a very political decision. From the start you would need support from the Chief in Council for success. (Participants #25 and 26)
2) Have other aboriginal community members involved, not necessarily 'representing' a band – need community members from outside the political arena (Participants #23 and 24). Therefore, you can't just have one seat for First Nations and consider this sufficient for genuine involvement (Participants #23, 24, 25 and 26).
3) Must watch gender balance. Although men usually fill the political roles in many First Nations communities, aboriginal women must be engaged in the process (Participant #26).
4) Must consider that within the aboriginal community personal relationships are more important than the bureaucratic process. For example, personal contact is important, ideally most interactions would be carried out face-to-face. Also, it would be important to watch the wording of letters and documents, making sure they are non-adversarial and welcoming (Participants #25 and 26). Finally, native communities do not respond well to demands and timelines being placed on them, it is not the way the culture works and this would need to be respected (Participant #26).

To engage the fishing community it is important to involve the leaders from the community on the establishment committee, so they can then promote the idea to friends

and colleagues within both industry and the community at large (Participants #16, 27 and 28). One fisherman notes that peer-pressure within the fishing community has a lot of strength. Also, fishermen would much rather discuss their questions and concerns with another member of the fishing community than anyone else (Participants #16 and 17). Once there is general agreement within the local fishing community, it will then be necessary to gain support from the broader fishing industry in the region, including the management boards (Participant #18).

The aquaculture industry would need to be involved with the establishment committee from the beginning, ideally involving both the regional aquaculture association as well as local operators who do not chose to be a part of the association (Participants #20 and 22). There will also need to be recognition of the conflict between aquaculture and Parks Canada around the Kejimkujik Seaside Adjunct (discussed above), at least with the aquaculture company involved. Parks Canada should indicate how National Parks and NMCA differ both in philosophy and in practice, and identify how similar difficulties can be avoided (Participant #20). There are positive examples of how aquaculture and conservation can work together in an area; for example, a successful partnership exists at Roosevelt Campobello International Park on Campobello Island, NB (Participant #22).

The tourism industry would also be very interested in NMCA establishment and would likely want to be involved from the beginning (Participants #27 and 28). Judith Cabrita of the Tourism Industry Association of Nova Scotia (TIANS) sees the Bay of

Fundy as having huge tourism potential that has not yet been fully explored or capitalized on. It is likely that it would be more appropriate for local tourism operators to be involved with the establishment committee, and then involve the broader industry at a later date. Since, as previously discussed, the establishment process must be designed by members of the communities it will be affecting.

Local operators to include up front are whale watch operators, representatives from the proposed Discovery Centre, and representatives from the hospitality sector in the region. Cooperative collaboration with the broader industry should include TIANS, provincial government departments and other tourism industry organizations; on-going partnerships with these groups would have to be established early in the process. Fortunately TIANS is committed to working cooperatively with other industries, and has played (and could play) a facilitating role with the broader tourism industry (Participant #27).

Having both tourism and fishing represented on a NMCA establishment committee would be a good opportunity for them to work together, collaboratively, to reach a common goal. It would help address concerns from the fishing community and others that fishing activity would simply be unfairly restricted in favour of increased tourism activity (Participants #5, 6 and 18). The Warden of the Municipality of Digby, Jim Thurber, sees increasing tourism in the area as being of benefit to communities by helping to diversify economic opportunities and increase economic security, instead of people relying only on somewhat unreliable fisheries – the lobster industry likely will not continue to be as lucrative as it is now for ever.

This would also be an opportunity for tourism and aquaculture to collaborate, since there has been conflict in the past between these groups over aesthetics of aquaculture sites in the coastal zone (Participant #36). The tourism industry could also partner with municipalities, helping to maintain and increase infrastructure in coastal communities, such as wharves and dockside tourist facilities.

Partnership should also be made with groups and organizations outside of the region of interest, which could provide resources and support throughout the initiative. For example the Bay of Fundy Ecosystem Partnership (BoFEP), the Gulf of Maine Council, and the Centre for Marine Biodiversity could perhaps provide scientific advice and help coordinate and facilitate discussion with scientists and academics (Participants #7, 8 and 27).

The Committee Leaders

Many participants note that key to success will be *who* is coordinating the process, who specifically is motivating or driving the process, and who the government person involved is; it has a lot to do with personality (Participants #9, 13, 24, 26 and 34). For example, when it comes to working with fishermen Hubert Saulnier notes: "it all depends who approaches these fishermen". With respect to leadership, a Parks Canada representative should *not* be the primary organizer, facilitator, or mediator (Participants #27 and 28). Walters and Butler (1995) drew a similar conclusion: "non-government intermediary individuals and organizations can play an important catalytic and perhaps a long-term functional role in the collaborative process" (p.210).

Instead, the committee should be co-chaired by both a local community leader, with credibility among different user groups and stakeholders, and a leader from the aboriginal community (Participants #24 and 33). To gain support from the First Nations communities it would be helpful if they already had a working-relationship with whomever is leading the process, to build on established ties, and avoid them looking at and treating the leaders and the process like a 'typical' government program (Participants #24 and 26). The co-chairs should be from the region and know the communities in the area very well (Participants #10, 13, 30, 33, 34 and 36). These co-chairs should have strong facilitating skills (Participants #9 and 27) so that the committee can work towards consensus. It will be necessary for Parks Canada to give them authority, decision-making power, and support throughout the process (Participants #13, 24 and 27), which participants and community members will want to see to gain faith in the process (Participant #13). It was recommended that the co-chairs be paid to work full-time on this initiative; however, this should not take the power and decision making authority away from the establishment committee (Participant #24).

In the St. Mary's Bay/Brier Island region there are already many local community-based efforts on-going, which would need to be coordinated for NMCA discussions. These include but are not limited to: the Coastal Communities Network, the Digby Neck Community Development Association and the Saltwater Network, as well as terrestrial associations, such as the Brier Island stewardship committee (through the NCC) and the Southwest Nova Biosphere Reserve Association. Also, all municipalities and local business organizations, such as the Boards of Trade and Chambers of

Commerce. Government should not fill the coordinator role, which should instead be filled by a respected organization already functioning in the area, such as the Bay of Fundy Marine Resource Centre (the MRC). These "local level champions" like the MRC are promoted by Fenton et al. (2002) as being "invaluable" in helping protected area proposals move forward (p.1421).

The MRC is an appropriate organization to take on this facilitator role. Manager Martin Kaye describes it as currently functioning like a "switchboard", connecting agencies, industries and communities. A communication network of all the groups in the region who might be interested in being involved in discussions on NMCA establishment should be created, and from here community interest in pursuing NMCA establishment in the region could be developed through helping groups to reach common goals cooperatively. It would be logical for members of these groups to make up part of the establishment committee. However, it would be important not to take energy away from these organizations, which would create resentment towards the NMCA initiative. The establishment committee must help, not hinder, them reaching already established goals for their associations.

It was suggested by some participants that ideally the establishment committee might be a group already functioning in the area, pursuing a similar goal of marine conservation through sustainable use management and protection of special or unique areas. The St. Mary's Bay Working Group may be an appropriate organization to take on this role, as they are already established and have experience working together, sometimes on controversial issues. However, it is sometimes *more* challenging to take an

already established group and change their existing mandate or develop a new one, than to create an entirely separate group specifically for this project.

Regardless of how the establishment committee is formed, the office for NMCA development must be located within the region of interest. For example, if the MRC were to take on the job of organizing the establishment committee, then the establishment office must be in the MRC, not in Parks Canada's offices in Halifax. Another excellent partnership opportunity in the region is with the proposed Bay of Fundy Discovery Centre; perhaps Parks Canada could use the Discovery Centre as the NMCA 'headquarters'. Working cooperatively with this local initiative lends credibility to the NMCA proposal. Parks Canada could assist this group by providing some operational funding and support for the Centre annually. In exchange, Parks could use the research facility at the Centre to do NMCA monitoring and research. This could also be the location from which the future NMCA management board could operate, and could serve as the interpretive centre for the NMCA.

Some participants believe that the process will likely be most successful if not initiated by Parks Canada at all, but instead by the community itself (Participants #19 and 34). This was the case for the Musquash Estuary Marine Protected Area on the New Brunswick side of the Bay, and was judged to be one of the primary reasons for the project's success. Participants agree that the process used for Musquash was a good one, which perhaps should be followed by other conservation initiatives in the Bay of Fundy (Participants #1, 13 and 34). They did not start out with strict rules or guidelines, but in many ways let the community shape the eventual delineation for the MPA (Participants

#1 and 13). This kind of flexibility is necessary if the community is actually going to be given the role of negotiators and decision makers. In Musquash the community put the proposal together, and then approached Department of Fisheries and Oceans with the idea (as described in Chapter 4). With broad community support from different user groups and stakeholders, the proposal had validity and strength (Participants #6 and 13).

6.5 Start an education campaign

Participants agreed that the first job for the establishment committee is to disseminate information to and involve the public, and seek support for the idea of a NMCA in the Bay of Fundy. It is critical that this begin early on in the establishment process so the community doesn't feel like the project is being pursued in secret (Participants #6, 11, 27 and 28). A conceptual question that must be addressed for everyone in the region is "How is this going to affect me?" Although difficult, given the wide diversity of interests, the issue of impacts on people needs to be clearly addressed at the outset in order to put peoples' fears at rest; Fenton et al. (2002) came to a similar conclusion. The importance of beginning the process with a public education campaign was exemplified specifically in one interview, where the initial reaction of the participant was one of concern – when asked about his understanding of Parks Canada's NMCA program he replied that he was not familiar but "I know enough about it that it scares me". However, after briefly explaining some of the details of NMCAs he later says he thinks it would be appropriate in the Bay of Fundy, and that the group he is affiliated with would support establishment as long as "whoever's doing this, can prove to them that it's beneficial". This would likely be the reaction of many members of the broad Bay of Fundy community who do not understand what a NMCA is, and are therefore nervous

about its potential implications or effects. For example, Doug Bertram of the aquaculture industry says "what scares me right now is the unknown, that's what scares me".

A NMCA needs to be, and needs to be presented as, a "win-win situation" for everyone (Participants #3, 5, 13, 16, 27, 28, 34 and 35), and thus all educational materials should be presented in this light. Including showing that the long-term sustainability of the environment is necessary for long-term sustainability of industries, and highlighting the peripheral benefits of NMCA establishment, which include economic benefits associated with increased tourism and employment, and potential environmental benefits for the coasts, watersheds, and surrounding terrestrial environment. In this regard, Walters and Butler (1995) noted: "observable benefits from the conservation initiative…will re-enforce a local community's commitment to the activity" (p.209).

A NMCA does not automatically mean that users lose something (e.g. access to resources). This is important to articulate because many people will expect losses but will not immediately recognize the potential for benefits (Participants #3, 6, 21, 32 and 34). This is how industry was approached for the Musquash Estuary MPA initiative. Fisherman Greg Thompson thinks it worked well and was critical in attaining industry's support for the project.

Educational materials should also make clear that when sacrifices must be made, these will be distributed among many and will not fall on only one user group or industry; specific individuals or sectors will not be targeted and asked to relinquish more than others (Participants #21, 22, 24 and 28). This is particularly important for the fishing community, who were described by one fisherman as somewhat "paranoid" about losing access to resources and subsequently their livelihoods in the future. As well, industries

would need to clearly see that zoning decisions and delineation would be based on scientific evidence, and not on public perception or an industry's reputation (Participants #18, 21, 22 and 36). In general, a lack of understanding is what breeds resistance to the idea, which has been seen before in other conservation initiatives (Participant #6).

In order for Parks Canada to avoid some of the suspicion and resentment usually directed towards DFO, the difference between the two agencies would need to be clearly communicated (Participants #16 and 17), as well as between NMCAs, MPAs, and fisheries closures, since most participants were unfamiliar with how they differ. Specifically the idea of protecting representative areas is a relatively foreign concept to many, and the scientific validity of this program, as well as the necessity of a no-take area, will therefore need to be detailed using clearly understandable language and avoiding scientific jargon (Participants #7, 8, 11, 20 and 21). Examples of effective representative marine conservation areas should be highlighted, with evidence, in the education campaign (Participants #3, 18, 20, 21 and 28).

The public will want to know why their area is special and see proof that it is in need of protection, and that a NMCA will be effective in providing this (Participants #1, 3, 9, 18, 20, 21, 22, 24, 25, 32 and 37). Fenton et al. (2002) note: "there is need to define from an ecological standpoint what requires protection and why a particular site is selected" (p.1422). The education campaign should target public interest in celebrating unique features and flagship species (Participant #7), and use a stewardship approach to start making people responsible for their local environment and its protection (Participants #11 and 14). Finally, to avoid frustrations in the future, it must be

communicated to the public that since NMCAs are legislated and not voluntary protected areas, the formal governmental establishment process (after the committee has public support and has submitted a proposal) may appear to be quite slow. Although steps will be taken to help speed the process along, a relatively lengthy process should be expected (Fenton et al., 2002).

All public education materials should be bilingual, use plain language that is easy to read and understand, and be short but comprehensive with concepts being clearly defined (Participants #5, 15, 32 and 33). There should also be more in-depth detailed information made available to anyone who requests it (Participants #1, 10 and 27). A variety of educational materials and techniques are available, which should be used in combination to create the most affective education campaign possible. These include: pamphlets; extended documents with more detail; information sessions and talks; door-to-door information distribution and one-on-one meetings; poster presentations; media and public service announcements; and school programs. An education strategy targeting children and youth should be designed to help spread excitement and interest throughout the community (Participants #5 and 11).

The best techniques to use in the community and with different groups or organizations should be decided by the establishment committee. For example, big public 'town-hall' meetings can sometimes be quite threatening, destructive, and end up polarizing the community over an issue (Participants #6, 19, 21 and 27). However, they also provide for broad open communication and can be positive socially (Participant #1). Therefore the question of if and when to use town-hall meetings will have to be decided

by the committee, taking into consideration the interests and experiences of the communities in the region. The committee should not expect all of the community to come-to-them, instead they will have to go out into the community, door-to-door, and have kitchen-table meetings with local people who request it, or with those who are not engaging in the NMCA process (Participant #19).

The establishment committee must maintain ongoing communication with the public. They should establish an information hotline, with extended hours, so that people can call at any time and ask questions, as well as having a website that is updated regularly and an email address for comments and queries. For the less technologically inclined, they could create a newsletter to keep the public up-to-date on the progress of the proposal throughout the establishment process, and provide contact information for questions.

For the process to be legitimately bottom-up there needs to be genuine consultation and involvement of the broad Bay of Fundy community, outside of those represented on the establishment committee (Participants #1 and 29). However, the techniques for doing so must be appropriate for the communities in the region, and therefore must be designed by the establishment committee. In general it needs to provide enough time for people to give meaningful feedback (Participants #22 and 23), and there must be follow-up with communities and participants, to keep them informed as to what was articulated during the consultation process and how this is influencing decision-making (Participant #18).

Kenneth Paul notes that education and capacity building with the aboriginal community must be a "two-way street"; there is much for the non-aboriginal community to learn *from* First Nations. The education campaign perhaps should focus on their 'seven generations' commitment, but needs to be designed for and by members of the First Nations community (Participant #26). For example, face-to-face discussions are best (Participant #26) compared to public meetings, which most people would not attend (Participant #25).

In this thesis I do not examine detailed aspects of management or make recommendations in this regard; this must be decided upon by the establishment committee. However, it was suggested that there should be a management board, similar to or perhaps the same as the establishment committee, to manage the NMCA once it is in place, and enforce government and NMCA guidelines agreed upon by the committee (Participants #3, 10 and 26). The Centre for Community-Based Management should be involved in designing and implementing a co-management plan for the NMCA. A co-management arrangement would ensure that management decisions are made by the committee representing the public, and were not decided upon by Parks Canada alone (Participant #20). Having the community create the management plan helps somewhat in mitigating conflicts and increasing the potential for successful self-regulation (Participant #33).

In terms of enforcement, how this would function affectively and who would be responsible for it would need to be addressed up front (Participants #6 and 24). It would also be important to show that NMCA legislation holds some weight, is enforceable, and

anyone in breach of the regulations established under the *CNMCA Act* would be held accountable (Participant #25). There also needs to be accountability for Parks Canada to study NMCA effectiveness in the region over time (Participant #18), and to go through a public review process to see how things are working and what, if any, changes need to be made (Participant #37). It would be helpful to create a stewardship committee, as was done in Musquash (Participant #6), so local people can be doing the monitoring both for efficacy of NMCA protection and for public compliance with NMCA regulations.

6.6 Make the long-term commitment needed and establish government partnerships

As Walters and Butler (1995) note "conservation agencies must…be willing to make strong, long-term commitments to communities that they collaborate with" (p.209). Several participants noted that no matter what process is followed, the project will be challenging and will take a long time (5 or more years); it will therefore need a significant up-front commitment from Parks Canada to protect an area in this region (Participants #1, 6, 21 and 22). In order to keep people engaged in the process, there must be ongoing progress and information sharing (Participant #33). It is frustrating and decreases community confidence in government, when good projects are started but then disabled after a few years due to a lack of government commitment (Participant #33). Incentives will be needed to keep the NMCA establishment committee working and avoid "volunteer burn-out" (Participants #1, 6, 15 and 33), as many will be involved outside of their regular employment. One participant proposed that the committee be paid by Parks Canada for their time. At least the co-chairs must be paid full-time salaries, in order to keep the proposal moving along. Parks Canada and the establishment committee

would need to celebrate those people doing the work (i.e. the volunteers and the establishment committee itself). For example, in the establishment newsletter and on the website (discussed above) you could profile and recognize/acknowledge the work being done by the community members involved.

In a similar vein, participants agreed that the project would be complex, detailed and expensive. For example, significant financial support will be required to run an effective education campaign (Participant #37). Parks Canada's commitment must therefore include an ongoing provision of resources (Participant #17). They should also look for financial partners to be involved in this initiative, to broaden their support base and acquire more resources for the project. The public should be made aware of these commitments, to gain confidence in the process (Participant #36). Participants noted that Parks Canada should not try to "cut corners" or "back out of" their financial commitments later on (Participant #25). This has been experienced in some projects (not involving Parks Canada) in the past, which resulted in high levels of resentment (Participant #14). The public is often critical of fisheries management for lack of enforcement of regulations, and they are told this is because of a lack of resources, so it must be shown how this would be different (Participant #36). Parks Canada should not take on this project if there are not enough resources available, not only to see it through but also to enforce the designation. Finally, funding would need to be available to properly train local people to be affective managers of the NMCA once it is established (Participant #25).

Finally, participants agreed that to be effective there would need to be a collaborative partnership established between DFO and Parks Canada. Because DFO is responsible for fisheries management decisions, it would be necessary for them to be supportive of any changes proposed for within the NMCA boundaries. Also, there would need to be cooperative partnerships established with provincial government departments as well. Not only those departments responsible for environmental protection, but also the departments responsible for industries that use the Bay of Fundy; including: fisheries (e.g. aquaculture branch), tourism, economic development, and others. Because of the various jurisdictional differences and the fragmented marine conservation mandate in Canada, for a NMCA to be justifiable and provide real protection for the marine environment, a commitment from DFO and other government agencies, including the province, is required (Participants #7 and 13).

In regard to DFO, there would need to be cooperation and coordination at the Ministerial level as well as specifically with the fisheries management department, in order to establish an effective zoning pattern within the NMCA, which would be decided upon in collaboration with the establishment/management committee (Participants #5, 7, 18 and 34). This partnership with DFO fisheries management would need to be visible to the public and particularly inshore fisheries, in order to gain their confidence in the process and see a shift in power – that this is a genuine opportunity for change, to better the environment and coastal communities (Participants #5, 31, 34 and 35).

The question of when in the process to invite DFO and other government agencies is a good one. It is clear that Parks Canada should *not* approach DFO first, before going to the communities or developing the establishment committee. The process may be

perceived as too government-heavy and top-down if the community is approached with this government partnership already established (Participant #19). Instead, once there is local buy-in and the establishment committee has been solidified, it should be they who approach DFO and fisheries management looking for support. This will give the community confidence in Parks Canada, and also the committee some much deserved power for negotiating with DFO – if the community is already on-side DFO will feel the pressure and be much more inclined to cooperate, they could not simply squash an idea that has the support of the community and industries (confidential).

However, it is important to involve DFO and other government agencies early in the process (Participant #7), so that: they are committed right from the start and feel some ownership of the project; they do not feel they were purposely left-out and thus react defensively; they are seen to be working genuinely with the community; they understand the communities' perspectives; and they are part of the planning process so they can not simply reject ideas later on. The importance of government collaboration and cooperation on marine conservation and management projects is identified right in Canada's Ocean Strategy (DFO, 2002a) and in DFO's Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada (2002b).

Acknowledgement at the federal government level, of the critical importance of coordinating marine conservation initiatives, is very significant and supports the discussion above. Governments are expected to work together on these types of initiatives and successfully negotiate results suitable for all (Participant #31), since this is absolutely necessary for the development of a national network of marine protected

areas. Therefore, if Parks Canada and communities were working together effectively on NMCA establishment, DFO and others would have to come to the table.

There would also need to be collaboration with Transport Canada, in terms of supporting NMCA boundaries and educating the shipping industry about them; as well, enforcement of boundaries, especially in terms of reducing pollution (e.g. ocean dumping which is banned within a NMCA) and ballast exchange (Participant #2). It would also be useful to cooperate with Coast Guard, to share resources (e.g. boats, fly-over planes, and pollution officers). There is a federal government Memorandum Of Understanding over the sharing of resources (Participant #2).

Fortunately, in the region of interest around St. Mary's Bay/Brier Island, the core area of high conservation significance identified by King (2004) and Buzeta et al. (2003) is outside of the new TSS (see Figure 15), and therefore Transport Canada would not be in the position of having to approach the IMO with another amendment to the TSS, which Transport Canada would likely not support (Participant #2). However, the TSS currently does not reach out much past Brier Island. Therefore, before a core zone could be established it would be important to identify the shipping patterns in the region, the level of traffic, and whether it could be managed to fit with a NMCA there; also, whether any voluntary guidelines should be developed for vessel passage in the region.

In the St. Mary's Bay/Brier Island region, intergovernmental cooperation should be established from the beginning by partnering with the Sustainable Communities Initiative (the Annapolis/Fundy field team). This is a multi-government group involving municipal, provincial, and federal government field representatives from the various

environment departments or branches, who come together and discuss important issues in the communities and how to develop better, more trusting working relationships with them. An open door invitation has been made for First Nations participation as well, but they have not yet been involved.

7. Conclusions and Recommendations

"Conservation has to start with the people side of the equation" (Robert Rangeley, World Wildlife Fund). Therefore in this thesis I have used qualitative methods to interview members of the broad Bay of Fundy community to identify a location in the Bay of Fundy where the 'people' would support further discussion on NMCA establishment in their region, and an appropriate process for carrying this out. Among the benefits of this approach is that a wide range of relevant opinions have been obtained, which are open to analysis and synthesis. However, among the intrinsic limitations of the study (discussed in section 2.5 above), with respect to drawing firm conclusions, is that it is difficult to eliminate subjectivity. In particular, the motivation of participants was not examined, nor can these motivations be examined easily. Nevertheless, recommendations made by several participants who belong to differing interest groups are of special value in overcoming this limitation. The conclusions and recommendations outlined below are of this sort.

7.1 Location

According to participants, and from analysing their interview responses, it is clear that there is little chance of successfully pursuing discussions on NMCA establishment on the New Brunswick side of the outer Bay of Fundy. Although the area has high conservation significance, with memories of the West Isles Marine Park proposal still articulated, and without the support of the conservation community in the region, there is little chance of progress on NMCA establishment there. The Musquash Estuary Marine Protected Area proposal and other on-the-ground conservation initiatives are more

appropriate and more likely to succeed in this region. Also, there is a high reliance on marine industries in the area, especially the aquaculture industry, which is a very large employer and quite pervasive. Thus, in this region it would be very difficult to establish an effective no-take zone to protect an area of high conservation significance in the inshore. It is therefore recommended that Parks Canada not pursue discussions on NMCA establishment on the New Brunswick side of the outer Bay of Fundy.

According to participants, and from analysing their interview responses, it is clear that the Inner Bay of Fundy, including both the New Brunswick and Nova Scotia sides, is not an appropriate place to pursue discussions on NMCA establishment either. Although the upper Bay supports a number of important habitats and species, with the recent abandonment of the Nova Scotia component of the Biosphere Reserve initiative in the region, and the continued pursuit of Biosphere Reserve establishment on the New Brunswick side, there is little chance for positive dialogue around NMCA establishment in this region. The lack of support from the conservation community in the region, due to concerns over the impacts of increased tourism (associated with a NMCA) on the sensitive coastal areas and species, is a major disincentive for pursuing a NMCA in the region. As well, current conservation initiatives in the region, particularly a new Integrated Management Plan spearheaded by a local fishermen, is a far more appropriate conservation initiative to be pursuing in the region than a government-modelled NMCA. It is therefore recommended that Parks Canada not pursue discussions on NMCA establishment in the inner Bay of Fundy.

According to participants, and from analysing their interview responses, it appears that the Nova Scotia side of the outer Bay of Fundy – the St. Mary's Bay/Brier Island

region, *is* an appropriate place to pursue discussions on NMCA establishment. The benefits associated with this region are far more substantial than any identified either on the New Brunswick side of the outer Bay, or in the inner Bay of Fundy. Similar to the Fundy Isles region, on the New Brunswick side of the outer Bay, and the inner Bay of Fundy coastal areas, the St. Mary's Bay/Brier Island region has been identified historically and recently as being one of high conservation significance within the Bay of Fundy. However, unlike the West Isles and upper Bay, there has not previously been a broad-scale marine conservation project initiated here, by government or other national group. Compared to the lack of support from the conservation community on the New Brunswick side, or the focus on pursuing the IM plan in upper Bay of Fundy, the community organizations on the Nova Scotia side of the outer Bay of Fundy, including the St. Mary's Bay Working Group, the two Marine Resource Centres, and the Discovery Centre, are not necessarily at odds with NMCA establishment or Parks Canada. The conservation community working in the region would be supportive if they feel decisions are based on good science and will provide real projection. Similar feelings were expressed by the various local user groups and industries that rely on this region for their livelihoods: as long as this project was based in good science, and harvesting activities were not totally restricted, then they too would be supportive of discussing this further in the St. Mary's Bay/Brier Island region.

Therefore, it appears that in general community members in this region are in an appropriate mind-frame to participate constructively in discussions on NMCA establishment. Many expressed the need for a change, towards environmental protection and sustainable use, and there are strong community leaders in the region who are

interested in participating. As was identified by Lien (1999), it is critical that the goals of Parks Canada fit with the goals of the communities, and this appears to be the case in the St. Mary's Bay/Brier Island region. There is definitely an opportunity here to move forward with discussions, which was not seen in any of the other regions of the Bay of Fundy. Finally, most of the limitations identified could be tackled through implementing an appropriate establishment process for the region, one focused on open communication and education, in order to address the communities' concerns. In the end, the limitations do not sufficiently detract from the positive aspects of the St. Mary's Bay/Brier Island region for further discussion on NMCA establishment.

It is therefore recommended that if Parks Canada were going to pursue discussions on NMCA establishment in the Bay of Fundy that they focus on the St. Mary's Bay/Brier Island region, on the Nova Scotia side of the outer Bay. However, they would need to do so following a careful and appropriate process identified by the community.

7.2 Process

It is not possible to determine all the steps required for a successful NMCA establishment process in the Bay of Fundy without first identifying a general area of interest, because it is critical to understand the local context before solidifying a process and pursuing it. As Walters and Butler (1995) note "each prospective cooperative venture must be considered on a case-by-case basis…there is no single model for cooperative coastal conservation" (p.210). It is clear however that specific requirements and initial actions are needed for success anywhere in the Bay, and those identified by participants

in this study are very similar to those articulated by other authors as critical for success in Atlantic Canada. These include:

- committing to a bottom-up approach;
- clearly identifying a general area of interest and conservation needs;
- recognizing the interests of the local communities to ensure that their goals fit with those of Parks Canada;
- openly recognizing mistakes from the past, and identifying a new approach based on the lessons and principles learned from previous experiences;
- beginning by building trust through open communication;
- developing partnerships with community members and user groups so that the process can be community-led;
- forming a multi-stakeholder establishment committee;
- finding community leaders to co-chair the committee;
- beginning a public education campaign to dispel myths;
- seriously committing to success by allocating sufficient resources to the project; and
- forming committed and cooperative intergovernmental partnerships.

Authors such as Fenton et al. (2002), Lien (1999), and Walters and Butler (1995), examined community involvement in marine conservation initiatives in Atlantic Canada, and identified many of same key components for success (summarized in Table 6). This table is a good reference point from which to start discussing potential NMCA establishment in the Bay of Fundy. For positive results in the St. Mary's Bay/Brier Island region checkmarks would be required in virtually all of the rows in Table 6. In conclusion, Table 8 summarizes how those previously-identified important qualities for public involvement in NMCA establishment (from Table 6), could be applied to the St. Mary's Bay/Brier Island region.

Table 8: Summary of how previously identified important qualities of public involvement in NMCA establishment (from table 6) could be applied to the St. Mary's Bay/Brier Island region, on the Nova Scotia side of the outer Bay of Fundy

QUALITIES	ST. MARY'S BAY/BRIER ISLAND REGION
Appropriate timing and similar goals	*Section 6.1 of this thesis*
Case-by-case treatment of each proposed area (recognize uniqueness)	- further research and discussion with local champions
Trust	*Section 6.3*
Local empowerment	- by developing a communication network and establishing partnerships with community groups in the region
Public initiation of the process (won't always first be the public's idea, and that's okay)	- may be possible here if a local group, organization, or other local champions decide to pursue this on their own first (e.g. the St. Mary's Bay Working Group or MRC)
Advisory committee established and continuous involvement in decision making throughout	*Section 6.4*
Involvement of non-government intermediaries	- very important question of who should sit on the establishment committee, must be identified by local organizing body or individuals, and the co-chairs
Trusted expert support and assistance available to committee	- broad community representation on establishment committee, and partnerships with other groups working in the region
Government and public treated as equals in process	- government involved on establishment committee as an important resource, but not as the leader or facilitator of the group
Education	*Section 6.5*
Early public involvement in design of process	- using an appropriate education campaign designed for the communities by the establishment committee
Observable benefits from conservation well communicated before study	- critical component of the education campaign to gain public and industry support for the NMCA initiative the region
Long-term government commitment to communities	*Section 6.6*
Resources available	*Section 6.6*
DFO involvement	- critical to have support from fisheries management, and other intergovernmental agencies
Involvement in management	- future community-based management board
Accepting local answer	- if establishment committee recommends abandoning this initiative in the region, Parks Canada recognizes and respects this

These qualities of a successful NMCA initiative can be compressed into six broad initial steps to be pursued:

1) identify a region
2) recognize the damage of past mistakes
3) begin with building trust
4) create a non-governmental establishment committee and enlist local leadership
5) start an education campaign
6) make the long-term commitment needed and establish government partnerships

In this thesis I have identified a region and thus completed step one.

It is therefore recommended that if Parks Canada is going to pursue discussions on NMCA establishment in the St. Mary's Bay/Brier Island region, that a partnership be established with the Bay of Fundy Marine Resource Centre initially, and then together they can apply the important qualities of a successful process identified above to this region. Creating a dialogue between Parks Canada and Bay of Fundy Marine Resource Centre should be the very first step.

7.3 Future research needs

An initial step would be to compile all the biological information for the area, both from scientific research and also based on local and traditional knowledge of the region. Following this, as much of this information as possible should be mapped. This map should then be overlaid with layers identifying areas of conservation significance, areas of traditional or historic significance and current conservation efforts in the region. Finally there should be an overlay with identified areas of human activity in the region, including fishing, aquaculture, ship traffic, whale watching, and any others. Through GIS work this could produce a helpful visual reference for identifying where the areas of highest conservation value are in relation to the areas of highest human use. Also, the

map would help identify what user groups exist in the region to be involved. In order to be inclusive this map would have to be combined with an exhaustive list of all the community groups and initiatives being pursued in the St. Mary's Bay/Brier Island region, as well as the various government departments, their jurisdictions, and responsibilities there.

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Appendix 1 – Glossary

Bioherm –ancient organic reef of moundlike form built by a variety of marine invertebrates, including corals, echinoderms, gastropods, mollusks, and others. (Encyclopaedia Britannica Online, 2004)

Biotope – a region uniform in its environmental conditions and in the types of plants and animals living in it. (Webster Dictionary Online, 2004)

Cass analysis – writing a case study for each person interviewed or each unit studied (Patton, 1990: p.376).

Categorizing strategies – refers to a qualitative data analysis strategies that "attempt to generalize and abstract by generating concepts and even theories from the raw data" (Sullivan, 2001: p.453).

Contextualizing strategies – refers to a qualitative data analysis strategies that "attempt to treat the data as a coherent whole and retain as much of the raw data as possible in order to capture the whole context" (Maxwell, 1996 *In* Sullivan, 2001: p.453).

Coding – classifying of observations into a limited number of categories (Sullivan, 2001: p.453)

Cross-case analysis – grouping together answers from different people to common questions or analyzing different perspectives on central issues (Patton, 1990: p.376).

Exploratory research – carried out when theories and concepts are not well developed for a specific topic, and relies more on personal insight and creativity. May involve loosely structured interviews and less quantitative measuring devices "as a way of advancing conceptual and theoretical development" (Sullivan, 2001: p.92).

Grounded theory – a research methodology for developing theory by letting the theory emerge from the data, or be "grounded" in the data. With this theory there is continuous interplay between data collection, data analysis, and theory development (Sullivan, 2001: p.321).

Interview guide – a list of questions or issues that are to be explored in the course of an interview. An interview guide is prepared in order to make sure that basically the same information is obtained form a number of people covering the same material (Patton, 1990: p.283).

Multiple-item measuring devices – produce a quantitative score that is a composite of the subject's responses to a number of separate items (e.g. indexes and scales). Used when social phenomena are too abstract or complex to be measured accurately by and individual's response to a single question or statement (Sullivan, 2001).

Non-probability sampling - when "the investigator does not know the probability of each population element's being included in the sample" (Sullivan, 2001: p. 205).

Phytoplankton – microscopic algae suspended in that part of the water column in oceans and lakes that is penetrated by light (Ruppert and Barnes, 1994).

Probes – follow-up questions intended to elicit clearer and more complete responses. Sullivan (2001) explains: "probes can take the form of a "pause in the conversation that encourages the respondent to elaborate" (p.269), or suggested probes may be contained in the interview guide, or interviewers must think of them on the spot, or it could simply be a direct request for elaboration or clarification.

Profiles – are constructed by transcribing in-depth interviews and then identifying parts of the interview that seem to the researcher to be especially important in telling this person's story (Sullivan, 2001: p.461).

Trophic level – a segment of the food chain in which all organisms obtain food and energy in, basically, the same manner (e.g., photosynthesis, herbivory, or carnivory) and in which all organisms are the same number of links from the photosynthetic segment. (Webster Dictionary Online, 2004)

Zooplankton – microscope animals that are free-swimming or suspended in the water column of both oceans and lakes (Ruppert and Barnes, 1994).

Appendix 2 – Interview Guides

Question Set #1 (for local representatives):

1) Can you please explain in your own words what your association is with the Bay of Fundy? Do you rely on it for your income?

2) Are you concerned about the health of the Bay of Fundy environment? Why or why not? If so, what are your concerns? What do you think could be done about this?

3) Are you familiar with Marine Parks or National Marine Conservation Areas, as governed by Parks Canada?

4) Do you think it is useful to establish conservation areas to protect marine environments? Why or why not?

5) Do you think there are any particularly sensitive areas in the Bay of Fundy that should be protected from human use?

6) Do you think you, or your group/association/organization/community/etc. would support the establishment of a marine conservation area in your (or their) community? Would you support it elsewhere in the Bay of Fundy? If so, where?

7) What would it take for you (or your group) to support the establishment of a marine conservation area in the Bay; what would you need to see first?

8) Have you or your group/association/organization/community/etc. ever been involved in government-lead or community-lead initiatives/projects before? If so, how did they work out…was it successful? Why? Would you do it again? How can government learn from this?

9) What are the best ways to involve you or your group/association/organization/ community/etc. in government-run initiatives? What techniques should be avoided?

10) How significant would establishing a marine conservation area in the Bay of Fundy be to you, or your group? Are you: very supportive, generally supportive, somewhat supportive, not really supportive, not at all supportive (please choose one)?

11) Is there any other comments and/or information you think is important to consider, or any other thoughts you wish to share with me about this topic?

Question Set #2 (for professionals):

1) Can you please explain in your own words any association you have **professionally** with the Bay of Fundy?

2) Do you work in the field of marine conservation? Can you briefly describe what you do? (NOTE: may not be necessary to ask this if covered in the answer to the first question)

3) What is your perception of the health of the Bay of Fundy marine environment? Can you give examples?

4) Where are the significant/sensitive habitats or areas of concern (high risk) within the Bay?

5) *New*: how familiar are you with Parks Canada's program for National Marine Conservation Areas (NMCAs)? Do you have a good understanding of it?

6) Do you believe a NMCA *(or if not familiar any type of multi-use zonation, with a no-take area)* in the Bay would be a useful step towards its sustained health and productivity in the future? Why or why not?
What other alternatives might be more effective?

7) *In general,* do you believe there is support or resistance to the establishment of a NMCA in the Bay? Why? Where exactly (locations)? What about near the areas you identified above as being ecologically significant?

8) In your opinion, what groups/associations/organizations/communities/etc. would provide the greatest support to NMCA establishment in the Bay? Why?

9) In your opinion, what groups/associations/organizations/communities/etc. would provide the greatest resistance to NMCA establishment in the Bay? Why?

10) Are you familiar with other initiatives in marine conservation area establishment in the area? What were the strengths and weaknesses of this/these? How could this be done differently in the future (NOTE: if necessary)?

11) If you were given the task of developing a proposal for a marine conservation area in the Bay, what would be *your* initial step (both biological and social)?

12) Generally, what approach to involving community and the public would you suggest to ensure affective dialogue is established? (NOTE: if not answered above)

13) Is there any other comments and/or information you think is important to consider, or any other thoughts you wish to share with me about this topic?

Appendix 3 – Study Participants

1) *Member of the Bay of Fundy Community*

2) *Member of the Bay of Fundy Community*

3) *Member of the Bay of Fundy Community*

4) *Member of the St. George Community, NB*

5) *Upper Bay of Fundy Fisherman; NS*

6) *Member of the Conservation Community*

7) John Roff (Marine Protected Areas network system plan) – *Professor*

8) Mark Costello (Executive Director at the time, since moved on) – *Huntsman Marine Science Centre (formerly)*

9) David Wildish

10) Oliver Maass (Protected Areas Branch, Central Region) – *Nova Scotia Department of Environment and Labour*

11) Marianne Janowicz (Water and Marine Planning Section) – *New Brunswick Department of Environment and Local Government*

12) Robert Rangeley (Director of Atlantic office) – *World Wildlife Fund*

13) Janice Harvey (Marine Conservation Program Director) – *Conservation Council of New Brunswick*

14) Sue Scott (Vice-president communications) – *Atlantic Salmon Federation*

15) Terry Farnsworth – *NS Hand-liner*

16) Hubert Saulnier – *NS Gill Netter*

17) Wayne Spinney – *NS Lobster Fisherman*

18) Greg Thompson (lobster and scalloper) – *Fundy North Fishermen's Association, NB (**Not** representing association)*

19) Bill Whitman (fisheries field service representative) – *Nova Scotia Department of Agriculture and Fisheries (interview **does not** necessarily represent the views of my Department)*

20) Doug Bertram – *Innovative Fishery Products Inc.*

21) Rodney O'Neil – *Ex fisherman now involved in aquaculture*

22) Nell Halse – *New Brunswick Salmon Growers Association*

23) Michael Cox (Director of Lands Environment and Natural Resources) – *Confederacy of Mainland Mi'kmaq Nova Scotia*

24) Hugh Akagi – *Chief of the PassammaquoddyPeoples*

25) Tim Nye – *Fort Folly First Nation*

26) Kenneth Paul – *Tobique First Nation*

27) Judith Cabrita (Managing Director) – *Tourism Industry Association of Nova Scotia (TIANS)*

28) Real Robichaud – *Tourism Industry Association of New Brunswick (TIANB)*

29) Darryl Goyetche (General Manager) – *St. John Board of Trade*

30) Bob Maher (Chair) – *Southwest Nova Biosphere Reserve Association*

31) Arthur Bull (Chair) – *Digby-Neck Community Development Association*

32) Martin Kaye (Manager) – *Bay of Fundy Marine Resource Centre*

33) Mary Kenneally-DesRoches – *Nova Scotia Fishing-Community Member*

34) Maria Recchia – *Centre for Community-Based Management*

35) Jim Thurber (Warden) – *Municipality of Digby*

36) Stanley Smith – *Mayor of St. George*

37) Tim Henderson – *St. Andrews Assistant Town Manager*

Appendix 4 – Consent Form

Developing a strategic framework for the establishment of a National Marine Conservation Area in the Bay of Fundy.

Principal Investigator: Victoria Sheppard, BSc.
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B3H 3E2
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902-431-7652

Masters of Environmental Studies Candidate

Martin Willison (supervisor)
School for Resource and Environmental Studies
Dalhousie University
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Halifax, NS
B3H 3E2
martin.willison@dal.ca
902-494-2966

NOTE: *the principal investigator is the primary contact person for this study. Any comments, concerns or questions are encouraged and should be directed to the above address, or via email or telephone.*

Introduction
You are invited to take part in a research study at Dalhousie University, which is being conducted as part of the Masters thesis research of Victoria Sheppard. The report is also in part for the Canadian Parks and Wilderness Society Nova Scotia chapter (CPAWS-NS), of which I am a board member and volunteer. Taking part in this study is voluntary and you may withdraw from the study at any time. Also, throughout the course of the interview you may decline to answer any question, or my completely terminate the interview if you so wish; this will in no way impact negatively on you, nor will it affect my performance evaluation. The study is described below. This description tells you about what you will be asked to do, and any risks, inconvenience, or discomfort, which you might experience. Participating in the study might not benefit you immediately, but I will learn things that could benefit everyone in the future. You should discuss any questions you have about this study with me at the start of the interview; you are welcome to stop the interview for clarification at any time, and to contact me later on as well.

Purpose of the Study
The purpose of this study is to see whether it would be possible to establish a National Marine Conservation Area (NMCA) in the Bay of Fundy. I am interested in where the best places might be, taking into consideration both the biological environment, and the socio-economic state of different areas within the Bay. It is important that a NMCA be located in an area where there is local support and an interest in involvement. I am interested in learning how this can be achieved.

Please note: Parks Canada's program of National Marine Conservation Areas has been established to protected representative areas from each of 29 distinct marine regions, which they have delineated. This network of protected areas would not only conserve unique marine features in each area, but would also be managed for visitors to "understand, appreciate, and enjoy in a sustainable manner". Atlantic Canada has been divided into 4 such marine regions, of which the Bay of Fundy is one. Further information can be obtained by going to www.parkscanada.ca and following the links for National Marine Conservation Areas.

Study Design
This study has two phases. The first is an intensive literature review to learn about the biology of the Bay of Fundy, past marine park proposals, and community life in the region. The second phase involves interviews. I am traveling around the Bay interviewing people from different groups and communities. I want to see how people view the idea of marine conservation areas, and to understand their perspectives.

Who can Participate in the Study
You have been asked to participate in the study because you have been identified as a representative member of the Bay of Fundy community who may have an interest in this subject.

Who will be Conducting the Research
I, Victoria Sheppard, am the principal researcher for this project. I will be carrying out all the research and writing the report. My supervisor, Professor Martin Willison of Dalhousie University, and David Millar, Chapter Coordinator of CPAWS-NS, will provide assistance throughout.

What you will be asked to do
You are being asked to answer interview questions as part of this study. The interview is semi-structured and asks open-ended questions. The interview will last between 1 ½ to 2 hours. You may take a break at any time if you so wish. I may also wish to contact you later for follow-up questions, or clarification on answers from the first interview, if you will permit me to do so. If you consent, this initial interview will be audiotaped in order to assure accuracy in the report. I will also ask you to make certain choices about the level of anonymity you wish to have, and sign this consent form. I will give you a copy for your personal records.

Possible Risks and Discomforts
There is minor risk posed to you by participating in this specific study.
- If this is a personal or emotional issue for you, discussing some of the questions may agitate you.
- You may not feel comfortable being the sole representative of your group or association, and therefore may wish to speak only from a personal level if you so choose, please inform the principal researcher of this at this time
- You may feel wary that this report could spark the idea of developing a proposal for a NMCA in the Bay of Fundy
- This study is **not** necessarily the first step towards developing a NMCA in the Bay of Fundy. However, should this be pursued in the future, you or your affiliated group (if you agreed to be named in the report) could potentially be contacted for involvement in developing the proposal

Possible Benefits
There are few immediate direct benefits to you from participating in this individual study.
- You may feel personally satisfied having your views heard and your opinion recorded, especially if this issue is of special importance to you
- You may feel you are helping my research by contributing your knowledge and experiences
- If the framework laid out in this report was used to develop a proposal for a NMCA in the Bay of Fundy in the future, you might be contacted (if you consent to having your name published in the report) for involvement in the process

Compensation/Reimbursement
There will be no compensation or reimbursement for involvement in this study.

Confidentiality
All attempts will be made to ensure your anonymity is respected in this study. It is Dalhousie University policy that all data be stored securely by the University for 5 years, post publication. Therefore audiotapes and notes from the interview will be stored in a locked location for five years, accessed by the principal researcher (Victoria Sheppard), and her supervisory committee only.

You will be asked to choose the level of anonymity you wish to have in the report (in the Signature section below). Please make your choice carefully and ask for any clarification if necessary.

New Information
In carrying out this study, should the principal research receive any information that may affect your decision to participate in the project, or the level of anonymity you may wish to have in the report, you will be contacted immediately, and given the chance to amend your previous decisions.

Problems or Concerns
In the event that you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Human Research Ethics/Integrity Coordinator at Dalhousie University's Office of Human Research Ethics and Integrity for assistance: ph. 902-494-1462, email patricia.lindley@dal.ca

Signature Page

I _____(PLEASE PRINT)_____ have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However I realize that my participation is voluntary and that I am free to withdraw from the study at any time.

I understand the choices for anonymity (below) and have had a chance to ask for clarification about them. I also understand that although all efforts will be taken to ensure that my choice protects my privacy, this cannot be guaranteed by the principal researcher.

*Note: please circle your choice (**do** or **do not**) in each statement below, and initial beside each statement to confirm your selection; there are a number of options relating to anonymity available to you, please read the entire list carefully before making your selection!*

_____ I (**do** or **do not**) wish to be referred in the report only as "a member of the
(initial) Bay of Fundy community"

_____ I (**do** or **do not**) wish to be referred to in the report only as "a member of
(initial) _____ community"

_____ I (**do** or **do not**) wish to be referred to in the report only as "a member of
(initial) _____ group/organization/association/university/other _____"

_____ I (**do** or **do not**) wish to be referred to in the report only by name
(initial)

_____ I (**do** or **do not**) wish to be referred to in the report using a combination of my
(initial) name and my affiliated group/organization/association/university/other

_____ I (**do** or **do not**) object to the principal researcher using an audio-recorder
(initial) throughout this interview

_____ The principal researcher (Victoria Sheppard) (**may** or **may not**) quote me
(initial) directly, using the reference style I have selected above

_____ The principal researcher (**may** or **may not**) contact me later if further
(initial) questions arise related to this interview.

_____
participant's signature

_____
date

_____
principal researcher – Victoria Sheppard

_____
date

Signature Page

I _____(PLEASE PRINT)_____ have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However I realize that my participation is voluntary and that I am free to withdraw from the study at any time.

I understand the choices for anonymity (below) and have had a chance to ask for clarification about them. I also understand that although all efforts will be taken to ensure that my choice protects my privacy, this cannot be guaranteed by the principal researcher.

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(initial) Bay of Fundy community"

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(initial) _____ community"

_____ I (**do** or **do not**) wish to be referred to in the report only as "a member of
(initial) _____ group/organization/association/university/other _____"

_____ I (**do** or **do not**) wish to be referred to in the report only by name
(initial)

_____ I (**do** or **do not**) wish to be referred to in the report using a combination of my
(initial) name and my affiliated group/organization/association/university/other

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(initial) throughout this interview

_____ The principal researcher (Victoria Sheppard) (**may** or **may not**) quote me
(initial) directly, using the reference style I have selected above

_____ The principal researcher (**may** or **may not**) contact me later if further
(initial) questions arise related to this interview.

_____
participant's signature

_____
date

_____
principal researcher – Victoria Sheppard

_____
date

Appendix 5 – Aboriginal Fisheries Licences for the Bay of Fundy, 2002

FIRST NATION	Large Commercial fisheries in the Bay of Fundy (scallop, lobster, sea urchin)		TOTAL FOR NOVA SCOTIA
Acadia First Nation, NS; Mi'kmaq	1 Full-Bay Scallop		22
Annapolis Valley First Nation, NS; Mi'kmaq	1 Full Bay Scallop 1 Lobster (LFA 35)		2
Chapel Island First Nation, NS (Cape Breton); Mi'kmaq	N/A		1
Eskasoni First Nation, NS (Cape Breton); Mi'kmaq	2 Full-Bay Scallop		19
Fort Folly First Nation, NB; Mi'kmaq	1 Mid-Bay Scallop 1 Lobster (LFA 35)		4
Glooscap First Nation, NS; Mi'kmaq	N/A		9
Indian Brook First Nation, NS; Mi'kmaq	N/A (note: no long-term agreement)		9
Kingsclear First Nation, NB; Maliseet	1 Mid-Bay Scallop 2 Lobster (LFA36 and 38) 2 Sea Urchin (Areas 38 and 36)		5
Membertou First Nation, NS (Cape Breton); Mi'kmaq	1 Full-Bay Scallop		5
Millbrook First Nation, NS; Mi'kmaq	2 Full-Bay Scallop 3 Lobster (LFA 35)		12
Oromocto First Nation, NB; Maliseet	1 Full-Bay Scallop 1 Mid-Bay Scallop 4 Lobster (LFA 36) 1 Sea Urchin (Area 36)		11
St. Mary's First Nation, NB; Maliseet	1 Lobster (LFA 36) 1 Sea Urchin (Area 36)		3
Tobique First Nation, NB; Maliseet	4 Full-Bay Scallop 1 Mid-Bay Scallop 1 Scallop (unknown) 3 Lobster (LFA 38) 2 Sea Urchin (area 38)		13
Wagmatcook First Nation, NS (Cape Breton); Mi'kmaq	N/A		6
Waycobah First Nation, NS (Cape Breton); Mi'kmaq	N/A		6
Woodstock First Nation, NB; Maliseet	2002 1 Lobster (LFA 38) 1 Sea Urchin	2003 1 Full-Bay Scallop 1 Mid-Bay Scallop 4 Lobster 3 Sea Urchin	2 (Swordfish and Herring weir)
New Brunswick Aboriginal Peoples Council	1 Mid-Bay Scallop 1 Lobster (LFA36 and 38)		5
Native Council of Nova Scotia	N/A (1 Lobster in LFA 34)		28
TOTAL	42 LICENCES in 2002		162 LICENCES