Parks Canada's National Marine Conservation Areas
Can we sink a ship in these waters to create an artificial reef and dive site?

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Abstract

Current marine policy in Parks Canada indicates that creating an artificial reef for display purposes or sinking a vessel for recreational diving is not permitted in a national marine conservation area. Interviews and consultations of lawyers and experts in artificial reefs, environmental law, and Parks Canada policy were conducted; and historical and interpretive analyses of Parks Canada marine policy and domestic and international law were completed. The combined rich data was used to determine whether new marine policy developed under the recent *National Marine Conservation Areas Act, 2002* could contain the same prohibition against sinking a ship or creating an artificial reef as the current policy. The results indicated that current policy trends seem to favour visitor experience, that the conservation mandate serves the "for the people" mandate, that the precautionary principle found within the *NMCA Act* is designed to change with societal norms, and that the *NMCA Act* itself does not prohibit the creation of an artificial reef provided it does not harm the marine ecosystem.

Acknowledgements

It is hard to believe that this project which represents the culmination of hundreds of hours of research is coming to an end. As I do the final editing and send off various emails to those who have been an integral part of the development of this thesis, I realize there are so many people to thank.

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My mother and best friend has been a solid rock of encouragement. Had she not come with me on the first trip across the country to return to school after a 25 year hiatus, I probably would have turned back to BC before reaching Calgary. Her ongoing prayers and willingness to listen to me excitedly share the latest research discovery (which I'm sure was only interesting to me) were a rich blessing.

Samantha and Jonathan, how can I express my love and pride in you? We have joked about your style of encouragement Sam, but seriously, the night I phoned you in tears about how hard school was and your response was "Mom, you have wanted to be back at school for years. Well, now you are there. Suck it up princess," is indelibly etched in my brain. Best encouragement ever. Jonathan, your hugs and constant support got me through many migraines and late nights writing. You both are amazing, resilient, intelligent, and talented people and I am proud to be your mom.

This is just the beginning…

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Acronyms and Additional Notes

NMCA Act	Canada National Marine Conservation Areas Act
CEPA	Canadian Environmental Protection Act
DFO	Fisheries and Oceans Canada
GPOPs	Guiding Principles and Operating Procedures 1994 policy
nm	nautical miles
CBA	Cost Benefit Analysis
IMO	International Marine Organization
EEZ	Exclusive Economic Zone
IUCN	International Union for Conservation of Nature

Notes:

Parks Canada Agency: Even though Parks Canada has changed names several times and been shuffled between several governmental portfolios, in this thesis, unless it is particularly germane, the entity will simply be called Parks Canada.

Where italics have been added to a quote for emphasis it is noted. If italics (or word capitalization) were in the original, no note was deemed necessary.

Does Parks Canada actually create an NMCA?

Although this thesis (and indeed much of the literature referenced) refers to Parks Canada as the creator of National Marine Conservation Areas, it is in fact the Governor in Council through Executive Order that adds new areas to Schedule 1 of the *NMCA Act***.** Section 5.1 states that "for the purpose of establishing or enlarging a marine conservation area… the Governor in Council may, by order, amend Schedule 1 by adding the name and a description of the area…" This also applies to reserves created under the *NMCA Act.*

The establishment protocol calls for the proposed amendment to Schedule 1 and a report containing information concerning consultations, any agreements respecting the establishment of the area or reserve, mineral and energy resource assessments, and an interim management plan, to be laid before each House of Parliament and the appropriate standing committee of the House of Parliament. This report and preparatory research would be coordinated and prepared by Parks Canada.

Chapter 1: Research Rationale

1.1 Introduction

The impetus for this thesis came from the mayor of Nipigon, Richard Harvey. Nipigon is a small community which sits on the northern shore of Lake Superior and is contiguous to one of Parks Canada's National Marine Conservation Areas (NMCA). As part of an economic diversification strategy, Richard Harvey and other stakeholders were discussing the viability of a dive tourism industry and wanted to know if a ship could be sunk in the Lake Superior National Marine Conservation Area to create an artificial reef and dive site.

In the early stages of researching this topic I came across a tiny paragraph tucked in the middle of Visitor Services and Facilities in a Parks Canada policy document, known internally as GPOPS, but officially as Parks Canada's Guiding Principles and Operational Policies. Section 4.3.3 states,

> The establishment of artificial reefs to attract marine organisms for display purposes, the intentional sinking of vessels or other man-made objects for recreational diving, and similar facilities *will not be permitted* in marine conservation areas (italics added, Parks Canada, 1994, p. 60).

It seemed my research question, can we sink a ship in these waters, was answered and I was going to have to find a new thesis topic. However, a fortuitous phone call and follow-up emails with various Parks Canada personnel indicated that since the policy was dated, and a new one being developed, perhaps a closer investigation was warranted.

Support for continuing the research was also found in the GPOPS explanatory notes prefacing the section titled National Marine Conservation Areas Policy. Two paragraphs stand out:

> In Canada, the establishment of marine protected areas is in its infancy. Although a national marine parks policy was produced in 1986, it was not based on practical experience. Since then, further study and consultation have led to a clarification of the

> concept that demonstrates the differences between terrestrial national parks and the needs for marine area management...
>
> As Parks Canada acquires operational experience in the establishment and management of marine conservation areas, *it will be necessary to reassess elements of this policy to ensure that they are workable.* Appropriate consultation will occur before any changes are made to the policy (italics added, Parks Canada, 1994, p. 45).

The significance of these statements is three-fold: the acknowledgement of a lack of experience in marine protected area establishment; the recognition of the differences between terrestrial and marine areas and that management plans need to be tailored for each; and that as time passes, policy reassessment will be an integral part of ensuring ongoing applicability. Currently, Parks Canada is developing new marine policy to integrate the 1994 policy with the *Canada National Marine Conservation Areas Act, 2002* (*NMCA Act*), define ecological sustainable use, and develop zoning guidelines for marine conservation areas (Office of the Auditor General of Canada, 2012; D. Yurick, personal communication, June 19, 2013).

The serendipitous timing of Parks Canada's marine policy writing and my initial forays into Parks Canada policy in light of the new *NMCA Act, 2002*, provided motivation to delve deeper into the issue. By exploring policy and defining certain terminology and concepts found in Parks Canada policy, documents, and legislation, the research attempted to find clarification and possibly determine the tenor of the current administration's interpretation of Parks Canada's dual mandate of conservation and use. National marine conservation areas are established for two reasons: to protect and conserve representative areas of the three oceans surrounding Canada, as well as the Great lakes, and to encourage the enjoyment, appreciation, and understanding of these marine areas (Dunsmuir, 2001). The Honourable Tom McMillan, then Minister of the Environment, shared the following thoughts regarding this dual mandate in his address to the Canadian Assembly on National Parks and Protected Areas:

> Frequently the debate [decisions associated with parks] deteriorates into a dialogue of the deaf because it has been structured around a false dichotomy… As the former

> Minister of Tourism, I am aware of the increased tensions between conservation and tourism – between preservation and use… I believe that common sense provides a foundation for resolving seemingly contradictory points of view. In the past, for example, there has been a sense that preservation and use were mutually exclusive and needed to be ranked. I think ranking is exactly the wrong approach. There can be no use without preservation, for, if the parks are not preserved by those of us who use them, after a while what will be left of them to use? At the same time, the parks were created and preserved for people to use and appreciate. Why else establish them in the first place? Indeed the National Parks Act itself, embodies the dual principles of preservation and use – the two go hand in hand. (Parks Canada, 1985, pp. 231-232)

The conservation and use dilemma can be like a dog chasing its tail at times. Ecological integrity (conservation) is upheld as the first priority, but if it is defined within very narrow conservation-oriented parameters, the human element and their use and enjoyment of the park needs to be eliminated from the equation (LeRoy & Cooper, 2000; Dowie (2009) discusses this in the context of displacement of Aboriginal peoples for the establishment of conservation areas). If a more liberal interpretation is afforded the conservation end of the argument, then ecological integrity is at risk as use escalates, and the parks, as places people can use and enjoy, are compromised. (Searle (2000) indicates that tourism and development of visitor services are the greatest threat to ecological integrity in Canada's national parks.) A primary theme of the research was to ascertain where Parks Canada policy and the *NMCA Act* was situated along the continuum of conservation and use. To answer the question, can we sink a ship within a National Marine Conservation Area (NMCA) to create an artificial reef and dive site, deliberative and interpretive policy analysis was conducted to discover whether there was a pattern in Parks Canada policy that may provide a clue as to what approach this new marine policy would take. This is discussed in Chapter 2: The Evolution of Parks Canada's Marine Policy.

Chapter 3 first examines the global context of fisheries sustainability, concern for the health of the world's oceans, and Canada's international obligations to setting aside 10% of

marine environments as protected areas[1]. Currently, Canada has set aside 61, 713 km^2 of marine protected areas, less than 1% of the total 7 million[2] km^2 of marine territory under Canada's jurisdiction (Government of Canada, 2010; Dearden & Canessa, 2009). Parks Canada's national marine conservation areas (and marine parks and reserves) contribute approximately 36% of that one percent. In other words, Parks Canada has created over 1/3 of all MPAs in Canada. For comparison, Environment Canada has contributed nearly 32% of marine protected areas, and DFO is just under 17%. (See Table 3.2 in Chapter 3.)

Chapter 3 also covers the development of domestic law and strategies to fulfill the mandate of creating marine protected areas through Fisheries and Oceans Canada (DFO), Environment Canada, and Parks Canada. Although there are many organizations and levels of government participating in the creation of MPAs, for the purpose of this thesis, only Parks Canada's role is discussed. In addition, within the context of the International Union for Conservation of Nature's (IUCN) definitions of MPAs, legislation and court cases concerning the *National Parks Act* admonition of having ecological integrity as a first priority in the management of parks are explored. Finally, a possible IUCN related reason for the GPOPs 4.3.3 prohibition is offered.

The results of analysing the *NMCA Act* are provided in Chapter 4 along with an in-depth philosophical and practical discourse concerning the precautionary principle, a contentious term which has been added to many pieces of legislation in Canada and other States, as well as international legal mechanisms such as Conventions and Protocols. One of the legislative arguments presented uncovered a major policy conundrum within Environment Canada's

[1] At the time of the release of Parks Canada's first official marine policy in 1986, Parks Canada was the only federal entity creating protected marine areas, despite international mechanisms and agreements. See Chapter 2 and the section titled National Marine Parks Policy, 1986 for further discussion.
[2] DFO puts this number at 5.7 million (Government of Canada, 2010). The calculations in this paper are based on the 7 million estimate (Dearden & Canessa, 2009), however, using the 5.7 million estimate gives a value of 1.08 % compared with .88% based on 7 million.

Disposal at Sea permitting process, affirming the International Maritime Organization's call for States to develop a permitting process for the placement of artificial reefs (which would also contain environmental rules and standards for proponents to abide by). The interrelatedness of the *Canadian Environmental Protection Act, 1999, NMCA Act, 2002*, and the international *London Convention (1972) and Protocol (1996)* regarding the definitions of "waste" and "disposal" is explored as well.

Chapter 5 brings the thesis to a conclusion with a summary discussion of the salient arguments presented in the preceding chapters. Topics for further research are also suggested.

1.2 Research Objectives

The primary research question was: Can we sink a ship to create an artificial reef and dive site within a national marine conservation area? The obvious source was to examine the legislation associated with NMCAs and so the guiding question for the research focus became:

- What does the *National Marine Conservation Areas Act, 2002* say about sinking a ship to create an artificial reef and dive site?

From the initial literature review and purview of the *NMCA Act*, five research questions were posed:

1. What are marine protected areas and how are they related to national marine conservation areas?
2. What was the evolution of Parks Canada's marine policy leading up to the GPOPs and its prohibition of creating artificial reefs for certain tourism related purposes?
3. What is the meaning of the precautionary principle and how might it affect the interpretation of the *NMCA Act?*
4. What is ecologically sustainable use?
5. What is the role of international law in the interpretation of the *NMCA Act*?

1.3 Methods

1.3.1 Historical and Interpretive Analysis

The approach for much of the thesis, but particularly for the section about the evolution of Parks Canada's marine policy and the analysis of the *NMCA Act*, rests on historical research, and interpretive policy and legislative analyses. Historical analysis "…is a systematic process of describing, analyzing, and interpreting the past based on information from selected sources as they relate to the topic under study" (Weirsma & Jurs, 2009, p. 254). Weirsma and Jurs point out: that the analysis is based on logical induction; the technique draws upon qualitative and quantitative research methods; interpretation is dependent upon the larger context in which the topic is situated; and interpretation is multiplied (the original document was written by someone who was interpreting context, and is again interpreted by the researcher).

It did not take long before the question of whose interpretation was correct arose. As Ellenwood (2006) wisely observed,

> History requires a recognition of the importance of understanding the full context of events—the deeper causes and the long range consequences. Of course, there are many versions of the past, and that fact itself also asks that we slow down and think clearly about both the veracity of each version and the subsequent implications for actions. (p. 23)

When various authors' interpretations of past policy did not seem to line up with the actual document itself, a willingness to approach the document with new eyes and a decision to let the document speak for itself guided the analysis (Yanow, 2007). Certainly historical context would play a role in how the policy should be interpreted, but it was deemed important to broaden the context to include strides in scientific research of ecological integrity and understanding of ecosystem management.

Historical research provides perspective within which to frame current decisions (Weirsma and Jurs, 2009). It informs today's context and can bring understanding to current

situations, guiding the process of thought. In the earlier quote from Parks Canada was the acknowledgement of needing to learn from past experiences. In the context of policy development, history can contribute perspective and prevention (Graham, 1980). Understanding the past can bring clarity to the present and looking back can reveal trends of thought not apparent at the time as well as reveal parallels between present and past (Graham, 1980).

Deliberative and interpretive policy analysis have evolved from a predominantly empirical approach to become more closely aligned with qualitative philosophies and methodologies (Fischer, 2003) which use "observational, communicative, and documentary methods in natural settings" (Riehl, 2001, as cited in Sadovnik, 2007, p. 417). Yanow (2007) observes that, contrary to the early nineteenth century positivist philosophical viewpoint that principles of social behaviour could be determined by "systematic application of human reason, …the human social world is different in significant ways from the world of nature and physical objects and forces. One difference is the centrality of meaning-making to human life" (p. 407). Drawing a comparison between quantitative *numbers* based analysis and interpretive (qualitative) *words* based analysis, Yanow states, that "policy-relevant actors deliberate through words…[and] researchers use those words as their data in seeing meanings and sources of meanings" (p. 407). The result is the difference between numerical statements (e.g. there are 2 NMCAs in Canada) and giving meaning to those numbers (e.g. Canada is moving at a glacial pace in response to its international obligations to establish marine protected areas). It is this ability to derive meaning that "makes interpretive methods particularly suitable for argumentative, deliberative, and other such approaches to policy research" (p. 408). According to Fischer (2003), the post empirical methodologies adopt "the informal logic of practical reason" (p. 220), analysing an issue within its own unique context; it employs a hermeneutical approach of

interpretation and meaning finding. The contextual analysis underpinning policy analysis demands establishing interconnections between empirical data, normative assumptions, interpretation of the data and results, and of course, context (Fischer, 2003).

Inherent in interpretive analysis is reflexivity, the researcher's acknowledgement of self (personality, life experiences, values, education, etc.). It is a realistic understanding that perception and interpretation of research will be coloured by self. Yanow (2007) elucidates the significance of reflexivity, broadening the implications of multiple meanings to legislative and policy analysis. When creating policy for Parks Canada for instance, the policy makers are interpreting legislation not only through standards of a formative framework, but from their own understanding of legislation and of the purpose of the policy they are writing.

Interpretive analysis is also aware of ambiguities that exist at multiple levels of interpretation adding layers of interpretation (or as stated earlier in the description of historical research, the interpretation is multiplied) (Yanow, 2007). Wagenaar (2007) affirms we live in a complex world of uncertainty and ambiguity, and so making definitive interpretations of this world is challenging. The precautionary principle for instance, as examined in Chapter 4, thrives in complexity and change because of its adaptability to societal shifts in focus and values.

Within an interpretive inquiry approach, data can be analyzed in numerous ways. Frame analysis was employed in the analysis of Parks Canada's marine policy. Frame analysis consists of picking out the language used to "frame" or define a particular theme, in this case, two seemingly opposing mandates, conservation and use, and then identifying the values connected with each theme (Yanow, 2007). Often used in mediation, this was an effective approach to understanding the dual, at times conflicting, mandates present in policy, legislation, and in practise.

The philosophical assumptions comprising the methodology of this thesis are an integration of worldviews but best summarized in Neuman's (2000) definition of Critical Social Science (CSS): "In general, CSS defines social science as a *critical process of inquiry that goes beyond surface illusions to uncover the real structures in the material world in order to help people change conditions and build a better world for themselves"* (p. 76). CSS is an approach that is action oriented and transformational. It seeks to empower people and is grounded in realism, understanding that "social reality evolves over time" (p. 77). Communities and other stakeholders need to have accurate information if they are going to engage with Parks Canada in NMCA negotiations. With Parks Canada currently developing management plans for the Lake Superior National Marine Conservation Area and the Gwaii Haanas National Marine Conservation Area Reserve, while also seeking to establish NMCAs in all 29 identified marine regions, there are potentially many stakeholders who will need to understand what the *NMCA Act* says. In addition, given the collapse of several major fisheries in Canada[3] and the fact that artificial reefs are used world-wide as a fisheries management tool, many doubling as tourism sites providing economic benefit to nearby regions (London Convention and Protocol/UNEP, 2009; Marseille City Council, 2013), Parks Canada may find themselves overseers of valuable marine protected areas and negotiating with stakeholders over the necessity of management tools geared towards fisheries sustainability, not just esthetically pleasing places for people to enjoy.

1.3.2 Group One Interviews

There were two groups of interviews conducted for this research, both of which were approved by the Research Ethics Board at Lakehead University. The first was comprised of semi-structured, interactive interviews lasting from 1 to 3 hours. The second group of interviews were

[3] Atlantic cod in the 1990s, (DFO, 2009); BC sardines in 2013, (Pynn, 2013); Pacific herring by the 1970s and today, (Shore, 2014)

more narrowly focused to gain specific information concerning isolated aspects of the research. As per university ethics guidelines, all participants indicated their desired level of anonymity. All participants mentioned in this thesis gave their permission to be named and have had the opportunity to vet their contributions.

The 5 initial interviews, arranged in advance, were conducted in Vancouver in person, from May 7 – 10, 2013. A list of prepared questions was emailed prior to the interviews. Consent letters explaining the content and format of the interview were emailed ahead of time or provided at the beginning of the interview and signed prior to the interview, as per university ethics guidelines (Tri-Council Policy Statement, 2010). The interviews were digitally audio recorded. Additional notes and observations were made throughout the interview process. Often the participants had documents to support the discussion, or provided references for further exploration. The recordings were transcribed in entirety and coded for predetermined and emergent themes, then analysed manually (Saldana, 2009). Key words, phrases, and themes were identified and categorized (Creswell, 2009). A copy of the participant's contribution to be included in this thesis was later sent to the participants, giving them the opportunity to validate or change the information collected. The resultant "rich" data[4] was eventually integrated with the historical and interpretive analysis, and the in-depth literature study.

Participants for the first group of semi-structured interviews were selected according to the purposive sampling technique (i.e. specific candidates are selected to be interviewed based upon their knowledge and specialization; Cresswell, 2009). Globally, there are not many experts in sinking ships who are conversant in international and domestic law, explosives, diver safety,

[4] Rich data encompasses a process, described by Maxwell (2009) and Becker [as cited in Maxwell, 2009], that enables "data that are detailed and varied enough that they provide a full and revealing picture of what is going on" (p. 244).

marine ecology, and environmentally safe practices of preparing ships. Tom Beasley*[5] (BA, MA, LLB) and Jay Straith* (LLB) provided interviews and data regarding their experiences of sinking ships, as well as addressing legal issues inherent with those projects. Jay provided further research and documents associated with his global work with Canadian Artificial Reef Consulting. Roy Mulder* (Marine Life Sanctuaries Society, President) set the stage for understanding some of the issues surrounding conservation in marine environments and the political minefield of international organizations, federal jurisdictions of DFO and Parks Canada, provincial authorities, and NGOs. Wayne Bourque* (retired, Parks Canada) was very helpful for understanding the management and operational factors of Parks Canada and discussed some of the internal history of the development of the 1994 GPOPS and the *NMCA Act*. Other Parks Canada staff directed me to various public documents concerning NMCAs and MPAs.

1.3.3 Group Two Interviews and Additional Contacts

The initial interviews informed the research as explained and instigated snowball sampling, also known as the chain referral method (Neuman, 2000). This second group of people provided interviews, referrals, and/or references and were contacted by phone and/or email. They consisted of 1) participants who had been referred and 2) authors who were experts in their field. The phone calls were usually preceded with an introductory email describing my research, how I received their name, and a request for information, usually of a specific nature. Each person gave their permission, if they were quoted, and a copy of their contribution was provided so they could validate or edit it. Doug Yurick* (retired, Parks Canada) provided a summary of the rationale for Parks Canada's GPOPs 4.3.3 section prohibiting sinking a ship. Mel Turner*, BC Parks (retired) provided perspective on Parks Canada policy and management practices. Shaun Fluker*, environmental lawyer, professor at University of Calgary Faculty of

[5] An asterisk beside a name indicates that a brief biography is provided in the Appendix.

Law, and author of several articles and a book chapter regarding ecological integrity and Parks Canada, gave ear to my suggested argument concerning ecological integrity and marine conservation areas. Evelyne Meltzer* (LLB, LLM; DFO, Chief, Marine Policy, retired); Julie Abouchar, partner Willms & Shier Environmental Lawyers LLP and Environmental Law Specialist (certified by the Law Society of Upper Canada); and Marko Ahteensuu (PhD, University Researcher and Adjunct Professor, University of Helsinki) provided information and references regarding the precautionary principle. Linda Porebski*, Chief of Marine Protection Programs at Environment Canada was quite conversant in The London Protocol and the ramifications of the "Disposal at Sea" process. Carey Ogilvie, Head of Environmental Assessment North for the Northwest Territories and Nunavut at Environment Canada, provided clarification of the legal authority for environmental assessments in the north. Colby Self (Director, Ship Recycling Policy, Basel Action Network) sent information concerning the HMCS Annapolis and the PCB problems associated with its future artificial reef status.

Closer to home, Greg Stroud and Cindy Giardetti, Parks Canada's Lake Superior National Marine Conservation Area staff, provided feedback and clarification of Parks Canada policy and ethos. Others who contributed their time and knowledge were Richard Harvey (Mayor of Nipigon), Mike Walton (former Field Unit Superintendent, Northern Ontario, Parks Canada), Winston Stairs (freshwater diver and researcher), Ray Boudreau and Hoss Pelletier (LSNMCA, Parks Canada).

1.4 Limitations and Delimitations

The literature review was far more extensive than is represented in the references section, as the references just record credit given to authors whose ideas and concepts were used in the writing of these chapters. The idea of including the greater bibliography came too late to capture much of the literature accessed but not referenced.

In the course of researching for this thesis many articles and reports were read about the benefits of artificial reefs. The assumption for this thesis is that artificial reefs may be controversial (usually due to pollution associated with careless dumping of materials not suited for a dynamic marine environment), but have been an accepted part of ecosystem and fisheries management for centuries (London Convention and Protocol/UNEP, 2009). They are used as fisheries remediation, habitat restoration, for thwarting poachers, to ameliorate heavy diving and tourism traffic on existing reefs, and for recreational, educational and tourism purposes. Considerable research was also done on the sinking of ships to create artificial reefs and dive sites, both in saltwater and freshwater, but was not included in this thesis.

The focus on the *National Marine Conservation Areas Act* was challenging as I am not an expert in law. My statutory analysis provided in Chapters 3 and 4 was not intended to be, nor does it follow the protocol associated with, statutory interpretation understood in law (as per Sullivan's *Statutory Interpretation* [2007]). That being said, the fundamental ideology of the plain meaning rule and the doctrine of fidelity to legislative intent (Sullivan, 2000) is present throughout the historical and interpretive policy analysis conducted.

1.5 Situating the Researcher

My interest in this project did not stem from a personal desire for a new dive site as I do not scuba dive, but was initially influenced by the potential economic and social benefits such an entrepreneurial project could bring to the communities situated on the shores of the Lake Superior National Marine Conservation Area (LSNMCA). I was excited to be a part of exploring whether sinking a ship to create an artificial reef, a tourism project rooted in principles of sustainability and conservation while creating economic opportunity and growth for the greater region, was feasible. Although the idea came from stakeholders associated with a community

situated on the shores of the LSNMCA, and certainly various Parks Canada staff were interested in the research, I did not receive any compensation or financial support.

The legislative framework of my thesis departed from research usually associated with a nature-based recreation and tourism degree, but feasibility studies and stakeholder surveys were moot if such a project would not even be permitted. I do not have words to describe the delight I found in my forays of law, particularly reading arguments of lawyers, judges, law professors, and others who have undertaken the study of concepts inherent in law and in the formation of laws. To be clear, I am not drawn to law because of court room drama; my interest lies in the fascinating struggle of people and societies trying to live together. The necessity for rules and directives exemplifies our diversity as a human race, demonstrating our inherent self-centredness as well as our capacity for working together for the common good.

Chapter 2: The Evolution of Marine Policy in Parks Canada

2.1 Introduction

In an effort to determine why the 1994 GPOPs marine policy contained a clause prohibiting the sinking of a ship, and to try to ascertain what future policy might bring, an analysis of Parks Canada's policy in light of the conservation and use mandate was conducted. The mandate of Parks Canada has been remarkably constant over the years as the two interconnected paths of conservation and use have vied for prominence. Although Parks Canada has come under pressure to be more conservation and ecosystem oriented (LeRoy & Cooper, 2000), the basic premise that has not changed is Parks Canada is "for the people". As discussed in this chapter and elsewhere, the dual mandate of conservation and use can actually be seen as a nested mandate: "the priority we give to ecological integrity does not change the mandate of national parks to deliver benefit, education and enjoyment to people. It sets the context for how we go about doing it" (Parks Canada, n.d., p. 1.5).

This chapter examines Parks Canada marine policies and additional documents and reports developed under the *National Parks Act, 1930* (and amendments), *Parks Canada Agency Act, 1998*, *Canada National Parks Act, 2000*, and the *Canada National Marine Conservation Areas Act, 2002.* Beginning with a brief overview, the discussion moves to the First World Conference on National Parks in 1962, where one of the earliest calls to protect marine areas was delivered. Then the chapter follows the progression of marine policy as Parks Canada developed a national system plan for defining marine ecosystems, delineated representative marine regions in which to establish marine parks (Parks Canada, 1972, 1986) and determined to help meet international commitments to marine protected areas (Parks Canada, 1979; 1986; 1994).

2.2 Early beginnings of Conservation and Use

Various authors such as Fluker, 2009, McNamee, 2009, and Shultis and More, 2011 have analyzed the ethos of policy and management in Parks Canada, referring to the dual mandate of conservation and use. Fluker's approach was very similar to my own conclusions developed through the historical research and interpretive analysis conducted, and so it is employed here to delineate three eras related to Parks Canada's purpose: the Colonial, Tourism and Preservation Eras. The Colonial Era links parks development with the establishment of Canada as a nation. Governmental agendas, such as MacDonald's National Plan and the race to complete a railway system to connect all of Canada in the late 1800s, promoted economic development (Lothian, 1977, McNamee, 2009). Natural resource extraction was permitted for a time: logging was permitted as late as 1967 in Newfoundland (MacEachern, 2001); mining in BC (new claims could be made until 1916 but mines in Banff and Yoho Parks continued until 1922 and 1952, respectively; Lothian, 1977); land could be leased for business, residences, and cattle ranching (Lothian, 1977); and hunting and wildlife culls are still permitted (current moose management in Terra Nova and Gros Morne; Parks Canada, 2013b). At the same time, conservation and protection of wildlife was deemed important hence the birth of the National Parks Wildlife Division in the early 1900s (Lothian, 1977). The Banff Hot Spring Reserve, and parks created under the *Rocky Mountain Park Act, 1887*, and later, the *National Parks Act, 1930* were designed for the enjoyment (use) of the people. Early legislation, parks priorities, and management were also influenced by the United States' experience and legislation (Foster 1998; McNamee, 2009; Shultis and More, 2011).

The Tourism Era overlaps with the Colonial timeframe and both saw the concept of preservation ("unimpairment") to ensure long-term enjoyment by Canadians locked into the *National Parks Act, 1930*. Parks Canada's development, through Harkin's (Commissioner of the

Dominion Parks Branch 1911 - 1936) tourism strategy, included an international focus in the early 1900s (Hildebrandt, 1995); later, the construction of a network of highways connecting Banff, Jasper, Lake Louise, Kootenay, Yoho, and Golden National Parks (1917 – 1940) was focussed on making the western parks accessible to the desired influx of tourists (Lothian, 1977). Global events such as two World Wars, increased industrialization and economic development, and shifts in societal values also permeated the function and purpose of Parks Canada throughout the 1900s. In terms of sustainable use and negative anthropogenic impacts, the first 65 years of Parks Canada's existence had the advantage of limited technology and road access, minimal fiscal resources, and a small national population - 9 million in the 1920s, 10 million in the 1930s and 11 million in the 1940s - until only two decades later it nearly doubled to 19 million (Lothian, 1977; Statistics Canada, 2013). The advent of the baby boom and economic growth following World War II, *inter alia*, contributed to the rise in popularity in the 1950s of national parks; campground use grew from 1.8 million in 1950 to 5.8 million in 1961 (Hildebrandt, 1995).

The naissance of international and national conservation organizations such as IUCN (founded in 1948) and the realization that an increased national population and escalated parks use demanded better management of the people and resources contributed to the rising tide of environmental concern particularly evident since the 1960s. Although authors extol the 1960s as an era of environmental renaissance in Parks Canada (Foster, 1998; McNamee, 2009; Hildebrandte, 1995; Kopas, 2007) with wilderness lands being set aside and species protection increased, an examination of Parks Canada's policies and reports from that era provide a surprising revelation: the mandate of "for the people" still superseded a conservation approach (Fluker, 2009). In fact, according to Fluker, the Preservation Era did not begin until ecological integrity became ensconced in the 1979 National Policy. Even so, although there was evidence

of ecologically framed policy, it was still nested within the mandate of preservation *for the use and enjoyment of the people.*

A fourth era, suggested by Lemelin (personal communication, January 28, 2014) could be called the Visitor Experience Era and arises from the fundamental changes wrought by the *Parks Canada Agency Act, 1998.* According to Dearden and Dempsey (2004), in 1996 the Auditor General of Canada pronounced that Parks Canada management had subjugated ecological factors in favour of social and economic factors. The 1998 Parks Canada Agency Act changed Parks Canada to an operating agency with the intent of making it more fiscally efficient but did not address the issue of ecological integrity which had become one of many organizational objectives. The Panel on the Ecological Integrity of Canada's National Parks in 2000 found that not only were the National Parks Act's priorities of ecological integrity "in peril" (p. 230) but they were not equipped to maintain, nor did they use science and traditional knowledge to promote, ecological integrity. According to Eagles (2002), the outcome of becoming a parastatal organization meant that Parks Canada was adopting a corporate management style "that encourages increasingly higher levels of cost recovery from tourists" (p. 139). To survive fiscally, Parks Canada was now dependent upon the people, bringing more challenge to its legislated (as an amendment in 1988, then as section 8(2) in 2000) ecological integrity priority.

2.3 Dual mandate and Parks Canada's Departmental Shuffle

One proposition for the changing emphasis within the dual mandate of preservation and use associates the shuffling of Parks Canada between federal departments as a primary influence (see Table 2.1). Parks Canada rested in the Department of the Interior from the National Parks Service inception in 1911 until its tenure under the Department of Indian and Northern Affairs (1966 – 1978). Hildebrandt (1995) notes: "William Lowry, in his assessment of

Canada's national parks while part of DIAND, suggests that the bureaucracy, which did not always abide by the policy directions of its own programs, still favoured development... Indeed it could be argued that having 'development' and national parks in the same ministry placed the minister in a conflict of interest situation" (p. 28). The development activities during this time included the completion of major highways in Banff, Yoho, Glacier, and Mount Revelstoke National Parks, and campgrounds were expanded to accommodate the growing number of visitors.

The move to the Department of the Environment in 1979 was applauded by environmentalists and reflected in an emphasis on ecosystem management (Parks Canada, 1979), ecological integrity (National Parks Act amendment, 1988), acid rain and wildlife research, and the environmental assessment and review process (Hildebrandt, 1995). The move in 1994 to the Department of Canadian Heritage is reflected in the language of the 1994 policy and its emphasis on our natural and historical heritage, gave developers hope, and freed up funding for other Environment Canada programs, but gave environmentalists cause for concern (Hildebrandt, 1995). As Hildebrandt further shares, tongue in cheek, "Critics of the move to Canadian Heritage ask what national parks have to do with the status of women, the CBC and multiculturalism" (p. 29). In 2003 Parks Canada, now an Agency under the *Parks Canada Agency Act, 1998*, found its home back at Environment Canada. Given the increased environmental awareness globally with the Earth Summit in Rio de Janeiro in 1992 and Canada's own *Statement of Commitment to Complete Canada's Networks of Protected Areas*, also in 1992 (Federal Provincial Parks Council, 2000), and the eventual commitment of the *Oceans Act, 1996* to develop a network of marine protected areas (Government of Canada, 2005), the move back to the Environment Canada umbrella made sense fundamentally and ideologically.

Table 2.1 Chronology and Evolution of National Marine Conservation Areas

Chronology of Canada's Marine Conservation Areas: 1962 – 2014		
1962	First World Conference on National Parks	A global call to create marine parks or reserves
1966-1978	*Department of Indian and Northern Affairs*	Moved from the Department of the Interior
1969-1976	4 coastal national parks with marine components established	Kouchibouguac (1969); Pacific Rim (1970); Forillon (1970); Autyuittuq (1976)
1970	**National Parks System Planning Manual**	A national marine park system plan is developed (9 regions)along with a national terrestrial park system (39 regions)
1972	**Byways and special places**	Initiatives for conservation and tourism promoted.
1974	National Parks Directorate expanded	New national marine park system planning section
1979-1994	*Department of the Environment*	Moved from the Department of Indian and Northern Affairs
1986	**National Marine Park Policy**	First official marine policy published
1987	Fathom Five National Marine Park, Georgian Bay	Ontario and the federal government sign an agreement to establish a marine park
1988	Amendment to *The National Parks Act*	Directs parks management plans to consider ecological integrity as the first priority
1988	National Marine Park proposed off Queen Charlotte Islands	British Columbia and the federal government sign initial exploratory agreement
1990	Saguenay-St. Lawrence Marine Park	Agreement for establishment signed by Canada and Quebec. Finalized: 1998. Identical dual provincial/federal legislation.
1993-2003	*Canadian Heritage*	Moved from Environment Canada
1994	**Guiding Principles and Operational Policies:** National Marine Conservation Areas	Terminology changed: national marine park becomes national marine conservation area.
1995	**Sea to Sea to Sea: Canada's National Marine Conservation Areas System Plan**	Framework for developing NMCAs within Canada's system of 29 marine regions
1995	Pacific Marine Heritage Legacy and Strait of Georgia NMCA study	BC and federal government sign MOU to purchase lands for new national southern Gulf Island park and for feasibility study for Georgia Strait NMCA.
2001	Lake Superior National Marine Conservation Area feasibility study completed	Based on research and stakeholder input, the Regional Committee produces document with 100 recommendations as a preliminary step toward establishment
2002	*Canada National Marine Conservation Areas Act*	Act passed.
2002	Action Plan to Protect Canada's Natural Heritage	Expansion plan for national parks (10 new ones) and 5 new NMCAs promoted
2003	2 NMCA Reserves: Gwaii Haanas and Strait of Georgia	MOU signed between Canada and BC governments to assess feasibility
2003	Gulf Islands National Park Reserve established	Includes protected marine areas
2003-2014	*Environment Canada*	Moved from Canadian Heritage
2007	Lake Superior National Marine Conservation Area	Agreement to establish LSNMCA signed between federal government and Ontario
	Gwaii Haanas National Marine Conservation Area Reserve	
2014	Current proposed NMCAs	Lancaster Sound, Nunavut; Southern Strait of Georgia, BC; Îles De La Madeleine, Québec

2.4 Is the dual mandate of "Conservation and Use" actually "Conservation For Use"?

The *National Parks Act, 1930* states the following as its objective:

> The Parks are hereby dedicated to the people of Canada for their benefit, education and enjoyment, subject to the provisions of this Act and Regulations, and such Parks shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations. (*National Parks Act*, S.C. 1930, c. 33, s.4)

The inclusion of "unimpaired" brings the element of conservation, or preservation to the expressed purpose of the park which is for the people. The word unimpaired appears throughout Parks Canada's subsequent policies and plays a role in establishing and carrying on the mandate of conservation for use.

The first appearance of ecological integrity was the 1979 National Policy which stated, "Ecological and historical integrity are Parks Canada's first considerations and must be regarded as prerequisites to use", but the very next line gives its context: "Protection of heritage resources is fundamental to their use and enjoyment by present and future generations" (Parks Canada, 1979, p. 12). The term ecological integrity was later added as an amendment to the *National Parks Act* in 1988: "Maintenance of ecological integrity through the protection of natural resources shall be the first priority when considering park zoning and visitor use in a management plan" (National Parks Act, R.S.C. 1985, c. N-14, s. 5(1.2). It was given further priority in the *National Parks Act, 2000*. Section 8(2) reads, "Maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks" (*Canada National Parks Act*, S.C. 2000, c.32, s. 8[2]). However, as discussed in Chapter 3, Fluker (2009; 2010; 2013) demonstrates that despite strong recommendations from the 2000 Panel on the Ecological Integrity of Canada's National Parks that ecological integrity be given first priority within legislation, section 4(1) ensures the conservation for use mandate remains:

> The national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment, subject to this Act and the regulations, and the parks shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations. (C*anada National Parks Act,* S.C. 2000, c. 32, s. 4[1])

Lacking the phrase ecological integrity, the *NMCA Act, 2002* focuses on ecologically sustainable use and indicates that all management plans need to be driven by "principles of ecosystem management and the precautionary principle" (*NMCA Act,* S.C. 2002, c. 18, s. 9[3]). Until these new phrases are more fully defined, the balance of the conservation and use see-saw will be uncertain. Section 4(1) of the *NMCA Act* is similar to the *National Parks Act, 2000, section 4(1)*, containing the for the people mandate:

> 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. (*NMCA Act*, S.C. 2002, c. 18, s. 4)

"Use" can refer to any influence by humans upon the environment, but within Parks Canada, the definition has evolved from its initial sanctioning of mining and forestry resource extraction, commercial and business development, and farming (Lothian 1977, MacEachern, 2001) to today's values of ecologically sustainable use (McNamee, 2009), comprising indigenous traditional activities, tourism (permitted specific activities have changed over the years), educational and research undertakings, and limited commercial and economic pursuits. Under the *Parks Canada Agency Act, 1998*, the new status as a parastatal entity may ensure an emphasis on "use" within the parameters of being ecologically sustainable since it now needs tourism for revenue.

Part of the Parks Canada promise to communities where new parks are being created is economic benefit primarily through tourism, an alternative use to the extraction of natural resources (Kopas, 2007). Through the experiences gained during expropriation attempts, and stakeholder negotiations for allowing continued natural resource extraction such as logging in Newfoundland and mining in BC, Parks Canada slowly adjusted its policies and approach when

establishing new parks to include consultation and negotiation with local stakeholders (MacEachern, 2001; Lothian, 1977). One of the goals in the consulting process is to determine what economic benefit can be accrued to local stakeholders from the establishment of a national park or marine conservation area. The question remains though, how does an organization dependent on tourism for fiscal health, balance "for the people" and "ecological integrity"? Part of the answer lies in the new terminology employed by the *NMCA Act,* "ecologically sustainable use" and the "precautionary principle". The precautionary principle is discussed in detail in Chapter 4.

The question posed in the title of this section, is the dual mandate of conservation and use act actually conservation *for* use, is answered in the term ecologically sustainable use. The logical conclusion of the policy analysis of Parks Canada's use of "conservation and use" and as indicated throughout the thesis, is that the focus on ecological integrity is in order to have a resource to sustainably use! Tom Lee, chief Executive Officer of Parks Canada at the time, explained: "Parks Canada as an agency is clearly responsible for ensuring that the natural element of those parks are sustainable – that is what ecological integrity is all about, ensuring that nothing we are doing in the parks will lead to the inability of those parks to sustain their natural systems" (Calgary Herald Editorial Board, December 2000, as cited in Parks Canada, n.d., p. 1.5). This commitment is solidified in the *NMCA Act* which is discussed in Chapter 4.

2.5 First World Conference on National Parks, 1962

In 1962, the International Union for Conservation of Nature and Natural Resources (IUCN); United Nations Educational, Scientific, and Cultural Organization (UNESCO); United Nations Food and Agriculture Organization; United States National Park Service; and Natural Resources Council of America, sponsored the First World Conference on National Parks (Adams, 1962). A dual mandate of conservation and use is evident throughout the conference

proceedings. The welcome to delegates from President John F. Kennedy reflects the thinking of the time - that outdoor places were important to the welfare of all peoples. “We must have places where we can find release from the tensions of an increasingly industrialized civilization, where we can have personal contact with the natural environment which sustains us” (Adams, 1962, n.p.). Others at the conference, such as IUCN, emphasized their ecological approach to national parks and conservation principles of ecology (Adams, 1962).

Recommendation No. 15 of this First World Conference on National Parks may explain why the onus for the concept of marine area protection first fell upon Parks Canada’s shoulders[6]. It states:

> THE FIRST WORLD CONFERENCE ON NATIONAL PARKS invites the Governments of all those countries having marine frontiers, and other appropriate agencies *to examine as a matter of urgency the possibility of creating marine parks or reserves to defend underwater areas of special significance from all forms of human interference*, and further recommends the extension of existing national parks and equivalent reserves with shorelines, into the water to the 10 fathom depth or the territorial limit or some other appropriate off-shore boundary. (italics added*,* Adams, 1962, p. 181-182)

As a result, and in connection with the development of the National Parks System Plan Part B (marine environments of Canada) in 1970, between 1969 and 1976 four coastal national parks with marine components were established in Canada: Kouchibouguac National Park, 1969, New Brunswick; Pacific Rim National Park Reserve, 1970, British Columbia; Forillon National Park, 1970, Quebec; and Autyuittuq National Park, 1976, Nunuvut (Parks Canada, 1986).

2.6 1964 Policy

By the 1960s, due to an influx of tourists visiting Parks Canada sites, new management techniques were needed to accommodate the increasing number of visitors but still maintain

[6] Representatives from Canada were: National Parks Branch (4), BC Provincial Parks (3), University of British Columbia (2 – Zoology), Ontario Agriculture College (1), BC Department of Lands and Forests (1), Ontario Department of Lands and Forests (1). The 1986 marine policy (Parks Canada, 1986) indicates that Canada’s endorsement of this Recommendation No. 15 was primarily responsible for Parks Canada’s commitment to protecting marine areas.

the integrity of Parks Canada's conservation and use framework (Parks Canada, 1979). Seutin (2001) calls this a time of "awakening" (p. 20) as Parks Canada conducted parks resource inventories and began to employ zoning as a management tool. According to the 1964 policy introduction, section 4 of *The National Parks Act* which outlines the purpose of national parks, had received various interpretations over the years creating conflict in the development and management of various parks. A history of inadequate policy processes guiding Parks Canada also contributed to this conflict: "Often policies were developed to correct a situation rather than to avoid it" (Parks Canada, 1964, p. 1). Consequently the 1964 policy was designed to be proactive, to guide national parks development, to inform individual park management, and to establish a permanent directive force in order to fill in the gaps in the legislation (Parks Canada, 1964).

The goal of an overarching policy was not easily attained. National parks were diverse in nature, demanding unique management and administration. An early classification system based on topography and purpose was proposed to help standardize these approaches and although it was not enacted, Parks Canada did have separate malleable categories of parks and sites defined within its portfolio (by 1979, new policy reflected separate guidelines for each category existing at the time; Parks Canada, 1979). The 1964 policy did introduce the concept of zoning within parks to delineate appropriate use, development, and access to the zones (Parks Canada, 1964). Effectively a land use planning measure, the zones (section XIII) were a proactive attempt to accommodate expected increases in recreational use and were to be unique to each park. The justification is important to note: the zoning was to be based on both use and preservation priorities and included instructions for the location of restrooms, picnic areas, parking, campgrounds, motels, cabins, restaurants, etc. in proximity to a park feature "but not

so close as to detract from the natural feature or its setting" (p.26). This aligns with an explanatory statement in section I – Purpose of National Parks, which says,

> National Park purpose is associated with the recognition of *recreation as a major resource use*. Each unit of the National Park System was established because, defining recreation in the broadest possible terms, it *represented a major recreation resource worthy of preservation* by the nation for public enjoyment (italics added, p. 3).

This concept is reiterated, saying that "the best and highest resource use for these areas lies in recreation and they are set apart and preserved for this purpose" (p. 3) and continuing with the benefits of parks: "recreation, refreshment, aesthetic enjoyment and knowledge essential to national health and wellbeing. The only way these products (benefits) can be assured is through reserving sufficient areas of high quality and providing for intelligent and appropriate use of park resources by people" (p. 3). Although various authors (see introduction) and later policy documents purport this 1964 document as an important shift towards environmentalism in its declarations about the "value of nature", a careful read-through of the document paints a picture of an anthropocentric view of parks. The dual mandate is present but preservation is to serve use. As Fluker (2009) states, "The 1964 policy was loyal to utilitarian preservation codified in the 1930 legislation, and the policy did little to appease the growing opposition to recreation in the parks" (pp. 4-5).

The language of the National Parks 1964 policy is plain and straightforward, but still allows room for multiple interpretations of what is being communicated. For instance, "Recreation facilities in harmony with the purpose and preservation of a park" (Parks Canada, 1964, p. 4) and indicating that recreation should be "primarily natural" (p. 19) assumes universally understood definitions and leaves room for subjective judgement and interpretation. This is perhaps one of the downfalls of attempting to create a broad national policy while acknowledging unique situations.

Section I of the policy discusses the purpose of national parks. The discourse was important to Parks Canada then and is applicable to today's national marine conservation areas as it addresses the overdevelopment of certain parks and the introduction of "secondary uses" which were not conducive to maintaining the basic priority of the park. It reminds the reader that park uses need to be in line with the focus and purpose of the park and not a location for unrelated tourist attractions. Any such amenities or services were to be kept outside park boundaries. That said, half a century ago, secondary uses such as golf, tennis, and skiing were considered acceptable, if they did not detract from the purpose of the park. Standing in contrast to these social mores and accepted park activities are the aggressive environmentalists of recent decades who advocate a purist view of ecological integrity, sometimes to the detriment of local communities and stakeholders (LeRoy & Cooper, 2000).

In section XV – Criteria for National Parks, two distinct objectives for developing new parks are recorded summing up the overall mandate of Parks Canada: "To preserve the Canadian heritage" and "To ensure this and future generations of Canadians the opportunity to use, enjoy, and benefit from the values of natural wilderness" (Parks Canada, 1964, p. 31). The policy acknowledges these "national obligations" (p. 31) may not be met at every site suggesting that some parks will be remote and therefore have more of a preservation focus, while the proximity of other sites will encourage visitation. Pragmatically, to avoid conflict, Parks Canada determined that parks would not be located in areas with valuable natural resource development capability. The caveat is that "Once a park is established, its value to the nation as a heritage and its potential to supply healthful enjoyment to the Canadian people should ensure its preservation [*note that nature and people's enjoyment are the conjunctive reason to preserve a park*], subject only to considerations of overriding national importance" (p. 31). At times

resource extraction or development has necessitated moving park boundaries (MacEachern, 2001).

The four criteria for choosing a national park site is reflective of a dual mandate: the "area must be worthy of preservation" (p. 32) containing certain ecological and geographic features, or "provide outstanding opportunities for enjoying appropriate non-urban forms of outdoor recreation amid superb surroundings" (p. 32). The potential park site has to be worth the money spent to preserve it, large enough to "support indigenous flora and fauna" (p. 32) and depending on the size and purpose of the park, all or part of the park should be able to facilitate tourist recreation and amenities.

2.7 National Parks System Planning Manual, Part B (Marine Environments of Canada), 1971

The National Parks System Planning Manual outlined a strategy "to preserve for all time areas which contain significant geographical, geological, biological, historical or scenic features as a national heritage for the benefit, education and enjoyment of the people of Canada" (National Parks Canada, 1971, Foreword). Based primarily on the United States National Parks Service document, *The National Park System Plan, Part II: Natural History, 1970*, the Canadian version modified, augmented, or "borrowed verbatim whenever the theme and write-up coincide[d] with Canadian thinking" (p. 2). The Canadian version consisted of two sections: Terrestrial Environments of Canada and Marine Environments of Canada, providing a physiographic framework to define the diverse regions needed to fulfill Parks Canada's mandate. The National Park System Plan divided Canada into 8 geographical regions which were subdivided to form 39 natural terrestrial regions. Using physical and oceanographic specifications, Part B of the System Plan divided the marine environments (freshwater not included) into three broad areas: Pacific Coast, Atlantic Coast, and Arctic Coast. Each area was further subdivided into marine natural regions with Marine Natural History Themes defining

geological and ecological characteristics. A portent of the ecosystem approach, the ecological category takes into account not just marine organisms, but how they interact with their environment. The marine region framework included Landforms (i.e. estuaries, beaches, islands), acknowledging the contiguous nature of land and water, and Oceanographic Phenomena (such as tides and currents), recognizing the dynamic nature of water.

2.8 Byways and Special Places, 1972

Byways and Special Places spelled out initiatives for Parks Canada that included the creation of national marine parks along with national landmarks, canal systems and wild rivers (Parks Canada, 1972). The program involved cooperation of every level of government to create interconnecting scenic routes: designating waterways for varied types of boaters; opening trails for bikers, hikers, and horseback riders through the purchase of land and right of ways; creating parkways on less frequented roadways with the additional goal of bringing tourists into communities needing an economic boost, and adding campgrounds, picnic sites, etc. as tourist attractions. Although the booklet promised increased employment and other economic benefits for Canadians through these initiatives, it also espoused a better "quality of life" (p. 52) through the intangible benefits of the Parks experience.

This document is very revealing as to the mindset of society and Parks Canada in particular. It boasts of adding 11 new national parks and 20 national historic parks in the four years since 1968 (compared to 2 national parks, Fundy [1948] and Terra Nova [1957] in the previous 2 decades) (Parks Canada, 1972). Preservationist phrases abound: "At least 30 more National Parks are needed to preserve that which is best in our natural environment" (p. 44); "We must ensure... that our natural areas are protected" (p. 44); "It [Heritage Canada] will also protect areas of natural beauty" (p. 45); "the growing concern for the preservation of our land and its history all demand new initiatives" (p. 45). But every initiative - canal systems, national

marine parks, national landmarks, wild rivers, historic waterways, historic land trails, and scenic and historic parkways – were designed "to answer some of the leisure needs of an urban Canada in the 1970s" (p.45) and for the Canadian city dweller who "needs to escape the city for quiet places" (p. 48).

Themes of preservation and use continue with the discussion of creating national marine parks which could "offer immense possibilities to enjoy and interpret our marine areas" (Parks Canada, 1972, p. 46). The Strait of Georgia, off the coast of BC, was already being considered as a potential marine park; 40 years later a feasibility study was initiated in 2003 and an MOU between the governments of Canada and BC was signed. Eight other suitable regions not listed in the report were being considered as potential marine parks. There is no doubt however, that marine parks were to be created with conservation in mind: "But one of the most important aspects of the National Marine Parks program is to acquire these areas now before they become polluted beyond the point of restoration" (p. 46), further foreshadowing ecological integrity issues soon to come. In 1974, Parks Canada added a national marine park system planning section to the National Parks Directorate (Parks Canada, 2003a).

2.9 National Parks Policy, 1979

By this time Parks Canada's responsibilities included a considerable portfolio of buildings, rivers, landmarks, canals, and historic parks and sites. The conservation ethic is evident in the preface: "Parks Canada is the federal agency whose clear mandate is to protect outstanding natural areas and historic places of Canadian significance across the country. As such, Parks Canada's activities play a vital role in the preservation of our national heritage for present and future generations" (Parks Canada, 1979, p. 3). Addressing use, the preface affirms that Parks Canada is there to "provide significant opportunities for us to learn about our

heritage, to enjoy outdoor activities and to *develop our tourism industry for which these special places are a focus*" (italics added, p. 3).

The document contains Parks Canada program policy, plus additional policies for new initiatives and current activity under Parks Canada's portfolio. As noted earlier, the 1979 policy saw the introduction of the term ecological integrity and further explains that research (and the Federal Environmental Assessment and Review Process from 1973) would be done on anything that would have a deleterious effect in order to provide protection "appropriate for the type, significance and sensitivity of the resources" (Parks Canada, 1979, p. 12). Further, encouraging "public understanding and enjoyment of heritage resources" (p. 12) is seen as a responsibility, and "the means of doing so in a particular situation will depend upon the constraints which are necessary to ensure the perpetuation and protection of such resources" (p. 12). And the purpose of perpetuating and protecting the resources was for the benefit, education and enjoyment of future generations. It would appear that according to this 1979 policy, the protection mandate exists in order to serve the "for the people" mandate.

That "for the people" may be the primary priority of Parks Canada is evident in several sections of the program policy. Section 1.4 discusses the symbiosis of man and nature: the role Parks Canada plays in preserving nature while acknowledging the impacts of man upon nature and how nature shapes man. Section 1.5 iterates that part of the purpose for research within Parks Canada is for people to enjoy the parks: "Research is essential for an understanding of heritage resources *so that* they can be identified, selected, protected, *enjoyed* and presented in a responsible and effective manner" (italics added, Parks Canada, 1979, p. 12). Section 2.3 specifies that activities not consistent with protecting heritage resources will not be permitted.

The National Parks zoning system is applied to both "land and water areas of national parks" (Parks Canada, 1979, p. 40) and is comprised of 5 zones: Special Preservation (I);

Wilderness (II); Natural Environment (III); Outdoor Recreation (IV); and Parks Services (V). Parks Canada's responsibilities include a leading role in fulfilling Canada's international commitments with IUCN, ICOMOS and the International Centre for the Study of Preservation and Restoration of Cultural Property, and the World Heritage Convention (UNESCO), to "protect and present aspects of the heritage shared with all mankind" (p. 15).

The objectives for most of the policy sections contained in the 1979 policy are similar, particularly in their repetition of the last phrase about people's enjoyment and park unimpairment: "To protect for all time representative natural areas of Canadian significance in a system of national parks and *to encourage public understanding, appreciation and enjoyment of this natural heritage so as to leave it unimpaired for future generations*" (italics added, Parks Canada, 1979, p. 11).

2.10 National Marine Parks Policy, 1986

Although national marine parks came under the *National Parks Act, 1974*, separate policy designed for marine parks was deemed essential because of inherent differences between terrestrial and marine systems. Soon after the 1979 policy came out, work began on marine specific policies. By 1982, within the 1971 systems approach of identifying representative natural areas, 11 marine areas of significance had been identified and a further 22 areas had been marked for further study; the 9 previously identified regions as well as the marine natural history themes were also being re-evaluated (Brown, 1983).

Within national terrestrial parks, no extraction or development of natural resources was permitted, apart from allowances for traditional use by locals and Aboriginal treaty rights for hunting, fishing, and trapping (for new parks only, however, these Aboriginal rights could be terminated if an agreement was reached; Parks Canada, 1979). In addition, sport fishing was permitted provided it did not harm fish populations. However, could the same limits be applied

to marine parks? The process of creating and managing an inherently different environment from terrestrial parks was daunting, and given the multiple users associated with marine systems, Parks Canada worked conjointly with the Departments of Fisheries and Oceans, Transport Canada, and Energy, Mines and Resources to develop a policy document congruent with all existing legislation, regulations, and policies.

The objective for the 1986 National Marine Parks policy was "to protect and conserve for all time representative marine natural areas of Canadian significance in a system of marine parks, so as to leave them unimpaired for future generations and to encourage public understanding, appreciation and enjoyment of Canada's marine heritage" (Parks Canada, 1986, p. 6). Canada's marine territory included the continental shelf and 200 nautical mile exclusive economic zone (Parks Canada, 1986). At the time, Parks Canada, under the auspices of Environment Canada, was the only federal entity creating protected marine areas, although Canada had made international commitments to establish marine parks through the United Nations Convention on the Law of the Sea (1982), IUCN's World Conservation Strategy (1980), and the United Nations' Environment Program – the Regional Seas Program (1974). The 1986 policy included steps to identify, select (through consultation, environmental and economic feasibility assessments), and establish representative national marine parks within 29 regional divisions. Marine parks encompassed "the seabed, its subsoil and overlying water column together with certain coastal lands and islands" (Parks Canada, 1986, p. 5) and existing jurisdiction of governmental bodies (such as the Department of Fisheries and Oceans) was to be maintained over fisheries, navigation and shipping.

Conservation and protection of marine resources through habitat protection, conserving ecosystems and genetic diversity was paramount although the policy states traditional uses such as commercial fishing, indigenous traditional harvesting, and shipping corridors would be

allowed to continue provided they did not "destroy or seriously impair the natural and cultural values for which the park was established" (Parks Canada, 1986, p. 8). The benefits advocated were the future enjoyment of "marine areas of unspoiled natural beauty" (p. 5), job creation, economic development through tourism, marine science research, and research into the effects of use on marine and coastal ecosystems.

The management plans were to be tailored to each marine park after consultation with related governmental authorities and public participation. Using a flexible resource-based zoning system, this method of management creates a continuum of zones to address protection, conservation, and use specific to the marine park. The following zones were suggested and ranged from restricted access to educational and recreational uses: Preservation (I); Natural Environment (II); Conservation (III); General Use (IV); Park Services (V); and Temporal and Vertical (water column) zoning. Environment Canada acknowledged a lack of expertise in marine zoning and that "the challenge will be to integrate *both conservation and use* in the same areas without creating an unduly complicated system of zones and regulations, and in a manner which safeguards park values at all times" (italics added, Parks Canada, 1986, p. 15).

No mention is made of creating an artificial reef and dive site by sinking a ship (a prohibition to appear in the 1994 policy), although a diving equipment rental shop is included in the list of commercial services that would be encouraged in communities adjacent to marine parks, and structures such as docks and marinas were considered essential provided they had minimal environmental impact (Parks Canada, 1986, p. 13).

2.11 Guiding Principles and Operational Policies, 1994 (GPOPs)

The 1990s were a time of increased awareness and action regarding ecological integrity (McNamee, 2009). Canada's Green Plan, influenced by the Brundtland Commission and their 1987 document, *Our Common Future*, and the *Greenprint for Canada* which was created by a

coalition of ENGOs, was developed by the federal government in 1990 to promote sustainable development within an environmentally conscious framework (Gale, 1997; Williams, 2005). Not only did the Green Plan lay out strategies for reduction of pollutants, but also promoted goals for setting aside 12% of Canada as protected space (terrestrial and marine) and to have a national parks system in place by 2000. The marine component required the creation of four marine conservation areas in addition to the existing three which were: Fathom Five Marine Park (1987), Gwaii Haanas (federal-provincial agreement signed to begin in 1988), and the Saguenay-St. Lawrence Marine Park (1990).

As indicated by much of the literature cited regarding international obligations, there is no doubt that increased global awareness and concern for marine health has been a catalyst for national legislative and policy development regarding marine protected areas. Canada's international commitments are a focus of this 1994 policy which includes, among others: UNESCO's World Heritage Convention, Ramsar Convention on Wetlands of International Significance, Convention on Biological Diversity, World Charter for Nature, UNESCO's Biosphere Reserves Program, and IUCN (Parks Canada, 1994). The influence of the 1992 Convention on Biological Diversity explains the emphasis on "sustainable development that benefits local communities" (Parks Canada, 1994, p. 13) as the Convention emphasized and included ways to address global economic and social disparities. Following the 4th World Wilderness Congress (1987) and the 17th General Assembly of the International Union for the Conservation of Nature (1988), where a marine policy framework was laid out, the IUCN published guidelines for marine protected areas (Kelleher and Kenchington, 1992). Canada's approach to developing a "biogeographical classification system to aid in the selection of a truly representative system of marine protected areas" (Parks Canada, 1994, p. 46) was put forth to the international community as a possible prototype (Parks Canada, 1994).

The GPOPs marine policy was adapted and expanded from the 1986 marine parks policy. The zones which were previously based on National Parks zones were reduced to three in number (Preservation Zone I, Natural Environment Zone II, and Conservation Zone III) but even these were to be considered guidelines and made contingent upon the characteristics and needs of the marine area under consideration. The Preservation Zone does not permit harvesting nor the construction of permanent facilities (unless required for natural resource protection or public safety), and allows limited, closely supervised educational-centred visitor access. Zone II is designed to be a buffer zone and permits non-consumptive recreational use, nature-based education, and research. The Conservation Zone allows "reasonable use consistent with maintaining the structure and function of marine ecosystems" (Parks Canada, 1994, p. 55); renewable resource harvesting activities, boating, education, and the construction of permanent facilities, visitor services and accommodation, were permitted.

The policy associated with Aboriginal rights refers to *Regina V. Sparrow* and Section 35 of the *Constitution Act, 1982* as the guiding legal framework. National marine conservation areas established within Aboriginal land claim settlements are to respect harvesting rights and involve Aboriginal people in the planning and management stages according to the terms of the agreement (Parks Canada 1994). Furthermore, the policy indicates that until a final agreement is in place via legislation, the area will be called a national marine conservation areas reserve (e.g. Gwaii Haanas) and will permit traditional harvesting and marine based activities.

The objective of the 1994 Guiding Principles and Operational (Marine) Policies 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, 1994, p. 49). Compared to previous national

parks and marine policies, this one has a consistently strong emphasis on the conservation mandate. Biological diversity, ecological integrity, and ecosystem management, along with tools to measure and monitor, are balanced with *sustainable* use. Relying on the guidelines provided by IUCN (Kelleher & Kenchington, 1992),

> 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, 1994, p. 48)

As mentioned in Chapter 1, an earlier draft of this policy did not contain section 4.3.3 which prohibits the establishment of artificial reefs to attract marine organisms for display purposes and the intentional sinking of vessels. See Chapter 3 for discussion.

2.12 Sea to Sea to Sea, 1995

In the same year as the publication of the GPOPs, a resolution addressing coastal nations and the importance of establishing a worldwide system of marine protected areas was put forth at the 1994 General Assembly of the World Conservation Union (IUCN, 1994a). Following this, in 1995, Canada's system plan for national marine conservation areas, *Sea to Sea to Sea*, was released. A model emulated by other countries, this system approach was originated by Parks Canada (Mercier and Mondor, 1995). Dividing Canada's extensive coastline contiguous with three oceans and four of the Great Lakes, Parks Canada identified a system of 29 national marine conservation areas based on representative regional marine ecosystems determined by oceanographic and biological characteristics. (Although not mentioned in the document, the system plan most likely had its roots in the 1971 publication, *National Parks System Planning*

Manual.) Procedures for the establishment of national marine conservation areas are outlined in five steps, descriptions of each of the 29 regions are provided, and the status of each region as Parks Canada moves through the steps is recorded. The system plan is still in place today, but is being developed with less optimism and more realism as timelines stretch out. According to the 2013-2014 Report on Plans and Priorities, only four national marine conservation areas exist, representing 5 of the 29 marine regions; three more are in the proposal stages: Lancaster Sound[7], Southern Strait of Georgia, and Îles De La Madeleine (Parks Canada, 2013a).

2.13 Charting the Course – preparation for the NMCA Act

In 1997, *Charting the Course – Towards a Marine Conservation Program* was released in response to the Prime Minister Jean Chrétien's announcement at the IUCN World Conservation Congress held in October 1996, of the development of new legislation regarding national marine conservation areas (Parks Canada, 1997). The purpose of the discussion paper was to provide background information for participants engaged in the development of a National Marine Conservation Areas Act as well as suggestions for what should be included in the new Act. That these marine conservation areas are not "do not touch" zones and are intended for people to use and enjoy is evidenced in the rationale for the purpose statement dedicating the areas to the people of Canada and the world: "This would underscore Canada's responsibilities to protect internationally recognized marine heritage areas and to promote these areas as *world class ecotourism destinations*" (italics added, Parks Canada, 1997, p. 5). The document also acknowledges fiscal challenges of establishing many marine conservation areas, suggesting that the proposed legislation contain phrases regarding partnerships with other agencies to secure access to additional financial resources. In line with the 1994 policy, this discussion paper promotes ecosystem management but it is the first time the term precautionary principle is

[7] For further discussion of Lancaster Sound and IUCN designation, see Lemelin & Dawson (in press).

employed in a Parks Canada publication. Without actually quoting Principle #15 of the Rio Declaration (United Nations, 1992a), the 1994 GPOPs policy does talk about "lean[ing] to the side of caution when prescribing reasonable levels of use" (Parks Canada, 1994, p. 53) and it is quick to say that sufficient research will be conducted "to avoid uncertainty in decision-making" (p. 53), but that seems to be the closest the document gets to giving nod to the Rio declaration. On the other hand, *Charting the Course* posits using the precautionary principle (in conjunction with ecosystem management strategies) to fulfill its obligation to the United Nations Conference on Environment and Development held in 1992, quoting Principle #15. The precautionary principle is discussed more fully in Chapter 4. And finally, the discussion paper makes no mention of prohibiting the sinking of a ship to create an artificial reef and dive site, leaving it as a policy item, not a legislative regulation.

Chapter 3: Marine Protected Areas

3.1 Marine Protected Areas – The Global Context

What were the original motivations for establishing global and national networks of marine protected areas? For people to have a beautiful recreation haven to visit? To build interpretation centres to teach people about marine ecosystems? A prime motivation was the concern for food security and international fisheries (Office of the Auditor General, 2012). IUCN's declaration at the 19th General Assembly iterated the fundamental reason for MPAs: "…CONCERNED that the world's oceans are subject to increasing human use and misuse which is resulting in the loss of marine biological diversity, and that growing development in coastal areas is the cause of severe impacts on the marine environment…" (IUCN, 1994b, p. 234). MPAs are by nature, dynamic fluid environments. Marine environments have many inherent challenges, not the least of which is the impossibility of setting impermeable boundaries which species cannot cross, or through which pollution cannot pass. International legal instruments are therefore designed to assist global neighbourhood cooperation. The sea is akin to the old European concept of "commons", land shared by all: "Roman law declared that air, running water, the sea, and its shores were to be shared among all people. Ocean policies have evolved from this basic tenet into *freedom of the seas*, for use as a global commons" (Ray & McCormick-Ray, 2014, p. 43). The *United Nations Convention on the Law of the Sea* (UNCLOS; UN, 1982) provided a legal framework for all ocean and sea activity, and extended national marine sovereignty to include a 200 nautical mile exclusive economic zone (EEZ). "Every coastal State [was] granted jurisdiction for the protection and preservation of the marine environment of its EEZ" (n.p.) and enforces the internationally accepted rules and standards established primarily

through the International Maritime Organization (UN, 2014, Section: Protection of the Marine Environment).

Directly related to the health of the oceans, governments and non-governmental organizations developed programs aimed at conservation of marine resources. Canada has ratified many of these international mechanisms regarding marine protection including, *inter alia*, the World Summit on Sustainable Development, 2002, where an agreement was signed to establish national networks of MPAs by 2012; and the United Nations Convention on Biological Diversity (CBD) Programme of Work on Protected Areas, 2004 and subsequent amendments, with the commitment in 2010 of establishing 10 percent of coastal and marine areas as protected areas by 2020 (Jessen et al., 2011). Canada's motivation may stem from our own fisheries collapse: Atlantic cod in the 1990s (DFO, 2009), and Pacific herring in the early 1970s (Shore, 2014) are just two casualties.

According to IUCN, a protected area (which includes both marine and terrestrial) "is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p. 8). Further, "conservation" is the "*in-situ* maintenance of ecosystems and natural and semi-natural habitats and of viable populations of species in their natural surroundings" (p. 8); "nature" refers to both biodiversity and geodiversity; "ecosystem services" opens the door to anthropogenic control and improvement of nature associated with meeting needs for food, water, protection from floods, droughts, and disease, deliberate remediation and/or improvement of soils, as well as cultural activities and values (Dudley, 2008).

The IUCN definition of a network of MPAs, embraced by Canada, is: "a collection of individual marine protected areas that operates cooperatively and synergistically, at various

spatial scales, and with a range of protection levels, in order to fulfill ecological aims more effectively and comprehensively than individual sites could alone" (Government of Canada, 2011, p.8). According to Dudley (2008), these protected areas are not isolated islands, but part of a broader landscape context, managed through an ecosystem approach of sustainability. The ecosystem approach attempts to integrate management of land and water use; protected areas are one management tool of this approach (Dudley, 2008). The goal of a protected area should be to maintain or improve the ecosystem, making it more "natural" if need be. In addition, IUCN encourages development of protected areas comprised of representative examples of global ecosystems (Dudley, 2008). The management objectives of a protected area will determine what IUCN category can be assigned (see Table 3.1).

Table 3.1 Main Management Focus of IUCN Categories of Protected Areas (information based on Dudley, 2008)

IUCN Categories of Protected Areas		Main Management Focus (75% of protected area)
Ia	Strict nature reserve	Science, protected for biodiversity which may include topographical features, human impact controlled with focus on conservation
Ib	Wilderness area	Protection and preservation of untouched, or slightly modified areas, with little or no human presence
II	National park	Ecosystem protection and controlled recreation, cultural, scientific, education activities
III	Natural monument or feature	Conservation and protection of specific natural features
IV	Habitat/species management area	Conservation and protection of species and/or habitats, often through management intervention
V	Protected landscape or seascape	Landscape/seascape which although altered through human use, have distinct ecological, biological, cultural, and scenic value and need to be protected and sustained
VI	Protected areas with sustainable use of natural resources	Sustainable use of natural ecosystems allowing some non-industrial use of natural resources while conserving nature

Where possible, corridors of connectivity are employed between various terrestrial and marine protected areas (Dudley, 2008). Theberge and Theberge (2009) draw comparisons between the theory of island biogeography and its effects on wildlife, and the isolation of

wildlife and their terrestrial habitats caused by human developments. They emphasize the importance of reducing fragmentation of habitat by providing interconnecting protected areas which promote species diversity through reciprocal immigration, gene exchange, lowered extinction rates, and a reduction of the effects of catastrophes on species. Integrated terrestrial and marine management, and international law such as the London Protocol, build on this theory of connectivity, applying the larger ecosystem context of the interrelationship of marine and terrestrial landscapes. The ecosystem management approach acknowledges the effects of terrestrial activities upon marine environments; the London Protocol (also known as the London Dumping Protocol) contains conservation laws related to preventing marine pollution not only at sea, but from terrestrial sources (IMO, 2014c)

Regarding international fisheries, the objectives of marine protected areas - conservation, fisheries protection, and holistic ecosystem maintenance - play an important role in global fisheries by "building resilience in marine ecosystems" (Roberts, 2012, p. 24), protecting spawning grounds, nursery areas, migration paths and preventing bottlenecks (sudden population and genetic shrinkage due to catastrophic events, both stochastic and anthropogenic). According to Houde (2014),

> In the past 50 years, the scope of fisheries science has broadened from principally addressing questions on population dynamics and demographics to inclusion of broader ecological research on effects of the environment, consequences of heavy fishing on predator-prey interactions, climate change, and effects of contaminants, pollutants, and disease… Recently, the emphasis has shifted and needs for knowledge on multi-species interactions, essential fish habitat, effect of fishing on the ecosystem and on untargeted organisms (the bycatch), and conservation of ecosystem services have become dominant themes for modern fisheries science that supports ecosystem-based management." (p. 66-67)

Pauly et al. (2002) suggest that in light of aquaculture limitations and technological advances (that make finding the fish easier such as GPS), marine protected areas with no-take policies are a strong remediation endeavor to protect global fisheries. A recommendation from

the World Parks Congress in 2003 was that 20 – 30% of the sea should be no-take zones, protected from all fishing (Roberts, 2012). In fisheries management, ecosystem management is controlled by the fundamental principle of knowing who is eating whom and acknowledging that since a complex food web is essential to fishery health, setting aside no-take protected areas provides the best remediation possible for the recovery of depleted fish stocks (Pauly et al., 2002). In addition, Pauly et al. suggest that single-species assessments and management approaches need to be replaced with ecosystem-based management strategies; to ensure the protection of many species, they recommend the establishment of MPAs or marine reserves in areas representing a broad spectrum of species. The *Oceans Act, 1996* bases the national strategy on three principles: integrated coastal management, sustainable development and the precautionary principle. According to Meltzer (1998b), regarding the value MPAs as part of integrated coastal management,

> Marine protected areas (MPAs) are increasingly recognized as a key component of coastal and marine biodiversity conservation and protection, fisheries management, and a means of insuring the sustainable development of the marine environment. The need to integrate and protect terrestrial, marine and atmospheric systems imposes an urgent need for the establishment of comprehensive, protected area management within broader coastal zone conservation strategies. (p. 18 and 19).

3.2 Marine Protected Areas – The Canadian Context

The focus of international law related to the health of the oceans has been on pollution prevention, limiting fisheries catches, and creating marine protected areas (Dearden & Canessa, 2009). The integration of terrestrial and marine landscapes in IUCN's protected areas definition and an international fisheries focus on integrated coastal management (Meltzer, 1998b) is an extension of the first three. In Canada, with nearly 40% of our population living within 20 kilometers of coastal and Great Lakes waters (Manson, 2005, as cited in Dearden & Canessa, 2009), anthropogenic impacts on marine ecosystems are a concern. An early domestic response is found in *A Statement of Commitment to Complete Canada's Networks of Protected Areas*,

which was signed in 1992 dedicating the efforts of Ministers responsible for the Environment, Parks and Wildlife to create networks of land-based protected areas by 2000 and to hasten the formation of representative marine protected areas (Government of Canada, 2011).

The 1996 *Oceans Act* articulates 3 important principles governing ocean management: integrated management, precautionary principle, and sustainable development (Walmsley, 2006). This paved the way for a federal comprehensive Oceans Action Plan which promotes the maintenance of "healthy and productive ocean ecosystems to allow Canadians to realize the full economic, environmental, cultural and recreational benefits that their oceans have to offer" (Government of Canada, 2005). Begun in 2005, the Oceans Action Plan assigned the task of developing a network of marine protected areas to three Ministries: 1) Fisheries and Oceans Canada: *Oceans Act*, 2) Environment Canada: *Migratory Birds Convention Act; Canada Wildlife Act*, and 3) the Ministry in charge of the Parks Canada Agency; *NMCA Act*. DFO provides the overarching leadership (Government of Canada, 2005) and as such is to "lead and facilitate the development and implementation of a national oceans strategy, based on the ecosystem approach and the principles of sustainable development, integrated management, and the precautionary approach" (Walmsley, 2006, p. 13). See Figure 3.1: Marine Protected Areas Hierarchy of Governance.

A plan of action was developed to facilitate this tri-partnership. Called *Canada's Federal Marine Protected Areas Stategy (2005)*, the document outlines the roles of each federal department and agency in the mutual goal of "*the establishment of a network of marine protected areas, established and managed within an integrated oceans management framework, that contributes to the health of Canada's oceans and marine environments"* (p. 3; italics in original). It also affirms that partnerships with other federal agencies (Transport Canada, National Defence, and Natural Resource Canada), provincial and territorial

governments, Aboriginal peoples, environmental and wildlife organizations, will be necessary and pursued (adding even more layers of policies and legislation to the governance of each marine conservation area developed by Parks Canada).

Hoyt (2011) commends Parks Canada's efforts saying that "Canada's systematic biogeographic approach in the NMCA system plan has been admired by MPA practitioners in other countries" (p. 196). However, he also notes that Environment Canada, under the Migratory Birds Act and the Canada Wildlife Act can establish national wildlife areas up to 12nm (22.2 km) and marine wildlife areas out to the EEZ boundaries (200nm; 370 km) but the CWA does not include the seabed, so mining and development could still occur.

Guenette and Alder (2007) contend that early marine protected area initiatives were not successful, citing a lack of funding as the primary cause, adding that conflict between government agencies and levels of government contributed to delays. They also assert that DFO "has yet to fully come to terms with its double duty as fisheries promoters and managers under the *Fisheries Act* and as leaders in conservation and ecosystem management under the *Oceans Act*" (p.66). R. Mulder's assessment is in agreement: "DFO was never made to manage conservation. DFO was structured to manage fishing, predation. That's why everything is so messed up." (Interview, May 7, 2013). T. Beasley's comments affirm this sentiment:

> DFO is an organization which structurally regulatory wise is about taking fish, not conserving fish species. And it doesn't look at holistically the use of the ocean, or water. It only looks at it from a food resource perspective, not from a tourism or other economic generator perspective. They have not had the tools or the political will or direction to create those tools. (Interview, May 7, 2013)

The recent *Report of the Commissioner of the Environment and Sustainable Development* (2012) concurs with Mulder, Beasley, and Guenette and Alder's prescient evaluation, revealing a lack of follow-through on promises made at the 1992 Convention for Biological Diversity. In fact, as of

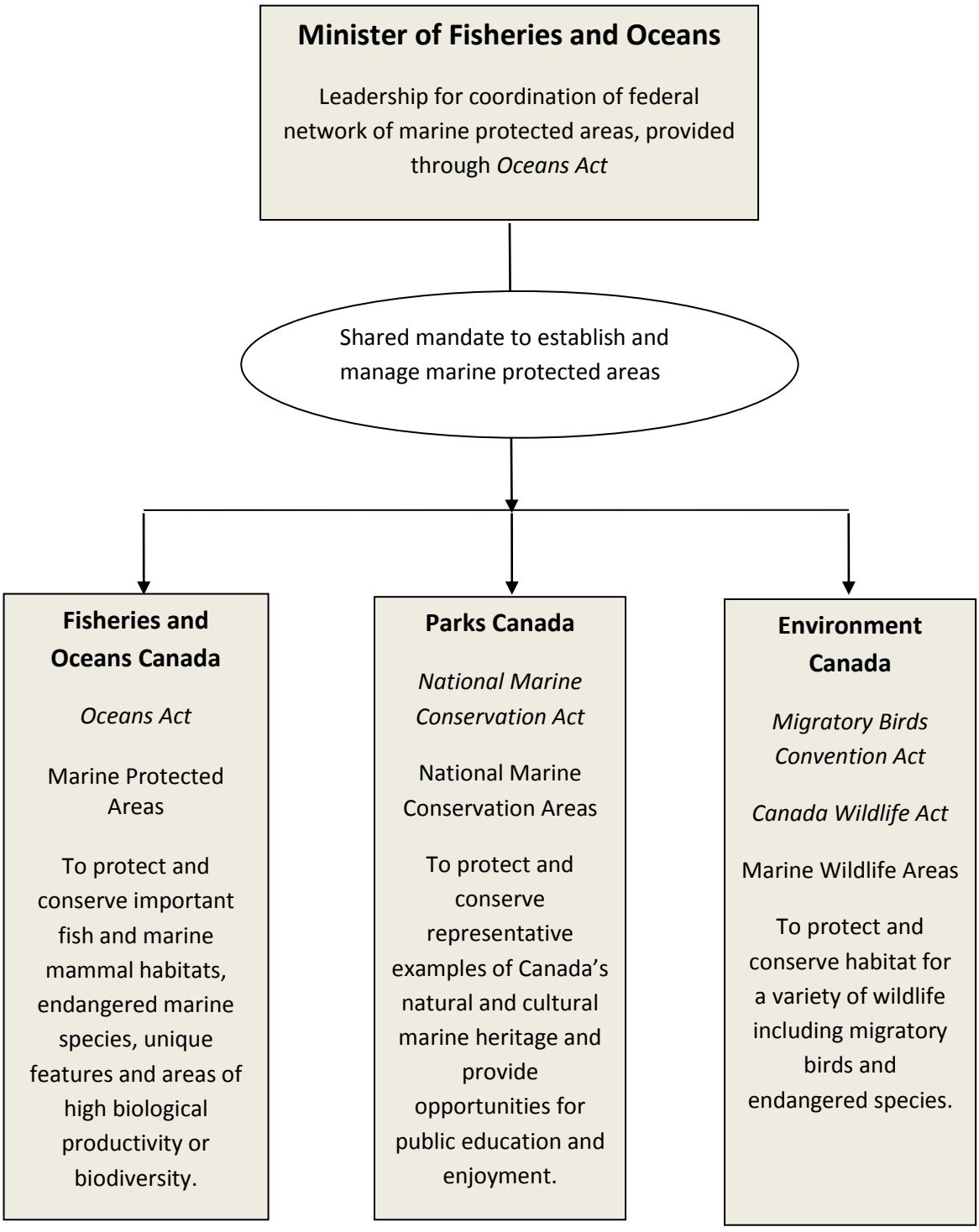

Figure 3.1 Marine Protected Areas Hierarchy of Governance; Data Source: (DFO, 2005)

2011, Canada is protecting less than 1% of its Exclusive Economic Zone (Jessen et al, 2011) and has no national network of MPAs (Office of the Auditor General, 2012). (Canada's EEZ comprises approximately 7 million km^2 of marine territory; Dearden & Canessa, 2009). One of the challenges facing the creation of MPAs is possibly a lack of knowledge on the part of stakeholders about what they are. Recently in Nova Scotia the fishing industry has lobbied against MPA zoning despite the benefits and necessity of fish nurseries and tourism (Ross, 2013). Figure 3.2 and Table 3.2 show the area and numbers of current MPAs in provincial and federal jurisdictions, as well as co-managed or non-governmental MPAs.

In 2011 the Oceans Task Group, comprised of representatives from all provinces and territories except Quebec, and from federal government agencies: Fisheries and Oceans Canada, Parks Canada, and Environment Canada, developed the *National Framework for Canada's Network of Marine Protected Areas* (Government of Canada, 2011). Its purpose is to create "an ecologically comprehensive, resilient, and representative national network of marine protected areas that protects the biological diversity and health of the marine environment for present and future generations" (p. 6). The Azores Report, a summary document of the 2007 Convention on Biological Diversity in the Azores, Portugal, has been adopted by Canada to guide the creation of a national network of MPAs. It includes criteria for Ecologically and Biologically Significant Areas, guidelines to identify representative bioregions, and suggestions for how to design a network of MPAs (Government of Canada, 2011). The goals for this national network of MPAs are:

> 1. To provide long-term protection of marine biodiversity, ecosystem function and special natural features.
> 2. To support the conservation and management of Canada's living marine resources and their habitats, and the socio-economic values and ecosystem services they provide.
> 3. To enhance public awareness and appreciation of Canada's marine environments and rich maritime history and culture. (p.6)

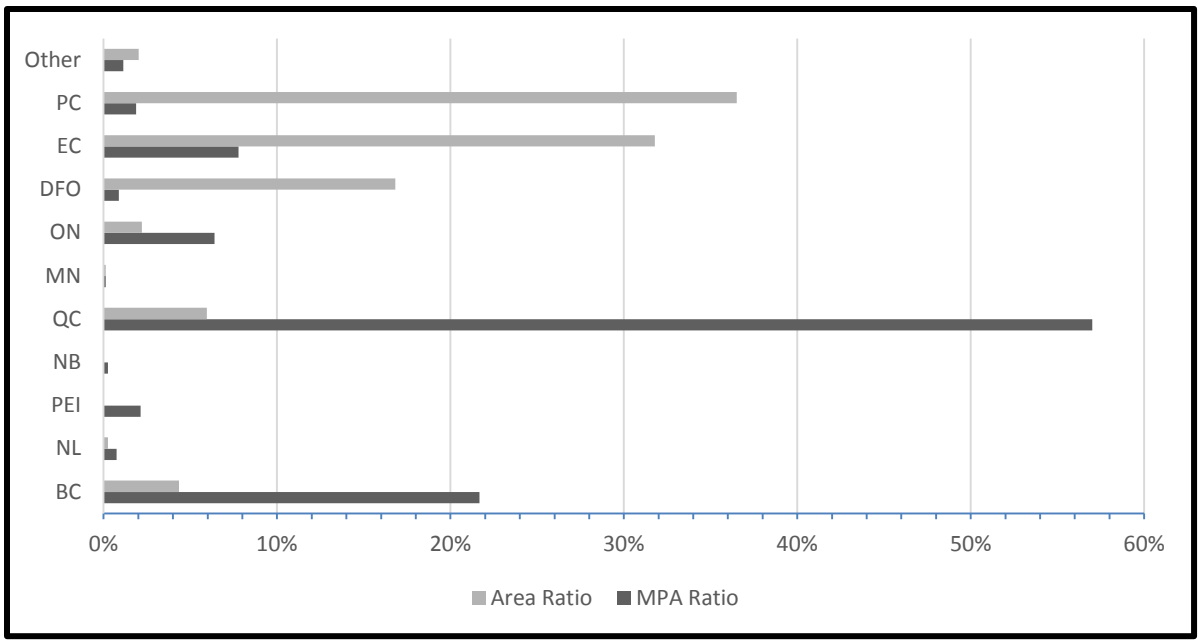

Figure 3.2 Percentage of Total Area (km^2) of MPAs and Percentage of Total Number of MPAs by Jurisdiction (Based on Table 3.2)

In order to qualify as an MPA in Canada, conservation of nature has to be the primary objective; it must fit within one of the 6 IUCN Categories (see Table 3.1); and it can be established through federal/provincial/territorial legislation or regulation and by agreements or management plans of Aboriginal or non-governmental organizations. (Government of Canada, 2011). However, to be considered part of the *network* of MPAs, it also has to fit within the 3 goals stated above.

3.1 National Marine Conservation Areas

Although the Great Lakes are not considered marine, their large size, direct connection to the Atlantic Ocean via the St. Lawrence Seaway, and the fact that the United States includes the Great Lakes in their system of marine protected areas, have spurred Canada to include them also in their marine protected areas (Government of Canada, 2011). National Marine Conservation Areas are defined as: “marine areas managed for sustainable use and containing

Table 3.2 Actual and Ratio number and area of Canada's MPAs Data Source based on DFO Report (Government of Canada, 2010)

Jurisdiction	# of MPAs	MPA Ratio	Area km^2	Area Ratio
BC	173	21.68%	2680	4.34%
NL	6	0.75%	152	0.25%
PEI	17	2.13%	4	0.01%
NB	2	0.25%	1	0.00%
QC	455	57.02%	3674	5.95%
MN	1	0.13%	80	0.13%
ON	51	6.39%	1357	2.20%
DFO[2]	7	0.88%	10376	16.81%
EC	62	7.77%	19611	31.78%
PC[3]	15	1.88%	22529	36.51%
Other[1]	9	1.13%	1249	2.02%
Total	798		61713	

[1] Co-managed or non-governmental [2] Includes Tarium Niryutait Marine Protected Area
[3] Includes Gwaii Haanas NMCA Reserve and Haida Heritage Site

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" (Parks Canada, 2012). Following IUCN guidelines, Parks Canada will establish large marine conservation areas (LSNMCA is over 10,000 km2; Gwaii Haanas National Park Reserve and Haida Heritage Site is 1,470 km^2) in close proximity to existing parks and protected areas to create larger corridors of conservation areas (Parks Canada, 1994).

Parks Canada has chosen to adopt a flexible management and planning approach for each marine conservation area since the people, culture, and circumstances in each region of Canada are different:

> Canadians view the marine environment and the role of marine protected areas quite differently. This is a reflection of strongly held social and economic values concerning the protection and use of the marine environment and its resources. While Parks Canada believes these areas must make a meaningful contribution to the protection of Canada's marine heritage, it also believes that the objectives for these areas are unlikely

> to be achieved without the cooperation, support and continued involvement of those most directly affected by their establishment. (Parks Canada, 1994, p. 47)

3.2 Is Conservation of Nature the Primary Objective of Parks Canada's NMCAs?

The *National Parks Act* was amended in 2000 to include the term "ecological integrity", declaring in section 8(2) that it is the "first priority of the Minister when considering all aspects of the management of parks." As Fluker (2010) proposes, there are two primary streams within the definition of ecological integrity: natural ecological integrity and socio-ecological integrity. The first argues that "ecological integrity can only be present in the absence of humans" (p. 92) and that any human influence interferes with the ecological integrity ideal. Fluker posits that this definition is in accord with Parks Canada's principles (found in the *National Parks Act*). The second stream assumes there is no place on earth that humans do not have influence and therefore "In this view, ecological integrity must be considered in the context of human judgment and becomes another factor, albeit an important one, to be weighed alongside other socio-economic interests in our decision-making processes" (p. 96).

Kopas (2007) argues a similar point regarding the distinction between conservation and preservation. The conservation camp promotes careful use under wise management, while preservationists would promote the hands off, zero-take principles of keeping wilderness pristine. Taking the following factors into consideration one could argue that Parks Canada seems to have chosen to interpret their NMCAs as areas dedicated to careful use under wise management:

- the renaming of "marine parks" as "marine conservation areas" to more accurately reflect the purpose and objectives of Parks Canada (Parks Canada, 1994)
- the *NMCA Act, 2002,* and the inclusion of "ecologically sustainable use" in section 4(4) and the exclusion of "ecological integrity"

- the distinction between conservation and preservation zones found in the 1994 Guiding Principles and Operating Policies

NMCAs are marine protected areas created and managed by Parks Canada, and, under IUCN guidelines, these very well may be classified as Category VI Protected Areas with Sustainable Use of Natural Resources (Day et al., 2012) rather than Category II National Parks which "will not generally have resource use permitted except for subsistence or minor recreational purposes" (Dudley, 2008). Category VI, has a strong focus on ecosystem management and maintenance of environmental services, promoting the sustainable use of natural resources for economic and social benefit (Dudley, 2008). However, in larger protected areas, these categories may be applied to zones within the area. This seems to be the intent of the NMCA Act, s. 4(4) which says,

> 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 [Category VI] and at least one zone that fully protects special features or sensitive elements of ecosystems and may include other types of zones. (Bracketed information not in original).

This multiple classification system can be adapted for a number of situations: where a marine protected area is contiguous with a terrestrial protected area, where certain zones are nested within a larger area (as may be the case in the Lake Superior NMCA), or as an amalgamated plan such as that used by Australia for many of their MPAs including the Great Barrier Reef Marine Park (Day et al., 2012).

Categories I thru VI are all considered protected areas which can be classified according to the primary management objective applied to at least 75% of the MPAs area (Day et al., 2012). The proviso is that the remaining 25% are used in ways "compatible with the definition of a protected area and the management category it is being assigned to" (p. 24). The way Parks Canada defines and interprets "ecologically sustainable use" and the "precautionary principle",

two potentially contentious phrases found within the *CNMCA Act*, will determine the Category(s) applied to each NMCA as well as the content and focus of future policies and Regulations created under the *Act.*

3.3 Is an NMCA a Category II or Category VI?

A comparison between the 1991 draft of the GPOPs policy with the final 1994 version indicated changes such as the additional information reflecting values expressed in the 1992 Convention on Biological Diversity. As mentioned in Chapter 1, the 1994 version also contained the addition of the clause prohibiting the sinking of a ship (GPOPs, section 4.3.3). A closer look at the 1994 IUCN publication of Guidelines for Protected Area Management Categories (IUCN, 1994c) concerning newly developed categories of protected areas and a table of appropriate activities within each IUCN designation found in the 2012 update of protected areas (Day et al., 2012, p. 27) revealed an interesting fact. The addition of artificial reefs pushes an MPA from Category II or III to being designated as a Category IV, V, or VI. The question arises, is it possible that the GPOPs 4.3.3 section prohibiting the sinking of a vessel in a marine park was added to ensure Parks Canada's marine parks would remain listed as IUCN Category II – National Parks? Currently, NMCAs allow recreational and some commercial fishing and these activities also push the NMCAs over to Category IV, V, or VI. Combine this with the inclusion of artificial reefs or other enhancement/restoration activities (fish aggregation or beach replenishment), and the argument for categorizing marine parks as Category VI is made stronger.

3.4 Is Ecological Integrity the First Priority?

IUCN states that a protected area "must have nature conservation as a **primary** rather than a secondary aim" (Day et al. 2012, p. 15). Given the precedent set in Canadian Parks and Wilderness Society v. Canada (Minister of Heritage) 2001 and 2003, and Mountain Parks Watershed Association v. Chateau Lake Louise, 2004 (Fluker, 2010), it would be interesting to

see if Parks Canada's marine protected areas would withstand a challenge to what the legislated first priority is for NMCAs. These two lawsuits against Parks Canada involving the ecological integrity amendments to the *Canada National Parks Act, 2000*, resulted in judgements favouring Parks Canada's "for the people" mandate of section 4(1), despite the first priority given ecological integrity in section 8(2). The judges in both cases weighed the content of section 8(2), "maintenance or restoration of ecological integrity... shall be the first priority", against section 4(1) which states parks are dedicated "to the people of Canada for their benefit, education and enjoyment" and according to Fluker (2009), "The Wood Buffalo Road and Chateau Lake Louise judgments interpret the maintenance or restoration of ecological integrity as but one factor in national park decision-making..." (p. 4), effectively placing ecological integrity in second place. Should this precedent apply to similar litigation under the *NMCA Act*, Canada may be found wanting in its international commitments to establishing MPAs since both IUCN and the Government of Canada's definitions of MPAs indicate that conservation of nature (ecological integrity) is to be a first priority.

That being said, the *CNMCA Act* contains the phrase "ecologically sustainable use" instead of ecological integrity. Until this phrase is more fully defined, the balance of conservation and use is unknown. Marine environments are by nature, fluid, and boundaries applied to terrestrial areas cannot be considered for a resource that is multi-dimensional, in motion through currents and shifting temperature stratas, and able to support a myriad of uses such as transport, recreation, tourism, shipping, commercial and sport fishing (Parks Canada, 2011). It is likely that until an ecological integrity issue arises demanding a court decision under the *NMCA Act*, the commitment of Parks Canada to conservation (i.e. is ecological integrity a first priority?) and the question of whether NMCAs can be considered MPAs may be unresolved.

Chapter 4: Canada National Marine Conservation Areas Act, 2002

4.1 Overview of the Canada National Marine Conservation Areas Act

The *NMCA Act* is the instrument upon which policy, guidelines, and Regulations will be based. Past policy will certainly influence present policy, but it is the *NMCA Act*, not the *National Parks Act* which has the final authority for NMCAs and with which all marine policy and management will have to abide.

The Preamble to the *NMCA Act* informs the legislation but is not the actual statute; it is helpful to the interpretation but is not definitive. The importance of protecting biological diversity (as per the CBD mandate; UN, 1992b) is affirmed and the precautionary principle is upheld as the guiding tool through which the marine environment will be conserved and managed. The Preamble confirms Parliament's desire to fulfill its international obligations to establish representative marine protected areas within a global network of MPAs, employ an ecosystem management approach, provide opportunities for Canadians and international visitors to appreciate and enjoy the natural and cultural heritage, acknowledge the social, cultural and economic well-being of coastal communities and individuals while providing opportunities for ecologically sustainable use through zoning, promote understanding of the marine environment, provide research and monitoring opportunities, consider traditional ecological knowledge in planning and management, and involve the appropriate stakeholders (including aboriginal governments) in the establishment and maintenance of these marine conservation areas.

The Interpretation section 2(1) includes a definition of "ecosystem" that is almost identical to that in the *Canadian Environmental Protection Act, 1999 (CEPA)*: "ecosystem" means a dynamic complex of animal, plant and microorganism communities and their non-living environment interacting as a functional unit." This definition is fundamental to understanding:

4(3) where management and use of marine conservation areas is to occur in a sustainable manner, meeting the needs of present and future generations, but without compromising the structure and functions of the ecosystems; 4(4) which refers to creating zones with at least one designed to fully protect special features or sensitive elements of ecosystems; 9(1) where management plans need to be prepared that include provision for ecosystem protection; and finally 9(3) which delineates the primary considerations of protecting marine ecosystems and maintaining marine biodiversity as being the principles of ecosystem management and the precautionary principle.

Clause 4(1) illuminates the purpose of these marine conservation areas as being to protect and conserve representative marine areas *for the benefit, education and enjoyment* of the people of Canada and the world. These three words – benefit, education, and enjoyment – were discussed in Chapter 2 about Parks Canada's mandates and policies. "Unlike national parks, whose resources are fully protected, marine conservation areas are managed for sustainable use and there is a focus on recreation, tourism, education and research" (Dunsmuir, 2001,p. 3).

Clauses 4(3) and 4(4) mention key phrases related to ecosystems such as managing and using marine conservation areas in a sustainable manner, not compromising ecosystems, using zoning to encourage ecological sustainable use of marine resources as well as conservation and protection of ecosystems. Clause 9(1) outlines the requirements for management plans that include a long term ecological vision for the NMCA and provision for ecosystem protection, human use, zoning, public awareness, and performance evaluation. The primary considerations, principles of ecosystem management and the precautionary principle are fundamental to how the *Act* is seen in praxis, and have a direct bearing on the decision-making process of propositions for an NMCA such as the creation of an artificial reef. Ecologically sustainable use

and ecosystem management are discussed in several places in this thesis; the primary discussions occur within Chapter 3, global and national systems of marine protected areas. Discussion of the precautionary principle in the next section, draws upon international literature and arguments that have arisen over the past two decades of its use in legislation and other legal instruments.

Sections 12 – 15 contain the prohibitions associated with NMCAs which state that without authority, there is no disposition or use of public lands, no exploration or exploitation of inorganic resources, no disposal of any substance in NMCA waters (with exceptions as per specific sections of *CEPA, 1999*) and special mention is made of permitting fishing licenses issued under the *Fisheries Act*. Section 15 gives the superintendent of an NMCA authority to issue, amend, suspend, and revoke authorizing instruments for activities consistent with the management plan. This is pertinent to the research question of sinking a ship to create an artificial reef as it gives Parks Canada discretionary license to allow or prohibit this activity. However, this discretion has to be taken in the greater context of the *NMCA Act*, keeping in mind that decisions made by a superintendent have to be supported by the management plans, which have to follow the principles laid out in the NMCA Act.

The *NMCA Act* definition of "waste or other matter" as provided in *CEPA, 1999* and clause 14(1) and 16(1)(l) regarding disposal of any substance will be addressed in the discussion about international maritime law and guidelines regarding the sinking of a ship to create an artificial reef. Regulations 16(1) and (e) seem to give leeway to Parks Canada to develop regulations (and policy) prohibiting the sinking of a ship to create an artificial reef and dive site (as found in the 1994 GPOPS) but, this section is prefaced with the statement "consistent with international law" and so this will be included in this chapter's section concerning the role of international law in the Canadian legislation and the *NMCA Act* in particular.

4.2 Precautionary Principle and Approach[8]

During the initial interviews, participants were asked for feedback about the NMCA explanation of the precautionary principle found within the preamble. The responses (after reading the definition aloud, two of the lawyers muttered "What the hell does that mean?") provoked the writing of this section. The problem with the precautionary principle is that it remains vulnerable to subjective interpretation and cognitive mechanisms that threaten its viability as an effective legal tool, yet this very vulnerability, effectively and wisely employed, may be the avenue for societal, governmental, and industrial paradigm shifts regarding ecological sustainable use of resources.

The precautionary principle is a difficult concept to understand and to precisely define: "Even so, unless there is some core meaning to a principle it is most doubtful whether it deserves that appellation, being instead a mere aspiration" (Hughes, 1995, p. 238). The judgement of Wheeler J, of the Supreme Court of Western Australia illustrates the challenge further:

> Adopting for the moment a very broad characterisation of the precautionary approach, a requirement that a decision-maker 'be cautious' says something about the way the decision must be made. There must be some research, or reference to available research, some consideration of risks, and a more pessimistic rather than optimistic view of the risks should be taken. However, such a requirement does not in any particular case specify precisely how much research must be carried out, or when a risk should be considered to be so negligible that it may safely be disregarded. Still less, does such an approach dictate what courses of action must be taken after the possibilities have been cautiously weighed. (18 WAR 102, 1997 as quoted in MyEnvironment Inc v Vicforests, 2012, p. 82)

At its simplest, the precautionary principle is an acknowledgement of a lack of certainty regarding our scientific knowledge (Hunt, 1994), is usually interpreted as preventative rather

[8] Although some authors make careful distinctions between precautionary principle and precautionary approach, this section addresses general philosophical issues associated with both. In short, the precautionary approach is a way of putting the precautionary principle into action. Meltzer (1998a and 2009) addresses the distinction between the precautionary approach in fisheries and the precautionary principle in environmental law.

than restorative (Pearce, 1994), in the face of serious harm and scientific uncertainty decisions should favour the environment (Meltzer, 2009) and as stated by numerous authors, errs on the side of caution in risk management. Attfield (1994) purports that "none of the elements of the principle is absolute" (p. 155). As Fisher (2001) notes, the precautionary principle demands a contextual approach, giving "primacy to innovative, democratic and discretionary administration over static and rule bound institutions" (p. 6), and challenges an approach to decision making in law that depends on a standardized framework. Ahteensuu (2007) posits that application of the precautionary principle relies on societal values, making imperative the need for justice and democracy when considering situations where human rights, risks, costs, and benefits are being decided. Despite widespread arguments over the validity and viability of using this principle in law, it has become embedded in law, risk regulation, and policy in jurisdictions all over the world such as Australia, New Zealand, India, Canada, Germany, France, and the UK (Peel, 2009; Fisher 2001).

4.2.1 Soft, Hard, and Customary International Law

In international law, hard law is the "product of negotiations among States and, together with customary rules", are "legally binding agreements that are typically embodied in international treaties and that require parties to behave in accord with their stipulations" (Meltzer, 2009, p. 11). A treaty is a bilateral, multilateral, or plurilateral international agreement governed by public international law and is usually identified as a Convention, Treaty, Protocol, or Agreement (Canada Treaty Information, 2011). Soft law is "nonbinding general norms or principles not readily enforceable through binding dispute resolution... [and] can be a precursor or catalyst of hard law, or reinforce and strengthen existing hard law instruments as well as prompt the formation of customary international law" (p. 11). Treaties and the Convention on Biodiversity are examples of hard law; Agenda 21 and the Rio Declaration (which includes the

precautionary principle in Principle #15) are examples of soft law and are non-binding. However, as Meltzer explains, soft law has an important role in the development of policy and guidelines which have room to evolve, they can provide clarification to hard law, be an instrument of gathering consensus and compliance, and be used to crystallize concepts and principles which may later become hard law. In addition, implementation of both soft and hard law can be influenced by NGOs, citizens, industry, State political will, and other stakeholders. (Meltzer, 2009). The difficulty is deciding when a non-binding instrument such as the precautionary principle becomes customary international law and therefore binding (upon the States who are signatories). According to the Privy Council (2003), the precautionary principle/approach was not considered to be a rule of customary international law. Given that this document is a decade old and that the precautionary principle has been added to several pieces of environmental legislation in Canada: *CEPA, 1999,* the *Canadian Environmental Assessment Act, 2012,* the *Endangered Species Act, 2007,* in addition to the *NMCA Act*, it seems to be an accepted component, albeit a contentious one.

4.2.2 The Rio Declaration and the Convention on Biological Diversity

The term precautionary principle has come into use relatively recently, although the maxim “better safe than sorry” might be a colloquial precursor to its use in law and policy. Its close cousin, “common sense”, has appeared in several court decisions correlated with the caution aspect of the precautionary principle (Fisher, 2001). The term precautionary principle began to appear in documents in the early 1980s, however a library journal search of the term revealed a dearth of articles until the 1992 United Nations Conference on Environment and Development (UNCED). Here, at what was also known as the Rio Earth Summit, five documents, including The Convention on Biological Diversity (CBD) were opened for signatures and

ratification (UN, 1992b). Two of these documents contribute to the focus of this chapter: the CBD and the Rio Declaration.

The precautionary principle was introduced as part of the Rio Declaration on Environment and Development, a summary of principles of a global strategy for sustainable development adopted by UNCED participants, including Canada. Principle #15 of the Declaration of the 1992 Rio Conference on Environment and Development states that:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. (United Nations, 1992a)

The wording and phraseology of Principle #15 has been drawn from the Convention on Biological Diversity (CBD), which is a document focussing on global issues of sustainable development and the conservation of biological diversity, and addresses socially, economically, and environmentally diverse states. It was a call for cooperation between nations and people, introducing and affirming principles that would unify a global mission of ecological sustainable development (UN, 1992b). The first phrase is a reminder of the environmental origins and focus of the principle, “In order to protect the environment”. The phrases “according to their capabilities” and “cost effective measures” acknowledge the diversity of participating States and their abilities to meet environmental standards. The phrase, “threats of serious or irreversible damage”, restricts the application of the precautionary principle to one end of the spectrum, meaning that for an action deemed below the “serious or irreversible damage” threshold, the principle is not brought into play. (But, how is this threshold determined, and what parameters are referenced where scientific certainty is not possible?) The calculation of risk involves many interlinking variables and the support of scientific knowledge (Fisher, 2001). Unfortunately scientific knowledge is not complete and so “lack of full scientific certainty” acknowledges that

some decisions will have to be guided by “judgement, based on values and priorities” (Privy Council Office, 2000, p. 7).

4.2.3 Global Marine Health

In addition to the CBD and the Rio Declaration, another stream of ecological awareness was emerging through concern for global marine health. The 1987 Ministerial Declaration of the Second International Conference on the Protection of the North Sea (the earliest convention to employ the precautionary principle; Cameron, 1994), the 1990 North Sea Ministerial Declaration, and the 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic used the precautionary principle, eliminating the need for proof of harm before action could be taken (MacGarvin, 1994). This reflected a move away from an assimilative capacity approach (pollute until the tipping point is reached) in marine ecosystem management to an approach which prevented toxins from entering the system in the first place.

By 1995, addressing the marine environment specifically, several conventions and agreements were adopted: the United Nations Convention on the Law of the Sea (1994); the United Nations Environmental Programme’s (UNEP) Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; the Convention on Biological Diversity (Jakarta Mandate) on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity; and the United Nations Agreements on Straddling and highly Migratory Fish Stocks. UNEP’s Regional Seas Programme (established 1974) and the International Maritime Organization (established 1948 and specializing in shipping safety and preventing pollution by ships) provide information and resources internationally, including the document, *London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs* (London Convention and Protocol/UNEP, 2009). All contain the precautionary approach or principle as part of management of fish stocks.

The London Protocol (1996) contains an example of the precautionary approach being applied to the specific issue of polluting marine environments. Article 3(1) places signing parties under obligation to,

> apply a precautionary approach to environmental protection from dumping of wastes or other matter whereby appropriate preventative measures are taken when there is reason to believe that wastes of other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.

In addition, Article 3(2) places the onus on the polluter to "bear the cost of meeting the pollution prevention and control requirements for the authorized activities", and Article 3(3) is a safeguard against simply transferring the pollution to another part of the environment. Unlike the 1972 London Convention which provided a list of prohibited waste matter, the Protocol prohibits the dumping of any waste except for a small reverse list of what is allowed to be disposed at sea. This version of the precautionary principle has strong rules and regulations supporting it, a precept advocated by Meltzer (2009).

4.2.4 International Declarations and Conventions

Nigel Haigh (1994) traces the introduction and evolution of the precautionary principle within the realm of international declarations and conventions to which the UK is a signatory. Additional references are added where needed to broaden the global picture of the nascence of the precautionary principle's use.

During the 1980s, when concern for the depleting ozone layer came to the fore, three statements were produced at three different international conferences (Munich Conference, 1980; Vienna Convention, 1985; and the Montreal Protocol,1987) advocating precautionary measures as CFCs (chlorofluorocarbons) had not been definitively proven to be the cause of the ozone problems: "a significant reduction should, as a precautionary measure, be achieved"; "*Mindful also* of the precautionary measures for the protection of the ozone layer"; "taking

precautionary measures to control equitably total global emissions" *(*Haigh, 1994, p. 243). These were followed by four statements specific to pollution in the North Sea, addressing severe damage by toxic substances. Two distinctives are common to all four. The first is that the substances are deemed dangerous and harmful: "dangerous" (London Conference, 1987); "pollution emissions [having]... damage or harmful effects" (Nordic Sea Conference, 1989); "persistent, toxic, and liable to bioaccumulate" (Paris Convention, 1989 and The Hague Conference, 1990). The second distinctive is instructive, stating that action should be taken even when a causal link between a substance and damage has not been scientifically proven.

The Bergen Declaration (1990), a response to the Brundtland Report – *Our Common Future* (UN, 1987) on sustainable development, and prepared in anticipation of the Rio Convention (1992), states that the precautionary principle is necessary to the goals of sustainable development and "goes beyond prevention by requiring anticipation" (Haigh, 1994, p. 232). In fact, the declaration specifies that the precautionary principle is only effectuated when there are threats of serious or irreversible damage - meaning that the principle of proportionality (appropriate measures matching the seriousness of the damage) comes into play.

When Principle #15 was introduced, it was part of the Rio Declaration, within the context of being a metaphorical fence between global neighbours, and so the additional phrase "according to their capabilities" acknowledges different economic situations amongst states. The 1992 Paris Convention presented a statement three months later regarding the North Sea and the North East Atlantic with a version of the precautionary principle that advocates preventive measures be taken if human health, living resources, marine ecosystems, amenities, "other uses of the sea" (presumably including anything from fishing to mining to tourism) are at risk of "hazards". As Haigh (1994) predicts, "the precautionary principle will continue to be

stated using slightly different words on different occasions so that it is likely to be interpreted differently depending on the country or international organization relying on it" (p. 233).

4.2.5 Context of the Wingspread Statement

Developed in 1998, the Wingspread Statement is used in Parks Canada's training manuals as an example of what the precautionary principle means, although there is a disclaimer indicating that Parks Canada does not necessarily endorse this definition. According to the Science and Environmental Health Network (1998), the context within which this statement was developed includes the acknowledgement that:

- the use of this term is growing at a domestic and international level,
- many existing laws, policies, and regulations are focussed on the aftermath of toxins being released into the environment, not preventing the incident in the first place, and
- risk assessment and cost-benefit analysis tended to give the benefit of the doubt to the proponent, leaving it up to victims to prove the activity or product had harmful effects.

The Wingspread precautionary principle shifts 1) the burden of proof of no harm and 2) culpability if harm is done, onto the proponent (SEHN, 1998). It is a call to "proceed more carefully than has been the case in recent history" (n.p.; Located in section titled The Wingspread Consensus Statement on the Precautionary Principle), not a license to halt all and any potentially harmful activities, although careful research is required to ascertain the level of risk and the appropriate response and must "involve an examination of the full range of alternatives, including no action" (n.p.; same as previous reference).

Table 4.1 Comparison of early uses of the precautionary principle with *CEPA* and the *NMCA Act.*

Comparison of Precautionary Principles	
Protection of the North Sea: London, 1987	Accepting that, in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence.
Nordic Conference, Pollution of the Seas 1989	...the need for an effective precautionary approach, with that important principle intended to safeguard the marine ecosystem by, among other things, eliminating and preventing pollution emissions where there is reason to believe that damage or harmful effects are likely to be caused, even where there is inadequate or inconclusive scientific evidence to prove a causal link between emissions and effects.
Third Conference on the North Sea: The Hague, 1990	...will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bioaccumulate even when there is no scientific evidence to prove a causal link between emissions and effects.
Bergen Declaration 1990	In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
Rio Declaration 1992: Principle #15	In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Paris Convention 1992 Protection of the Environment of the North East Atlantic	The contracting parties shall apply: a) the precautionary principle, by virtue of which preventive measures are taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.
Wingspread 1998	When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically
Canadian Environmental Protection Act, 1999	Whereas the Government of Canada is committed to implementing the precautionary principle that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Canada National Marine Conservation Areas Act, 2002	Whereas the Government of Canada is committed to adopting the precautionary principle in the conservation and management of the marine environment so that, where there are threats of environmental damage, lack of scientific certainty is not used as a reason for postponing preventive measures...

4.2.6 Substantive in the Face of Uncertainty

If the precautionary principle is held up as a standard (substantive law) then it is expected there will be norms attached to it, standards by which regulations and policy may be guided and which will inform judicial decisions. However, in this role, the precautionary principle may not be justiciable, but as Fisher argues, it should be used in the "reshaping of administrative processes and procedures... [requiring] the implementation of flexible, proportionate and democratic decision-making processes" (Fisher, 2001, p. 334). Her argument states in part that the level of scientific expertise required of the courts in ascertaining risk associated with an action may be beyond the competence of the court. Furthermore, precaution is a matter of degree (how bad is the threat) and proportionality (a solution appropriate to the risk) and therefore context has to determine the precautionary threshold, not some arbitrary framework of rules (Feintuck, 2005). As Fisher (2001) expresses, "Procedures need to be developed which ensure that science is not overly relied on in such cases [of scientific uncertainty]. Those procedures cannot be a set of rigid rules because the nature and extent of scientific uncertainty will vary as will the nature of the risks themselves" (p. 332). In this context, the legitimacy of depending solely on science to be a rationale foundation for decision making in environmental management is brought into question (Hunt, 1994). Fisher's mention of democracy is integral to understanding the complexity of the precautionary principle in praxis, as invoking this principle calls upon "the values which we attach to the nature, society, human well-being, and social equality" (Ahteensuu, 2007, p. 108) demanding discretionary decision-making based not only on science and hard facts, but also on ethics, social costs, societal values and morals. These in turn affect the outcomes of cost benefit analyses, scientific modelling and prediction, risk assessment, and liability assessment.

A helpful framework for understanding scientific uncertainty comes from Wynne (1992) who delineates the concept using four terms:

- Risk – defined as knowing the parameters of the situation and being able to quantify them
- Uncertainty – knowing the parameters, but lacking quantitative knowledge and understanding
- Ignorance – knowing neither the parameters nor anything about them
- Indeterminacy – the unforeseeable ramifications of a situation or event not only on ecological systems, but within the context of social constructs.

The first three can be viewed as a continuum from complete knowledge to lack of knowledge. The fourth term, indeterminacy, according to Wynne, is the overlaying unpredictableness of social behaviour. There are too many possible variations that can occur because of people behaving differently despite being in seemingly identical situations. Consider two identical pulp mills in two different municipalities governed by different waste management and labour laws. The processes of the mills may be identical but the extrinsic social factors plus differences in governing laws, *inter alia,* bring an element of indeterminacy to the identicalness of the outcomes of the mills. In fact, Wynne would argue that there are so many possible differences, that a basis of assumption of science, the inferential premise that an experiment (for instance) can be identically duplicated, is false. This argument is presented in many different forms by authors such as Sunstein (2003) and Ahteensuu (2007 and 2008), acknowledging the myriad roles social complexity plays in the precautionary principle.

4.2.7 Theory of Planned Behaviour

In much the same way as the Theory of Planned Behaviour depends upon people making rational choices based on the gathering of information and logically ascertaining the

best decision, the precautionary principle seems to assume the same ability is present in law and decision makers. The reality is that it is *people* making the laws, people interpreting the laws, people policing the laws, and of course people breaking the laws; and *people* place different meaning and values on things. As Warner (1994) reminds, "Evidence itself is not a cause for taking precaution" (p. 105); precaution is influenced by shifting cultural memes and values. Consider the rather blunt commentary on precaution in US environmental law, "where the economical justification for the additional margins of safety become the battlegrounds between various vested pressure groups whose resolution of dispute does not always constitute the 'public interest'" (Warner, 1994, p. 106).

4.2.8 Cost Benefit Analysis

In the face of uncertainty, Cost Benefit Analysis (CBA) calculates risk neutrality through the expected value concept, and risk aversion as the expected utility concept: the first multiplies the probability of an event by the determined magnitude of the event, the second weights the variables by placing a relative value on the event (Pearce, 1994). For example, the US EPA distinguishes between harm itself and the risk of harm, risk being a function of magnitude and probability of harm (Bodansky, 1994). However, It is this "relative value" that proves impossible to compute. As Sunstein (2003) points out, people do not necessarily behave rationally and in a formulaic manner.

The idea of spending a lot of money to achieve potential, unguaranteed future benefits has little appeal for most, yet this is precisely what is proposed when determining a course of action or non-action based on the precautionary principle and cost benefit analysis (O'Riordan & Cameron, 1994). While not arguing against the need for legislative protection (for the environment), Sunstein (2003) points out that the precautionary principle by default, allows for certain cognitive influences on behaviour to creep in. Although cost benefit analysis seems to

be an effective way to protect (the environment in our case), it actually provides no definitive direction at all, but inherently depends on cognitive mechanisms such as loss aversion, probability neglect, and the availability heuristic, resulting in a narrow focus on a risk while neglecting the entire system (Sunstein). Loss aversion is the idea that people are more likely to forego potential benefits and go to greater lengths to avoid loss of something they have. For example, the fear of potential harm of genetically modified crops may override potential benefits of providing genetically engineered crops to hungry people (Sunstein). This is not an argument for or against GMOs, rather, it is provided to point out the importance of considering the loss of potential benefits should the precautionary principle be brought to bear out of a biased fear of GMOs.

Proportionality or "cost-effectiveness of margin of error" (O'Riordan & Cameron, 1994, p. 17) is still somewhat of a guessing game since the ability to perform a cost benefit analysis is dependent on the validity of the information used to make the decisions. "Scientific uncertainty", in other words a lack of tangible evidence, means that there is always going to be a risk of error, either through maintaining status quo when intervention would have been wiser, or through proactive choices gone bad. The risk exists then, that management, not wanting the costs involved in determining whether a particular action may result in damage to the environment, makes a pre-emptive strike through policy and regulation. For instance, Parks Canada may decide it is easier to develop policy prohibiting the sinking of ships to create artificial reefs because it deems the alternative (having to evaluate and vet proponents' proposals) too costly. Under the guise of the precautionary principle, such a restrictive policy may seem reasonable.

Within the context of the *NMCA Act*, to develop a policy such as the 1994 policy against the creation of artificial reefs may be a misuse of the precautionary principle. Documented use

of artificial reefs for hundreds of years, along with more recent studies of the benefits to fisheries and other aquatic life, balanced with regulatory safety measures regarding toxins present and released, would be part of the burden of proof that the sinking of a ship to create an artificial reef can be done in an environmentally safe manner (London Convention and Protocol/UNEP, 2009).

Risk assessment and CBA both depend on full and complete knowledge in order to be valid. The precautionary principle on the other hand lives in the land of scientific uncertainty. Within the precautionary principle, two fundamental questions need to be asked in every situation regarding changes to the environment: Does it cause harm? And what is causing the harm? (Bodansky, 1994). To elucidate, sinking a cleaned ship may not be harmful (apart from the initial explosions and settling of the ship) but if any toxins are left aboard, the damage may not arise from the presence of the ship, but a particular toxin such as PCBs or asbestos. Bodansky (1994) points out that the shift of the burden of proof (to prove something will not do any harm) still does not mean the risk of harm is eliminated; DDT and CFCs would have been allowed no matter who was responsible for the proof because no one knew they were toxic. Further, the precautionary principle may be an inhibiting factor to newer technology which may not get approval because the inventors cannot prove there will be no harmful outcome, even though it may produce less pollution or harm than the existing technology. The conundrum, according to Bodansky, is then, do we allow intermediary measures that do not eliminate harm, but reduce it with the hopes that sometime in the future technology will eliminate the harm completely? Or do we allow the precautionary principle to prevent technology that cannot guarantee no harm. This is one of the inherent dangers of the precautionary principle – that it becomes a black hole for new technology that may indeed help reduce pollution and toxins.

4.2.9 Procedural Framework

In her book, *The Quest for Sustainable International Fisheries*, Meltzer (2009) advocates that parameters and reference points be determined in advance in order for the precautionary principle/approach to be effective. Regional Fisheries Management Organizations (representing States) access pre-determined triggers for "pre-agreed upon conservation and management action" (p. 118). As Meltzer states, "preagreed decision rules are an important component of precautionary management. Such rules pre-empt controversy, prolonged debate, and stonewalling, and are intended to protect stocks that are approaching or exceeding limit reference points from decisions that are based on short-term political horizons rather than science" (p. 118-119). Jessen et al. advocates that "in order to be precautionary, there is a need to determine the 'metric on which a decision is based and the level (or standard) of proof that the metric must meet'"(Gerrodette et al, 2002, p. 658, as cited in Jessen et al., 2011, p. 28).

4.2.10 A Comparison of Principle #15, *CEPA,* and the *NMCA Act*

A review of how Principle #15 has been defined and applied within the context of the *Canadian Environmental Protection Act (CEPA)* may shed light on how the *NMCA Act* will be interpreted. The wording of the Canadian Environmental Protection Act, 1999 (CEPA) states:

> Whereas the Government of Canada is committed to implementing the precautionary principle that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The Federal Sustainable Development Strategy (2010) provides this interpretation of the definition of the precautionary principle within CEPA: "In other words, the absence of complete scientific evidence to take precautions does not mean that precautions should not be taken – especially when there is a possibility of irreversible damage" (Environment Canada, 2010, p. 7).

This version of the precautionary principle is very similar to Principle #15 of the Rio Declaration, but fundamentally different from the *NMCA Act*, which describes the precautionary principle within the preamble in the following way:

> Whereas the Government of Canada is committed to adopting the precautionary principle in the conservation and management of the marine environment so that, where there are threats of environmental damage, lack of scientific certainty is not used as a reason for postponing preventive measures...

In section 9(3), under Administration, the *Act* informs where the principle is to be applied, which is in the context of management plans:

> In order to protect marine ecosystems and maintain marine biodiversity, the primary considerations in the development and modification of management plans and interim management plans shall be principles of ecosystem management and the *precautionary principle*.

The first observation is that the precautionary principle is never actually defined in the legislation. The preamble states that the Government of Canada is committed to adopting the precautionary principle. It states where (in the conservation and management of the marine environment) and why (so that where there are threats of environmental damage, preventive measures are not postponed because of lack of scientific certainty), but grammatically, the sentence structure is formulated such that what is meant by "precautionary" is left up to the reader. This has vast implications, as has been discussed, for ensuing policy and regulation development and law enforcers.

The phrase, "threats of environmental damage" may have a broader scope than *CEPA's* use of "serious and irreversible damage" of Principle #15, triggering the precautionary principle at a much lower threshold of possible damage. The problem remains of determining what that threshold is and how to quantify potential environmental damage. Also, the *NMCA Act's* description limits the damage to the environment, leaving a question mark as to how far up the

food chain "environment" goes. And unless humans are assumed to be part of the environment, it also makes no mention of harm to humans.

The *NMCA Act* leaves out an adjective that also changes the meaning of Principle #15, which says "lack of *full* scientific certainty". It is uncertain what this phrase is referring to: 1) not being certain that a particular action will cause (or is causing) harm in the first place, or 2) not being absolutely certain that the possible solution to the damage will work. In addition, the inclusion of "full" may indicate that at least some degree of scientific knowledge is needed to establish a threat even exists, before the precautionary principle comes into play (Ottawa Chamber of Commerce, 2011). The word "full" sets the desirable standard of scientific knowledge, making the requirement for some level of knowledge implicit.

CEPA and Principle #15 use "cost-effective" to describe the measures to prevent environmental degradation. The first point is a question of what "prevent" means. Is this a pre-emptive admonition, meaning that certain activities should not be allowed in the first place? Walmsley (2006) states that the term precautionary denotes an approach where activities are undertaken in advance to protect against possible danger or failure. Or is this referring to actions taken to remediate existing damage? In the *NMCA Act*, the precautionary principle has an interesting twist at the end: "lack of scientific certainty is not used as a reason for postponing preventive measures" which seems to give it the pre-emptive interpretation, but could still refer to not postponing remediative measures. The second point is that "cost-effective" brings the element of proportionality to the issue. Any actions taken should be proportional to the risk of harm. This could imply that "as the scientific certainty of risk goes up, the justification for costlier measures is similarly increased" (Ottawa Chamber of Commerce, 2011, p. 1). As a side note, this "cost effective" phrase is also missing from the Canada Consumer Product Safety Act, 2010.

The issue of the burden of proof is tricky for the *NMCA Act's* precautionary principle, given the context. Using the example of a group of stakeholders who desire to sink a ship to create an artificial reef, the scenario of the burden of proof resting on the proponent would result in economic feasibility studies, cultural and archaeological studies, biogeographic marine studies of several possible sites, and proof of the ship's environmental cleanness (currently a Disposal at Sea permit issued by Environment Canada). However, the Parks Canada staff responsible for evaluating the application would have to have a level of scientific expertise sufficient to judge these reports as valid and reliable or not. Parks Canada would likely have to contract objective consultants, if they did not have in-house scientific experts, to enable such a determination. There would have to be an additional adjudication of both sides (if there were differences of opinion and evidence). The assignment of burden of proof to the proponent is not simple.

Another question arising from the precautionary principle is whether it can address aggregate actions that may have little impact individually such as operating a motorboat but the combined effect of many boaters for instance may cause "threats of environmental damage".

Following the Panel on the Ecological Integrity of Canada's Parks, training was provided for Parks Canada staff specifically about ecological integrity. According to a Parks Canada training manual (Parks Canada, n.d.) the precautionary principle is consistent with PC's current dual mandate of protection and leaving the parks unimpaired for future generations. Key principles are that nature has value in itself, not just in how we use it; choices in favour of nature are to be made, even when the environmental consequences of an action are unclear or unknown; the burden of proof of no negative impact is on someone proposing a change; and all decisions have a cost and sometimes the best decision is to forego opportunities today to protect the future. Within the context of this ecological integrity training, the manual explains:

> The precautionary principle is not an excuse for doing, or allowing nothing. In practice, it means that when there are clearly important ecological values at stake, and informed judgment suggests that an action may cause lasting harm to those values, the appropriate decision is the one that creates the least risk until further research or analysis helps create a clearer picture of the responsible choice. We can never know everything about what might happen if we make a decision – and we will still make decisions. The precautionary principle tells us to keep alert for the risk that acting in ignorance may cause lasting damage and, when it's clear that the risks are significant, hold back from making significant decisions until we can find out more. (p. 3.9)

To balance the previous paragraph, as mentioned earlier when discussing CBA, under the precautionary principle, Parks Canada could possibly justify policy that excludes the sinking of a ship to create an artificial reef and dive site. However, given that their current mandate includes visitor experience as a top priority the precedent of allowing more interaction between people and the environment within Parks boundaries may swing the balance away from the belief/value of a delicately balanced ecosystem that can be affected by the slightest disturbance, toward ecologically sustainable use, which according to IUCN guidelines, maintains, through ecosystem management, a balance between conservation and use. A strong indicator of a policy swing away from the ecological integrity movement of the 1990s towards a more user friendly approach is evident in some new visitor activities being permitted. As of 2010, Parks Canada, through public consultation has approved at a national level mountain biking, traction kiting, guided interpreted canopy walks, zip lines, via ferrata and aerial parks, as well as community or collective gardens as acceptable activities with the proviso that all activities will not be available at all parks (Parks Canada, 2010b). Zoning and third party for-profit operators are two management tools being employed. Quoting Ed Jager, Parks Canada director of visitor experience, "When an organization or a visitor would approach us with a new possible activity or event, the easiest answer for us to give was 'No'… That's the culture we're trying to change" (The Canadian Press, 2013). The precautionary principle is quite flexible and easily bent to accommodate political will and societal changes. When discussing the development of a

framework within which the precautionary principle sits, an important component is determining and keeping abreast of "Canadians' social and economic values and priorities" (Government of Canada, 2001, p. 5). It is this factor that seems to control the precautionary principle's interpretation.

4.3 The Role of International Law in Canadian Legislation

The *London Convention and Protocol*[9] articulate the rules and standards as per the *United Nations Convention on the Law of the Sea, 1982,* Article 210.6, and ensures that they are congruent with other agreements such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989), the International Convention for the Prevention of Pollution from Ships, 1973, and Protocol, 1978, the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (1995) and the UNEP Regional Seas Programme (International Maritime Organization, 2014). Canada is a signatory to all of the above (IMO, 2014a) and a member State to the International Maritime Organization and as such, according to Environment Canada (2014) contributes to the formation of international soft and hard law "by advancing and sharing science and knowledge, as well as through stakeholder negotiations and policy dialogue" (Par. 1).

International Law is binding upon the signatories, but not until the law becomes part of national legislation (IMO, 2014b). Many multilateral treaties allow for parties to sign subject to ratification "as it provides them [States] with an opportunity to ensure that any necessary legislation is enacted and other constitutional requirements fulfilled before entering into treaty commitments" (IMO, 2014b, Section: Signature subject to ratification, acceptance or approval).

[9] Reference to the *London Convention and Protocol* refers to the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* signed by Canada on December 29, 1972, as amended from time to time, and the *1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972*, as amended from time to time.

A signature can have the effect of consent to a treaty (See the *Vienna Convention on the Law of Treaties*, 1969), but usually signing indicates the State's support of the principles and its *intent* to ratify the convention. A monitoring component can be established to assess States' compliance to the agreement (United Nations, 2014); the International Maritime Organization however does not have the power to enforce conventions as enforcement is, for the most part, dependent upon the governments of member parties.

According to retired Parks Canada staff member D. Yurick (personal communication, June 19, 2013) Parks Canada approaches the issue of sinking a ship to create an artificial reef from several positions: heritage protection and definition, ecosystem integrity, and disposal of waste regulations.

> Paragraph 4.3.3 in the NMCA Policy section of the GPOP prohibits the creation of artificial reefs and the intentional sinking of vessels for recreational diving in NMCAs. There are two heritage protection policy reasons for this.
>
> 1. While a shipwreck in the form of an historic, accidental sinking is undoubtedly an example of cultural heritage (Fathom Five National Marine Park with its several historic wrecks being a primary example), a ship deliberately sunk for artificial reef or diving purposes would not have that connotation.
>
> 2. A deliberately sunk ship (whether or not for artificial reef purposes) would be considered an unnatural impact on the natural structure and function of the NMCA ecosystem.
>
> The disposal of substances in NMCAs (Great Lakes included) is prohibited, except in limited circumstances. Vessels are manufactured items as meant in the definition of substances in the Canadian Environmental Protection Act. An oft-cited example of a potential exception in an NMCA would be the disposal of dredge spoils under permit in a designated location, when it is necessary to dredge to maintain a navigation channel and disposal of the spoils beyond NMCA boundaries is not feasible.
>
> The subsections of the Canadian Environmental Protection Act that are cited in Section 14 of the Canada National Marine Conservation Areas Act do not apply in the Great Lakes but that does not negate the policy intent. Permits to dispose substances may be issued by a superintendent should such disposals fall within the policy intent, but the issuance of such a permit would have to be consistent with a regulation made under paragraph 16(1)(l) of the Canada National Marine Conservation Areas Act. Such a regulation has yet to be made; when it is made, there is no reason to expect that it will vary from the NMCA policy intent. [The 1994 marine policy specifically prohibits the sinking of a ship to create an artificial reef and dive site within an NMCA.]

The definition of "waste or other matter" in the *NMCA Act*[10] means waste or other matter as listed in Schedule 5 of *CEPA, 1999*. The *NMCA Act*, s.14(1) says that no substance can be disposed of in NMCA waters (even though *CEPA's* definitions of water do not include the Great Lakes, the principle of intent will govern the LSNMCA; see Yurick quote above and the *NMCA Act s. 2(1)*), except by permit issued by the superintendent pursuant to the *NMCA Act*. Section 16(1) indicates that regulations made regarding control and management, which includes permits, are to be *consistent with international law*. The only other disposal permitted is by permit issued by the Minister of the Environment for disposal of waste (*CEPA*, s. 127), the disposal of a substance that is not necessarily waste but needs to be disposed for emergency reason (*CEPA*, s. 128), or to avert danger or threat to human life or a "threat to a ship, an aircraft, a platform or another structure at sea" (*CEPA,* s. 130). In addition, section 14(2) of the *NMCA Act* says that no permit will be issued under sections 127 and 128 of *CEPA* for the disposal of substances in a national marine conservation area unless the Minister in charge of Parks Canada concurs.

However, the definition of "disposal" in the *NMCA Act* is given the same meaning as section 122 of *CEPA* minus reference to the sea. Section 122.1 of *CEPA* states that "The purpose of this Division [Disposal at Sea] is to protect the marine environment, particularly by implementing the Convention[11] and the Protocol[12]". Section 122.1(a-g) defines "disposal" (see Table 4.2). Section 122.1(h-k) lists exceptions to the definition of disposal. Section 122.1(i), under which the sinking of a ship to create an artificial reef is applied, states that "disposal" does not include "the placement of a substance for a purpose other than its mere disposal if the

[10] References to *NMCA Act* and *CEPA*, unless otherwise stated, refer to the most recent versions of the *Canada National Marine Conservation Areas Act, S.C.2002, c.18*, and the *Canadian Environmental Protection Act, S.C.1999, c. 33.*
[11] See Footnote 1.
[12] See Footnote 1.

placement is not contrary to the purposes of this Division and the aims of the Convention or the Protocol". This has to be understood when reading the *NMCA Act*: using *CEPA's* definition of "disposal" sets apart the activity of creating an artificial reef, designating it instead as placement for a purpose other than its mere disposal.

Another key phrase in the *NMCA Act* that needs to be explored is *consistent with international law,* which is found under the instructions regarding regulations. Understanding the binding component of international law is important when reading the *NMCA Act* and *CEPA*. To facilitate this discussion, Table 4.2 contains the "disposal" sections from the *London Convention, Protocol,* and *CEPA.*

The *London Convention and Protocol* advocates control of all sources of marine pollution by prohibiting dumping toxins into the ocean as well as preventative management of waste, however, the exceptions include "placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention" (Article III, section 1(b)(ii)). The International Maritime Organization and other associated international organizations and states consider artificial reefs to be "placement of matter for a purpose other than the mere disposal" and have developed guidelines for the placement of artificial reefs (London Convention and Protocol/UNEP, 2009). Both *CEPA* and the *NMCA Act* commit Canada to honouring international law. The language of *CEPA* is similar to the *London Convention*, as shown in Table 4.2, and parts of *CEPA* were actually copied from the international document (Linda Porebski, EC, personal communication, February 25, 2014) and so the meaning of *CEPA's* "disposal" definition should be understood within the meaning given to the equivalent "dumping" definition in the *London Convention*, including the exceptions listed. The conclusion then, is that Parks Canada should not be considering the creation of an artificial

reef as a “disposal”, but rather, “the placement of a substance for a purpose other than its mere disposal”.

Can Parks Canada policy and management plans include statements prohibiting the sinking of a ship to create an artificial reef and dive site? The guiding principle for the regulations section is that their creation is to be “consistent with international law, for the control and management of any or all marine conservation areas” (s. 16(1)), so a regulation “restricting or prohibiting activities or regulating the use of activities in marine conservation areas or in any zones” (s. 16(1)(e)) has to be consistent with international law. To prohibit the sinking of ship to create an artificial reef and dive site has to be supported in Parks Canada’s rationale for such a policy, but it seems the support does not reside in the *NMCA Act*, nor in *CEPA*, nor in *The London Convention and Protocol*. The proviso to this statement is that Parks Canada retains discretionary authority through section 15 of the NMCA Act to create permits and other authorizing instruments which are in line with NMCA management plans. Given their current policy of not permitting the creation of artificial reefs to attract marine organisms for display purposes or sinking a vessel or other man-made object for recreational diving, it seems possible that Parks Canada may choose to maintain this prohibition at a national policy level, or leave it up to the discretion of each individual NMCA superintendent (as section 15 indicates).

There is an interesting policy conundrum that Environment Canada is currently analyzing in an effort to be consistent with the domestic and international legislative interpretation of sinking a ship for the purpose of creating an artificial reef and dive site as not “disposal”. Under *CEPA*, Environment Canada regulates the Disposal at Sea permit process. There are three stages to the permit process: an application meeting *CEPA’s* criteria is submitted, an environmental assessment and permit review is conducted, and public notice has to be given of the project. EC staff assess disposal at sea projects using the applicable

environmental assessment legislation protocol: in the north the *Nunavut Land Claims Agreement* is in force; in the south, it is the *Canadian Environmental Assessment Act*. After rigorous testing and passing the assessment process (Schedule 6 of *CEPA*), materials listed in Schedule 5 of *CEPA* are approved for ocean disposal contingent upon Regulations, policies, and guidelines. (Environment Canada, 2014).

Regarding land claims agreement in the north, Carey Ogilvie (Head, Environmental Assessment North for the Northwest Territories and Nunavut, Environment Canada) states that:

> The Nunavut Impact Review Board (NIRB) delivers EA's in Nunavut. CEAA does not apply in Nunavut. The Nunavut Project Planning and Assessment Act (NUPPA) is a federal statute and is currently making its way through Parliament. NIRB derives its current powers from the Nunavut Land Claim Agreement. NUPPA will simply provide more details when enacted. In the Inuvialuit Settlement Region (ISR) of the NWT, both CEAA and the ISR EA Process apply and run in parallel. With some projects, CEAA has developed an MOU with the Inuvialuit that involved a substituted panel where the ISR board would meet the needs of both CEAA and the Inuvialuit. (Carey Ogilvie, personal communication, March 3, 2014).

Historically, Environment Canada has treated the sinking of a ship to create an artificial reef and dive site as a "disposal at sea" which means there are various steps required to qualify for a Disposal at Sea Permit. Schedule 5, which provides a list of items allowed to be disposed at sea under permit, includes "ships, aircraft, platforms or other structures from which all material that can create floating debris or other marine pollution has been removed to the maximum extent possible if, in the case of disposal, those substances would not pose a serious obstacle to fishing or navigation after being disposed of" (*CEPA, 1999,* Schedule 5). However, Environment Canada also operates with consideration of international law, specifically referring to the *London Convention and Protocol* in *CEPA, 1999* and because *the London Convention and Protocol* has been interpreted to define sinking of ships as artificial reefs as an exception to dumping,

Canadian Environmental Protection Act, 1999 Division 3 Disposal at Sea Interpretation	**Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972** Article III	**1996 Protocol To The Convention On The Prevention Of Marine Pollution By Dumping Of Wastes And Other Matter, 1972 (as amended in 2006)** Article I
122.(1)…"disposal" means (a) the disposal of a substance at sea from a ship, an aircraft, a platform or another structure, (b) the disposal of dredged material into the sea from any source not mentioned in paragraph (a), (c) the storage on the seabed, in the subsoil of the seabed or on the ice in any area of the sea of a substance that comes from a ship, an aircraft, a platform or another structure, (d) the deposit of a substance on the ice in an area of the sea, (e) the disposal at sea of a ship or aircraft, (f) the disposal or abandonment at sea of a platform or another structure, and (g) any other act or omission that constitutes a disposal under regulations made under paragraph 135(3)(c), **but does not include** (h) a disposal of a substance that is incidental to or derived from the normal operations of a ship, an aircraft, a platform or another structure or of any equipment on a ship, an aircraft, a platform or another structure, other than the disposal of substances from a ship, an aircraft, a platform or another structure operated for the purpose of disposing of such substances at sea, (i) the placement of a substance for a purpose other than its mere disposal if the placement is not contrary to the purposes of this Division and the aims of the Convention or the Protocol,… 122.1 The purpose of this Division is to protect the marine environment, particularly by implementing the Convention and the Protocol. 2005, c. 23, s. 19.	For the purposes of this Convention: 1 (a) "Dumping" means: (i) any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; (ii) any deliberate disposal at sea of vessels, aircraft, platforms or other manmade structures at sea. **(b) "Dumping" does not include:** (i) the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft, platforms or structures; (ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention.	4.1 "Dumping" means: .1 any deliberate disposal into the sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; .2 any deliberate disposal into the sea of vessels, aircraft, platforms or other man-made structures at sea; .3 any storage of wastes or other matter in the seabed and the subsoil thereof from vessels, aircraft, platforms or other man-made structures at sea; and .4 any abandonment or toppling at site of platforms or other man-made structures at sea, for the sole purpose of deliberate disposal. **4.2 "Dumping" does not include:** .1 the disposal into the sea of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft, platforms or other man-made structures; .2 placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Protocol; and .3 notwithstanding paragraph 4.1.4, abandonment in the sea of matter (e.g., cables, pipelines and marine research devices) placed for a purpose other than the mere disposal thereof.

Table 4.2: Comparison of "disposal" and "dumping" definitions in *CEPA, 1999*, *the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, and the 1996 Protocol (as amended in 2006).*

CEPA is also interpreted to exclude the same activity from the definition of disposal. This is the conundrum. The exclusions from the definition of "disposal" (such as creating an artificial reef) do not require a Disposal at Sea permit (Environment Canada, 2014). But, without the Disposal at Sea permit process, there is nothing in place to enforce the current stringent environmental standards imposed when sinking a ship to create an artificial reef. The only other legislation to have impact would be the *Fisheries Act*, s. 36(3) which states that no "person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish", however under this Act, a substance could be deposited and only if it turns out to be deleterious would the Act be violated since there is no assessment or permitting process associated with section 36. That said, if a ship were sunk without a permit and without being cleaned to Environment Canada's standards, it may not be considered a legitimate placement.

Linda Porebski (Chief, Marine Protection Programs, Environment Canada) explained the relationship further:

> As a Party to the London Protocol (the newer and more modern of the two international treaties on disposal at sea) Canada has accepted to prohibit, under its domestic law (CEPA 1999), all disposal at sea except for a small list of acceptable wastes which can be assessed, using an agreed assessment framework, and, if found acceptable, then these wastes could be granted permits. Only those activities which are disposals and are conducted at sea, require a permit. Placement, is one of the exemptions from being a dumping/disposal. To qualify as a placement, the activity must be done for a purpose other than mere disposal and the placement must not be contrary to aims of the London Convention and Protocol or contrary to the purpose of CEPA Disposal at sea (Purpose is to protect the marine environment and prevent marine pollution) .
>
> A cleaned vessel is one of the items on the list of acceptable "wastes or other matter" under London Protocol (Annex 1) and CEPA (Schedule 5) that can be considered for a dumping permit. If a vessel is to be disposed of, a permit must be applied for and the required waste assessment must be done before a permit decision can be made. In Canada, the assessment includes meeting a clean-up standard.
>
> CEPA Disposal At Sea does not have a separate system for regulating any placement activities and EC has generally considered that vessels are being disposed of and must apply for assessment (clean up) and permits.
>
> Internationally, some countries were including the sinking of vessels as potentially being placements when they were for the creation of artificial reefs or diving attractions. To

> be placement the two tests have to be met: 1) it is for a purpose other than disposal (and suitable for that purpose) and 2) the placement is not contrary to the aims of the Protocol (eg has little potential to cause marine pollution). If either test is not met, the activity remains a dumping/disposal. This is a case by case determination. Where the activity is a placement, Parties to the London Convention and London Protocol were of the view that additional guidance on how to assess and build a reef so that it would not be Contrary to the aims of the LC/LP was needed. The guidance on the construction of artificial reefs was developed by the Parties of the LC/LP for that purpose. The guidance also generally recommended that a permit system similar to that used for disposal at sea would be advisable to prevent potential for harm to the marine environment in the construction and use of reefs. (personal communication, March 3, 2014).

The London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs suggests that each state needs to develop legislation specific to artificial reef creation (appropriate to the country's situation), creating a permit process, determine criteria (technical, environmental, social) associated with the artificial reef, and set up regulations for a monitoring and enforcement system. Environment Canada is currently exploring this: "As a Party to the London Protocol, EC is looking at placement in the context of a recent amendment to the London Protocol which created a permit system for ocean fertilization research and other marine geo-engineering… Some other countries such as the UK have a permit system for all placements" (Linda Porebski, personal communication, March 3, 2014). This amendment to the London Protocol has yet to be ratified. The proposed sinking of the Annapolis in Halkett Bay Provincial Marine Park, BC may point to the need for further controls on the sinking of a ship to create an artificial reef and dive site.

4.4 Intent and Amelioration of Impact

Returning to the email (D. Yurick, personal communication, June 19, 2013), sinking a ship to create an artificial reef is not "disposal" by intent. It is a deliberate choice to place a structure on the strata below and within the water column. This is similar in nature and intent to building a dock, or mooring buoys, or a pier (T. Beasley, Interview, May 7, 2013; M. Turner, personal communication, March 6, 2014). In addition, the unnatural impact concern expressed

in Yurick's email and which W. Bourque mentioned in his interview is ameliorated. At the point of sinking, the ship's purpose has already changed. It is no longer a transportation vessel but a carefully crafted structure with the purpose of creating a reef and dive site.

There are many factors considered to ensure safety and ecological integrity. J. Straith (Interview, May 7, 2013) discussed many of the necessary protocols. Regarding safety, the ship, in addition to having gone through environmental clean-up, removing toxins such as asbestos and PCBs, has also been structurally changed for diver safety - each space being given 2 or 3 exits, openings widened, and objects that could interfere or catch divers' equipment removed. As far as ecological impact is concerned, before a ship is sunk, studies are done of potential locations - wind, waves, currents, underlying strata and affected organisms. A location is sought where the least possible negative impact will be seen and where the creation of a reef would be beneficial; a ship will not be sunk on an existing life-teeming reef, or an area already providing unique habitat for species. There may be compression of organisms on the strata below, but assessments are done to ensure this impact is minimal. As Howard Robins of the Artificial Reef Society of British Columbia (ARSBC) said in his presentation to the Marseille Artificial Reef Convention,

> The choice of an immersion site depends on set criteria after a specific study. Some zones are excluded (navigation, intense fishing or shellfish farming production, military areas, unstable sea bed, zones that are dangerous for diving, etc.). Thanks to cartographic techniques, it is possible to target sites where finer evaluations can be carried out beforehand. Flat areas are also sought, tending to be without substrate but at the same time with good trophic production capacities. It takes several weeks to analyse the zone, the positions of the ship and to determine the most suitable sites for diving practices and needs (different diving proficiency levels). With hindsight, the economic impacts are interesting and the biological impacts positive. Ships offer very interesting forms of habitat because of the complexity of their structure, their volume and height in the water column (creation of ascending currents that make nutriments circulate, opportunities for reproduction and resources for predators). (Marseilles City Counsel, 2013, p. 25)

A further related argument comes from Mel Turner, former BC Parks Planning and Conservation Manager for the Lower Mainland and Vancouver Island. He questioned the rationale of differentiating between habitat improvement through measures such as controlled burns and habitat improvement by establishing artificial reefs. If Parks Canada was willing to use an interventionist ecosystem management technique for terrestrial parks, why isolate artificial reefs in their policy as a prohibited activity? If Parks Canada was willing to intervene for the wood buffalo, why not also enhance a marine species? Would Parks Canada prescribe to a hands-off approach for all species?

4.5 A Closer Look at the GPOPs policy, 4.3.3

> The establishment of artificial reefs to attract marine organisms for *display purposes*, the intentional sinking of vessels or other man-made objects for *recreational diving*, and similar facilities will not be permitted in marine conservation areas (italics added, Parks Canada, 1994, p. 60).

A closer look at this policy reveals a lack of specificity, although initially it seems to define the limitations quite thoroughly. This paragraph, unique in the GPOPs document, not appearing elsewhere other than under policy related to Visitor Services and Facilities, indicates that creating an artificial reef to attract marine organisms for display purposes or intentionally sinking a vessel or other man-made objects for recreational diving is not permitted.

The first phrase is quite specific: if an artificial reef is designed to attract "marine organisms for display purposes" it is not permitted. Might then an artificial reef be allowed if:

- the artificial reef was designed to attract marine organisms for scientific research purposes?
- the artificial reef was meant for fisheries remediation, to create a nursery, or for habitat restoration?
- the artificial reef was not intended to attract marine organisms but, for example, as a deterrent to illegal poaching, or as a training ground for divers?

The second phrase “the intentional sinking of vessels or other man-made objects for recreational diving, and similar facilities” is vague and is dependent upon an existing understanding of what a man-made object consists of. Is a man-made object assumed to be in the same category as a ship and refers to airplanes, trains, tractors, and other modes of transportation? Or does a man-made object have broader implications which would preclude an underwater sculpture museum such as that found at the Museo Subcuatico de Arte at Salon Manchones, near Cancun Mexico? The *Silent Evolution* display features 450 statues, made to scale, and has an additional purpose as an artificial reef designed to ease tourist pressures off of nearby natural reefs (Engman, 2012). Do man-made objects also include materials and reefs used globally for fisheries remediation such as reef balls? Does the phrase “for recreational diving” eliminate any guesses as to what the man-made object is since it is the purpose, not the object itself that is being objected to? And finally, what does “similar facilities” refer to? Its placement in the sentence seems to indicate that the prohibited purpose of recreation diving may have additional meanings. Or perhaps the awkward placement means that it actually is referring to the entire concept of intentionally sinking a man-made object for recreational diving and this phrase “similar facilities” is referring to other similar projects.

This policy, without further context or explanation is almost useless as a guiding principle as it assumes managers will draw the same conclusions as what was meant by the author. It also does not seem to preclude the creation of an artificial reef for purposes of research, remediation, restoration, or as a deterrent to poachers. Neither does it address a dual purpose of recreation with a (possibly) acceptable purpose. If Parks Canada is including some prohibition to sinking a ship to create an artificial reef or dive site in its new policy, then it will need to be much better articulated. An observation expressed anonymously by a Parks Canada staff member was that the policy was “un-used” and therefore had not been through a process

where a clear definition was needed. As noted by environmental lawyer, Shaun Fluker (personal communication, December 16, 2013), if the legislation does not indicate justification for refusing permission to create an artificial reef in an NMCA, Parks Canada has to have a good rationale for prohibiting sinking a ship. Even if this specific prohibition appears in policy, proponents of such a project could go to court and argue the right to create an artificial reef. The reverse could also happen: a group could argue against the creation of artificial reefs.

Chapter 5: Chapter 5: Conclusion and Final Thoughts

What does the *National Marine Conservation Areas Act, 2002* say about sinking a ship to create an artificial reef and dive site? Several issues arising from the legislation as well as the broader context have been discussed in this thesis:

- Subject to the "disposal" argument involving *CEPA* and the *London Protocol*, and whether the placement of a ship is considered to be disposal or waste, section 15 of the *NMCA Act* indicates any proponent of sinking a ship would require a permit from Parks Canada.
- Section 9(3) indicates that ecosystem management and the precautionary principle are to be employed in order to protect marine ecosystems and maintain marine ecosystems. Discussion of the precautionary principle expressed concerns about the possible misuse of this principle and raised questions of its justiciability and usefulness without substantive law in place to clarify limits and standards.
- NMCAs are to be managed in a sustainable manner according to section 4(3) and not compromise the structure and function of the ecosystem. A proponent of sinking a ship would have to demonstrate the environmental risks were minimal or could be ameliorated.

Current marine policy indicates a bias towards prohibiting the creation of artificial reefs for the purposes of displaying marine organisms and sinking a ship (or other objects) for recreational diving. There are a number of reasons to recommend the policy be reconsidered as Parks Canada moves forward in their creation of NMCAs. Given the nested mandate of conservation **for** use, as evidenced in the analysis of Parks Canada's marine policy evolution and history, this particular paragraph seems incongruent with Parks Canada ideology and ethos. The

language of the *NMCA Act* seems to indicate a shift in tenor from the ecological integrity priority present in the *National Parks Act* and related policy, to ecologically sustainable use, which is again, the nested mandate of conservation for the purposes of use by the people. The additional element of obtaining the definitions of disposal and waste from *CEPA*, which references, and quotes verbatim in places, the London Protocol, would seem to necessitate a re-examination of the current marine policy as well.

An overarching theme arising from the research was one I did not expect: the role of national marine conservation areas in international sustainable fisheries. Since NMCAs are created only by Parks Canada, they sit within a context of "for the benefit, education, and enjoyment of the people of Canada and the world" (*NMCA Act*, section 4[1]). The context of my thesis was to discover whether a ship could be sunk to create an artificial reef and dive site within an NMCA created by an entity that is focussed on visitor experience and views ecological integrity as the context in which visitor benefit, education, and enjoyment happens. When examining what I thought was the meta context for NMCAs, that is, that they are Parks Canada's version of marine protected areas[13], a new paradigm was exposed. This meta context of national MPAs was actually within a global framework of united nations, in fact, the United Nations, and the many international conventions, protocols, treaties, and other mechanisms arising from global concerns of oceanic health and food security. This quote from the Commission of the Environment and Sustainable Development iterates the global picture:

> Conserving and protecting marine biodiversity is not solely an environmental priority. As recently reported at the 2012 World Economic Forum, the ocean's natural capital (the stock of ecological goods and services that can be maintained for use in the future) is intrinsic to the health and functioning of the world economy. Today, more than 1.5

[13] Parks Canada has 11 National Parks with MPAs which are managed under the *National Parks Act*, not the *NMCA Act.* The Saguenay-St. Lawrence Marine Park is managed under its own act, *Saguenay-St. Lawrence Marine Park Act* S.C. 1997, c. 37. That said, Parks Canada counts Fathom Five Marine Park and Saguenay as part of the national system of NMCAs (Parks Canada, 2014).

> billion people count on fish for their daily protein source. With the world population projected to reach 9 billion by 2050, humankind needs to double the production of food without further depleting Earth's natural capital. (Office of the Auditor General of Canada, 2012, Chapter 3, p. 2)

The information summed up in this statement gives perspective and additional weight to the importance of NMCAs and their potential role in international sustainable fisheries.

Interestingly enough, at an international level, artificial reefs are accepted and used by many nations as an integral part of fisheries management (London Convention and Protocol/UNEP, 2009). Artificial reefs have been made out of many different materials (including old tires and other toxic materials now banned) depending on the purpose of the reef. Ships, when properly prepared and correctly placed, are one of the possible materials discussed in the London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs. As argued in Chapter 4, the *NMCA Act* and *CEPA* both lean on international law such as the London Convention and Protocol, for interpretation. Through the definitions of "disposal at sea" and "waste", Environment Canada already recognizes the role of ships as artificial reefs and is currently developing a permitting system. Parks Canada may be missing this link in their current policy and understanding of the *NMCA Act* and its legal connection to *CEPA* and various pieces of international law (as mentioned in previous chapters).

As Mel Turner (BC Parks, retired) asked during our discussion, why would Parks Canada arbitrarily eliminate a form of remediation and habitat restoration within a marine environment? Overall, Parks Canada seems to subscribe to the legitimacy of anthropogenic interference in species and habitat restoration, as well as for ameliorative purposes (such as moose culls in Newfoundland's two national parks). So why pick on this particular management tool?

In an effort to discover what might be the motivation, I spoke with 2 people who were involved with the sinking of 2 ships back in the early 1990s (the time period between the two

versions of GPOPs), the Chaudiere and the GB Church, to see if there was anything about them that would scare off Parks Canada, but there was nothing unusual indicated[14]. There was an anonymous suggestion that Fathom Five Marine Park did not want more ships because they already had too many. Concern for marine mammals such as the Beluga whale (listed under the *Species At Risk Act*) may have prompted the 2010 Saguenay St. Lawrence Marine Park management plan to indicate a phasing out of creating artificial reefs through sinking a ship (Government of Canada & Government of Quebec, 2010). But it wasn't until I was examining IUCN's definitions and categories of protected areas that a plausible explanation for the GPOPs prohibition presented itself. This was discussed in Chapter 3 and won't be repeated here, except to observe that the IUCN designation of Category II – National Park, was a priority among several Parks Canada staff. If a national marine park had allowed the creation of an artificial reef, the national park would have lost its standing as a Category II – National Park, according to IUCN. And so, Parks Canada's answer may have been to simply prohibit artificial reefs through policy.

In addition, it is important to understand that these IUCN categories are all within the framework of being a marine protected area. A Category VI or IV or II is still a marine protected area. The discussion in Lemelin and Dawson (in press) about the recognition of indigenous use and using the IUCN designation of a Category IV, and the discussion presented in this thesis about ecologically sustainable use and Category VI, should not be seen as demotions or deeming an MPA as a less worthy category, it is simply an acknowledgement of a marine protected area

[14] Both the Chaudiere (1992, Sechelt Inlets Marine Provincial Park) and the GB Church (1991, Princess Margaret Marine Reserve) were sunk in Provincial Parks. The Minister responsible for the Park Act "decides if an artificial reef is an improvement to the park and acceptable. In the case of the Chaudiere, it was." When the Gulf Islands National Park Reserve was created in 2001, the GB Church, came under Parks Canada jurisdiction as per the terms of the Park Establishment Agreement between BC and Canada. "Parks Canada is required to maintain all park improvements that were in place at the time of the Agreement, including the GB Church" (M. Turner, personal communication, March 3, 2014).

that will be used in a certain manner. Given that IUCN categories are based on management objectives, a *realistic assessment of the level of use of an MPA will result in an appropriately designed management plan* that is proactive in assuring the integrity of the primary principle of marine protected areas in Canada, conservation of nature. As a reminder, the earlier quote from Chapter 3 is provided again:

> 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**. (bold added for emphasis, Parks Canada, 1994, p. 48)

The language of the *NMCA Act* and the employment of "ecologically sustainable use" in particular, is very similar to the descriptor of IUCN Category VI which advocates sustainable use. Perhaps the writers of the *NMCA Act* were acknowledging the difference between terrestrial and marine environments, realizing that a designation of a Category II protected area was probably not going to be possible in a dynamic, permeable, fluid environment that had so many anthropogenic influences. The ongoing dual mandate of conservation and use, or as argued in this thesis, the nested mandate of conservation FOR use, fits in beautifully with the terminology adopted by the *NMCA Act*: ecologically sustainable use. With biodiversity and ecological integrity as guiding ideals, ecosystem management (and the precautionary principle) are meant to fulfill the conservation side (or the "ecologically sustainable" part of ecologically sustainable use). Again, as stated so well in the Parks Canada training manual, "the priority we give to ecological integrity does not change the mandate of national parks to deliver benefit, education and enjoyment to people. **It sets the context for how we go about doing it**" (bold added for

emphasis, Parks Canada, n.d., p. 1.5). The entire phrase, ecologically sustainable use, is a clever way to say there will be use, but it can be determined ahead of time what that use will look like and how it is managed. Such an approach is prescribed in Annex II of the 1995 United Nations Fish Stocks Agreement which states that "previously agreed precautionary reference points… shall be used to trigger pre-agreed conservation and management action" (as cited in Meltzer, 2009). As Meltzer explains, "Preagreed decision rules are an important component of precautionary management. Such rules pre-empt controversy, prolonged debate, and stonewalling, and are intended to protect stocks that are approaching or exceeding limit reference points from decisions that are based on short-term political horizons rather than science" (pp. 118-119). This approach to the precautionary principle makes it a valuable part of ecosystem management and can help direct Parks Canada's ecologically sustainable use mandate.

As many students before me have probably discovered, there are many garden paths that get explored in the process of research and I offer a few of those paths here as potential future research projects.

- The role of Aboriginal and treaty rights in the establishment of National Marine Conservation Areas
- The possibilities for co-management of parks between the federal government and First Nations
- How Aboriginal Traditional Environmental Knowledge is acknowledged in precautionary principle literature (or not).
- Issues of stakeholder involvement in the planning and management process of NMCAs. Ray & McCormick-Ray (2014; regarding MPAs) and anonymous Parks Canada staff

observed that trying to reach consensus between stakeholders with myriad and sometimes competing agendas can pose difficulties resulting in delays and compromise.

- Differences between MPAs developed by DFO, Environment Canada, and the Parks Canada Agency (see Lemelin and Dawson, inpress, for a discussion of the Northern context).
- The role of the *Species at Risk Act* in the management and formation of MPAs in Canada.
- The evaluation and comparison of management plans of existing marine parks, reserves, and conservation areas
- A study of Australia and New Zealand's legislation, policy, and management plans regarding marine protected areas
- The importance of IUCN categories to Parks Canada and possible ramifications of attempting to keep MPAs within Categories I or II.
- The examination of links between US and Canadian legislation and policy concerning marine protected areas and national parks.

The final conclusion of this thesis is to express the hope that Parks Canada adopts a marine policy for NMCAs that is site-specific and does not preclude artificial reefs. There may be places where sinking a ship to create an artificial reef and dive site does not make economic, sociological, or environmental sense. On the other hand, there may be situations where such a project would have very positive benefits. The precautionary principle will be brought into play in making these decisions, weighing the costs and benefits, determining which factors weigh more heavily in the balance of the three-legged stool of economic, sociological, and environmental issues. Over time substantive standards may be developed concerning the use of artificial reefs, making the precautionary principle a positive force in NMCA management. The

eventual development of 29 large MPAs would more than double Canada's current 61,000 km^2 of MPAs, bringing our percent of marine territory up to 2% protected (a far cry from the 10% commitment). Bringing the focus back to the meta context of sustainable fisheries, Parks Canada may do well to broaden their scope of understanding concerning the role their marine protected areas play at a global level and adjust policy and management plans to reflect this.

References

Adams, A., (Ed.). (1962). *First World Conference on National Parks*. Seattle, Washington: National Parks Service.

Ahteensuu, M. (2007), "Rationale for Taking Precautions: Normative Choices and Commitments in the Implementation of the Precautionary Principle", Risk & Rationalities [Conference Proceedings], Queens' College, Cambridge, UK. (URL:http://www.kent.ac.uk/scarr/ events/ahteensuu.pdf)

Ahteensuu, M. (2008), *In Dubio pro Natura? A Philosophical Analysis of the Precautionary Principle in Environmental and Health Risk Governance,* Reports from the Department of Philosophy, University of Turku, Painosalama (Doctoral Dissertation).

Attfield, R. (1994). The Precautionary Principle and Moral Values. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle*, (pp. 152-164). London: Earthscan Publications Ltd.

Bodansky, D. (1994). The Precautionary Principle in US Environmental Law. In, T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle*, (pp. 203-228). London: Earthscan Publications Ltd.

Brown, K. (1983). Progress towards national marine parks in Canada. *Winter 1983 Bulletin,* p. 12. Ottawa: Parks Canada.

Cameron, J. (1994). The Status of the Precautionary Principle in International Law. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle*, (pp. 263-289). London: Earthscan Publications Ltd.

Canada Treaty Information. (2011, March 3). Department of Foreign Affairs and International Trade Act. *Policy on Tabling of Treaties in Parliament*. Retrieved from http://www.treaty-accord.gc.ca/procedures.aspx

Creswell, J. (2009). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches.* New Delhi, India: Sage Publications India Pvt Ltd.

Day J., Dudley N., Hockings M., Holmes G., Laffoley D., Stolton S., & Wells, S. (2012). *Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas*. Gland, Switzerland: IUCN.

Dearden, P. & Canessa, R. (2009). Marine Protected Areas. In P. Dearden & R. Rollins (Eds.), *Parks and Protected Areas in Canada Planning and Management Third Edition*, (pp. 403-430). Don Mills, Ontario: Oxford University Press.

Dearden, P. & Dempsey, J. (2004). Protected Areas in Canada: A Decade of Change. *The Canadian Geographer*, 48 (2), 225-239.

Dowie, M. (2009). *Conservation refugees: the hundred-year conflict between global conservation and native peoples*. Cambridge, Massachusetts: MIT Press.

Dudley, N. (Ed.). (2008). *Guidelines for Applying Protected Area Management Categories*. Gland, Switzerland: IUCN.

Dunsmuir, M. (2001, March 28). Bill C-10: An Act Respecting the National Marine Conservation Areas of Canada. *Legislative Summary.* LS-396E. Law and Government Division. Canada: Parliamentary Research Branch.

Eagles, P. (2002). Trends in Park Tourism: Economics, Finance and Management, *Journal of Sustainable Tourism*, 10(2), 132-153. DOI: 10.1080/09669580208667158

Ellenwood, S. (2006). Revisiting Character Education: From McGuffey to Narratives. *Journal of Education* 187(3), 21 – 44.

Engman, K. (2012, November). Under the Sea. *Westjet Up* 8(11). Calgary, AB: RedPoint Media Group Inc.

Environment Canada. (2010). *Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada*. Canada: Environment Canada, Sustainable Development Office.

Environment Canada. (2014). *Activities That Do Not Require Disposal at Sea Permits*. Retrieved from http://www.ec.gc.ca/iem-das/default.asp?lang=En&n=D21EAD32-1

Federal Provincial Parks Council. (2000). *Working Together: Parks and Protected Areas in Canada*. Canada: Federal Provincial Parks Council.

Feintuck, M. (2005). Precautionary Maybe, but What's the Principle? The Precautionary Principle, the Regulation of Risk, and the Public Domain. *Journal of Law and Society* 32(3): 371-398.

Fischer, F. (2003). Policy Analysis and Deliberative Practice. In M. Hajer & H. Wagenaar (Eds.), *Deliberative policy analysis: understanding governance in the network society*, (pp. 209-227). Cambridge: Cambridge University Press.

Fisher, E. (2001). Is the Precautionary Principle Justiciable? *Journal of Environmental Law* 13(3): 315-334.

Fisheries and Oceans Canada (DFO). (2009). *Global Consequences of Overfishing*. Retrieved from http://www.dfo-mpo.gc.ca/international/isu-global-eng.htm

Fluker, S. (2009). *Ecological Integrity and the Law: The View from Canada's National Parks*. Listed on the Social Science Research Network (SSRN). Retrieved from http://ssrn.com/author=1111214

Fluker, S. (2010). Ecological Integrity in Canada's National Parks: The False Promise Of Law. *Windsor Review of Legal and Social Issues 29,* 79-123.

Fluker, S. (2013). Environmental norms in the courtroom. The case of ecological integrity in Canada's National Parks. In L. Westra, P. Taylor, & A. Michelot (Eds.), *Confronting Ecological and Economic Collapse. Ecological integrity for law, policy and human rights,* (pp. 21 – 31). New York, NY: Routledge Taylor & Francis Group.

Foster, J. (1998). *Working for Wildlife: The Beginning of Preservation in Canada (2nd edition*). Toronto, ON: University of Toronto Press.

Gale, R. (1997). Canada's Green Plan. In *Nationale Umweltpläne in ausgewählten Industrieländern* (A Study of the Development of a National Environmental Plan with expert submissions to the Enquete Commission 'Protection of People and the Environment' for the Bundestag [German Parliament]). (pp. 97–120). Berlin: Springer-Verlag.

Government of Canada. (2001). *A Canadian Perspective on the Precautionary Approach/Principle.* Discussion Document. Government of Canada.

Government of Canada. (2005). *Canada's Federal Marine Protected Areas* Strategy. Ottawa, Ontario: Fisheries and Oceans Canada.

Government of Canada. (2010). *Spotlight on Marine Protected Areas in Canada.* Ottawa: Fisheries and Oceans Canada.

Government of Canada & Government of Quebec. (2010). *Saguenay-St. Lawrence Marine Park Management Plan*. Approved by Minister of the Environment (Canada) and Minister of Sustainable Development, Environment, and Parks (Quebec). Published in Canada.

Government of Canada. (2011). *National Framework for Canada's Network of Marine Protected Areas*. Fisheries and Oceans Canada, Ottawa.

Graham, P.A. (1980). Historians as policy makers. *Educational Researcher, 9,* 21 – 24.

Guenette, S. & Alder, J. (2007). Lessons from Marine Protected Areas and Integrated Ocean Management Initiatives in Canada. *Coastal Management 35*, 51-78.

Haigh, N. (1994). The Introduction of the Precautionary Principle into the UK. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle*, (pp. 229-251). London, England: Earthscan Publications Ltd.

Hildebrandt, W. (1995). *Historical Analysis of Parks Canada and Banff National Park, 1968-1995*. Prepared for the Banff-Bow Valley Study Task Force. Banff, Alberta. Retrieved from http://www.ourroots.ca/e/page.aspx?id=866930

Houde, E.D. (2014). Fisheries science: acquiring knowledge to support policy and management. In G.C. Ray, & J. McCormick-Ray (Eds), *Marine Conservation: Science, Policy, and Management*, (pp. 66-67). New Jersey: Wiley & Sons Ltd.

Hoyt, E. (2011). *Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for cetacean habitat conservation and planning.* 2nd Edition. London and Washington, DC: Earthscan.

Hughes, D. (1995). The Status of the 'Precautionary Principle' in Law. *R v Secretary of State for Trade and Industry ex parte Duddridge. Journal of Environmental Law* 7(2): 224-244.

Hunt, J. (1994). The Social Construction of Precaution. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle,* (pp. 117–125). London: Earthscan Publications Ltd.

International Maritime Organization (IMO). (2014a). *Status of Conventions*. Retrieved from http://www.imo.org/About/Conventions/StatusOfConventions/Pages/Default.aspx

International Maritime Organization (IMO). (2014b). *Introduction: Adopting a convention, Entry into force, Accession, Amendment, Enforcement, Tacit acceptance procedure.* Retrieved from http://www.imo.org/About/Conventions/Pages/Home.aspx

International Maritime Organization (IMO). (2014c). *1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.* Retrieved from http://www.imo.org/OurWork/Environment/PollutionPrevention/Pages/1996-Protocol-to-the-Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter,-1972.aspx

International Union for Conservation of Nature and Natural Resources (IUCN). (1994a). Resolutions and Recommendations. *19th Session of the General Assembly of IUCN – The World Conservation Union, Buenos Aires, Argentina 17-26 January 1994*

International Union for Conservation of Nature (IUCN). (1994b). Section 19.46 Marine and Coastal Area Conservation from the *19th Session of the General Assembly of IUCN* - The World Conservation Union Buenos Aires, Argentina 17-26 January 1994. Gland, Switzerland: IUCN. Retrieved from https://cmsdata.iucn.org/downloads/resolutions_recommendation_en.pdf

International Union for Conservation of Nature and Natural Resources (IUCN). (1994c). *Guidelines for Protected Area Management Categories*. CNPPA with the assistance of WCMC. Gland, Switzerland and Cambridge, UK: IUCN.

Jessen, S., K. Chan, I. Côté, P. Dearden, E. De Santo, M.J. Fortin, F. Guichard, W. Haider, G. Jamieson, D.L. Kramer, A. McCrea-Strub, M. Mulrennan, W.A. Montevecchi, J. Roff, A. Salomon, J. Gardner, L. Honka, R. Menafra & A. Woodley. (2011). *Science-based Guidelines for MPAs and MPA Networks in Canada*. Vancouver: Canadian Parks and Wilderness Society.

Kelleher, G. & Kenchington, R. (1992). *Guidelines for Establishing Marine Protected Areas*. A Marine Conservation and Development Report. Gland, Switzerland: IUCN.

Kopas, P. (2007). *Taking the Air: Ideas and Change in Canada's National Parks*. Vancouver, BC: UBC Press.

Lemelin, R.H., & Dawson, J. (in-press). Great expectations: examining the designation effect of marine protected areas in coastal Arctic and Sub-Arctic communities in Canada. *The Canadian Geographer/Le Géographe Canadie*n. Doi: 10.1111/j.1541-0064.2013.12059.x.

LeRoy, S. & Cooper, B. (2000). Off Limits: How Radical Environmentalists are Stealing Canada's National Parks. *Public Policy Sources No. 45*. Vancouver, BC: The Fraser Institute.

London Convention and Protocol/UNEP (2009). London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs. UNEP Regional Seas Reports and Studies No. 187. London, UK: International Maritime Organization/United Nations Environment Programme.

Lothian, W.F. (1977). *A History of Canada's National Parks Volume II*. Ottawa, Canada: Parks Canada.

MacEachern, A. (2001). *Natural Selections / National Parks in Atlantic Canada, 1935 – 1970*. Montreal and Kingston: McGill – Queen's University Press.

MacGarvin, M. (1994). Precaution, Science and the Sin of Hubris. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle,* (pp.69-101). London: Earthscan Publications Ltd.

Marseille City Council. (2013, February 5 – 8). *Proceedings of the 1st Euro-Mediterranean conference on artificial reef management.* Book 1 - Conference Proceedings. Marseille: Marseille City Council.

McNamee, K. (2009). From Wild Places to Endangered Spaces: A History of Canada's National Parks. In P. Dearden & R. Rollins (Eds.), *Parks and Protected Areas in Canada Planning and Management Third Edition,* (pp. 25-55). Don Mills, Ontario: Oxford University Press.

Maxwell, J.A. (2009). Designing a Qualitative Study. In L. Bickman & D. Rog (Eds.), *Applied Social Research Methods,* (pp.214-253). Los Angeles: Sage Publications Inc.

Mercier, F. & Mondor, C. (1995). *Sea to Sea to Sea. Canada's National Marine Conservation Areas System Plan*. Ottawa: Parks Canada. Published under the authority of the Minister of the Department of Canadian Heritage.

Meltzer, E. (1998a). *Guidelines for Offshore Marine Protected Areas in Canada*. Oceans Conservation Report Series Integrated Coastal Zone Management - Marine Protected Areas - Marine Environmental Quality. Ottawa: Department of Fisheries and Oceans.

Meltzer, E. (Ed.). (1998b). *International Review of Integrated Coastal Zone Management: Potential Application to the East and West Coasts of Canada.* Oceans Conservation Report Series. Can. Tech. Rep. Fish. Aquat. Sci. 2209. Ottawa, Ontario: Department of Fisheries and Oceans.

Meltzer, E. (2009). *The Quest for Sustainable International Fisheries: Regional Efforts To Implement the 1995 United Nations Fish Stocks Agreement: An Overview for the May 2006 Review Conference* Ottawa, Ontario: NRC Research Press.

MyEnvironment Inc v VicForests. (2012). *Judgement of Osborne JA*. Supreme Court of Victoria, Melbourne, Common Law Division. VSC 91. S CI 2011 04452.

National Parks Canada. (1971). *National Parks System Planning Manual*. Canada: National and Historic Parks Branch.

Neuman, W.L. (2000). *Social Research Methods/Qualitative and Quantitative Approaches*. Boston, MA: Allyn & Bacon.

Office of the Auditor General of Canada. (2012). Chapter 3, Marine Protected Areas. *Report of the Commissioner of the Environment and Sustainable Development.* Retrieved from http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201212_e_37708.html

O'Riordan, T. & Cameron, J. (Eds.). (1994). *Interpreting the Precautionary Principle*. London: Earthscan Publications Ltd.

Ottawa Chamber of Commerce. (2011). *Definition of the Precautionary Principle*. Co-sponsored by Lethbridge Chamber of Commerce, the Energy and Environment Committee.

Parks Canada. (n.d.). *Parks Canada Ecological Integrity course. Participant's Workbook Version 2.0*. Canada: Parks Canada Agency.

Parks Canada (National Parks Branch). (1964). *Parks Canada Policy 1964*. Ottawa: Minister of Northern Affairs and Natural Resources.

Parks Canada. (1972). *Byways and special places.* IAND Publication No. QS-1202-000-BB-A-1. Ottawa: National Historic Parks Branch, Indian Affairs and Northern Development.

Parks Canada. (1979). *Parks Canada Policy.* Ottawa: Minister of the Environment.

Parks Canada. (1985). Heritage for Tomorrow / Canadian Assembly on National Parks and Protected Areas. Canada: Minister of the Environment.

Parks Canada. (1986). *National Marine Parks Policy*. Ottawa: Environment Canada

Parks Canada. (1994). *Parks Canada Guiding Principles and Operational Policies*. Ottawa: Canadian Heritage

Parks Canada. (1997). *Charting the Course: Towards a Marine Conservation Areas Act: discussion paper*. Ottawa: Canadian Heritage.

Parks Canada. (2003a). Historic Chronology of National Marine Conservation Areas. *News Releases and Backgrounder.* Retrieved from http://www.pc.gc.ca/APPS/CPNR/release_e.asp?bgid=661&andor1=bg

Parks Canada. (2010b). *National Parks Visitor Activity Guidelines*. Retrieved from http://www.pc.gc.ca/eng/progs/np-pn/dav-vag/dav-vag01.aspx

Parks Canada. (2011). *The State of Canada's Natural and Historic Places*. Retrieved from http://www.pc.gc.ca/eng/docs/pc/rpts/elnhc-scnhp/2011/part-b.aspx

Parks Canada. (2012). National Marine Conservation Areas of Canada. Retrieved from http://www.pc.gc.ca/eng/progs/amnc-nmca/index.aspx

Parks Canada. (2013a). 2013-2014 Report on Plans and Priorities. Retrieved from http://www.pc.gc.ca/docs/pc/plans/rpp/rpp2013-14/sec01/index.aspx

Parks Canada. (2013b). *Moose Population Reduction*. Retrieved from http://www.pc.gc.ca/eng/progs/np-pn/sf-fh/grosmorne/guide.aspx

Parks Canada. (2014). *Map of completing the National Marine Conservation Areas System.* Retrieved from http://www.pc.gc.ca/progs/amnc-nmca/cnamnc-cnnmca/index/carte-map.aspx

Parks Canada Agency. (2000). "Unimpaired for Future Generations"? Protecting Ecological Integrity with Canada's National Parks. Vol. I "A Call to Action."Vol. II "Setting a New Direction for Canada's National Parks." Report of the Panel on the Ecological Integrity of Canada's National Parks. Ottawa, ON: Minister of Public Works and Government Services.

Pauly, D., Christensen, V., Guenette, S., Pitcher, T., Sumaila, U., Walters, C., Watson, R., & Zeller, D. (2002). Towards sustainability in world fisheries. *Nature 418* (8 August 2002), 689-695.

Pearce, D. (1994). The Precautionary Principle and Economic Analysis. In T. O'Riordan & J. Cameron (Eds.), *Interpreting the Precautionary Principle,* (pp.132-151). London: Earthscan Publications Ltd.

Peel, J. (2009). Interpretation and Application of the Precautionary Principle: Australia's Contribution. *Review of European Community and International Environmental Law* 18(1), 11-25.

Pynn, L. (2013, October 15). B.C. sardine fishery collapse leaves 'a hole in the marketplace,' repercussions up the food chain to humpback whales. *National Post.* Vancouver, BC: Postmedia Network Inc.

Privy Council Office, (2000). *Risk Management for Canada and Canadians: Report of the ADM Working Group on Risk Management*. Canada: Privy Council.

Privy Council Office. (2003). *A Framework for the Application of Precaution in Science-based Decision Making about Risk*. Canada: Government of Canada.

Ray, G.C. & McCormick-Ray, J. (Eds.). (2014). *Marine Conservation: Science, Policy, and Management*. New Jersey: Wiley & Sons Ltd.

Roberts, C. (2012). The role of marine protected areas in sustaining fisheries. *Fisheries and their contribution to sustainable development.* Prepared by the Division for Ocean Affairs and the Law of the Sea. United Nations – Office of Legal Affairs. Retrieved from http://www.un.org/depts/los/consultative_process/6thmeetingpanel.htm

Ross, S. (2013, February 5). Report: Marine protection behind schedule. *The Chronicle Herald*. Retrieved from http://thechronicleherald.ca/novascotia/645401-report-marine-protection-behind-schedule

Sadovnik, A. (2007). Qualitative Research and Public Policy. In F. Fischer, G. Miller, & M. Sidney (Eds.), *Handbook of Public Policy Analysis Theory, Politics, and Methods*, (pp. 417-427). Florida: CRC Press, Taylor & Francis Group.

Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. London, England: Sage Publications Ltd.

Science & Environmental Health Network (SEHN). (1998, January 26). Precautionary Principle. *Wingspread Conference on the Precautionary Principle*. Retrieved from www.sehn.org/wing.html

Searle, R. (2000). *Phantom Parks: The Struggle to Save Canada's National Parks.* Toronto: Key Porter Books.

Seutin, G. (2001). Ecological Integrity and Parks Canada. *PRFO-2001 Proceeding: Protected Areas and Ecological Integrity.* Retrieved from http://casiopa.mediamouse.ca/2010/05/2001-prfo-proceedings-protected-areas-and-ecological-integrity/

Shore, R. (2014, February 17). DFO assessment of herring fishery based on broken ecosystem, study finds. *Vancouver Sun*. Retrieved from http://www.vancouversun.com/technology/assessment+herring+fishery+based+broken+ecosystem+study+finds/9517568/story.html

Shultis, J. & More, T. (2011). American and Canadian National Park Agency Responses to Declining Visitation. *Journal of Leisure Research* 43(1), 110-132.

Statistics Canada. (2013). *Estimated Population of Canada, 1605 to present.* CANSIM table 075-0001. Retrieved from http://www.statcan.gc.ca/pub/98-187-x/4151287-eng.htm

Sullivan, R. (2000). The Plain Meaning Rule and Other Ways to Cheat at Statutory Interpretation, in E Mackaay (ed.), *Les Certitudes de Droit*. Ottawa: 2000. Retrieved from http://aix1.uottawa.ca/~resulliv/legdr/interp.html.

Sullivan, R. (2007). *Statutory Interpretation, Second Edition*. Toronto, Ontario: Irwin Law.

Sunstein, C. (2003). *Beyond the Precautionary Principle*. The Law School. The University of Chicago. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=307098

The Canadian Press. (2013, April 25). Paragliding, zip lines OK'd for parks. *The Chronicle Journal, p. A8. Thunder Bay, ON*

Theberge, J.C. & Theberge, J.B. (2009). Application of Ecological Concepts to the Management of Protected Areas. In P. Dearden & R. Rollins (Eds.), *Parks and Protected Areas in Canada Planning and Management Third Edition*, (pp. 84-109). Don Mills, Ontario: Oxford University Press.

Tri-Council Policy Statement (TCPS 2). (2010). *Ethical Conduct for Research Involving Humans*. Ottawa, Canada: Interagency Secretariat on Research Ethics.

United Nations. (1982). *United Nations Convention on the Law of the Sea*. Retrieved from http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

United Nations (UN). (1987). The Brundtland Report – *Our Common Future*. Report of the World Commission on Environment and Development.

United Nations (UN). (1992a). The Rio Declaration on Environment and Development. *United Nations Chronicle.* 29(3): 66-67.

United Nations (UN). (1992b). *Convention on Biological Diversity.* United Nations. Retrieved from http://www.cbd.int/convention

United Nations. (2014). The United Nations Convention on the Law of the Sea (A historical perspective). Retrieved from http://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm#Historical Perspective

Wagenaar H. (2007). Interpretation and Intention in Policy Analysis. In F. Fischer, G. Miller, & M. Sidney (Eds.), *Handbook of Public Policy Analysis Theory, Politics, and Methods*, (pp. 429-441). Florida: CRC Press, Taylor & Francis Group.

Walmsley, R.D. (2006). *Approaches to the Evaluation and Assessment of Progress and Performance of the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative.* Nova Scotia: Fisheries and Oceans Canada.

Warner, F. (1994). What If? Versus if it ain't broke, don't fix it. In T. O'Riordan & J. Cameron (Eds), *Interpreting the Precautionary Principle,* (pp. 102–107). London: Earthscan Publications Ltd.

Wiersma, W. & Jurs, S. (2009). Research Methods in Education: An Introduction, Ninth Edition. Boston, MA: Pearson Education Inc.

Williams, T. (2005). *Sustainable Development in the Federal Government: I. The commissioner of the Environment and Sustainable Development*. Government of Canada: Ottawa, Canada.

Wynne, B. (1992). Uncertainty and environmental learning. Reconceiving science and policy in the preventive paradigm. *Global Environmental Change*, June 1992: 111-127.

Yanow, D. (2007). Qualitative-Interpretive methods in Policy Research. In F. Fischer, G. Miller, & M. Sidney (Eds.), *Handbook of Public Policy Analysis Theory, Politics, and Methods*, (pp. 405-415). Florida: CRC Press, Taylor & Francis Group.

Appendix A: List of Participants and Contacts

Jay Straith: Trial Lawyer, scuba diver
President: Artificial Reef Society of British Columbia (ARSBC) 1989-2001

- Initiated and guided 7 artificial reef projects sinking ships

President: Canadian Artificial Reef Consultants Inc. www.artificialreefs.net

- Established industry standards for diver-safe artificial reefs
- Presented at scientific conferences on artificial reef development
- Testified before Canadian Senate Committee for Fisheries
- Assisted development of first set of internationally accepted "benchmark" environmental standards for environmentally responsible ship preparation which were incorporated into the London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs (2009)

Tom Beasley: BA, MA and LLB

- Employment Lawyer; avocational underwater archaeologist; maritime historian; and advocate for recreational scuba issues including artificial reef development, dive safety and marine environmental protection

President: Vancouver Maritime Museum Society
Director: Underwater Archaeological Society of BC (Past President)
President: Underwater Council of B.C. 1993 – 2008
Vice-President: Artificial Reef Society of British Columbia (ARSBC) 1989-1994

- GB Church – Sidney, BC, 1991 and HMCS Chaudiere – Sechelt, BC,1992

Roy Mulder: Underwater cinematographer and mediactivist, scuba diver
President, Marine Life Sanctuaries Society
http://www.uwvideo1.webs.com/

Wayne Bourque (Parks Canada, retired)

- Early project manager for Gwaii Haanas NMCA and Reserve
- Lead on NMCA policy development
- Superintendent for Gulf Islands National Park Reserve

Doug Yurick (Parks Canada, retired)
Senior Advisor, Marine Program
Protected Areas Establishment and Conservation Directorate
Parks Canada Agency

Linda Porebski
Chief, Marine Protection Programs
Environment Canada

Mel Turner (BC Parks, retired)
Former Manager of Planning and Conservation, Regional Director for Lower Mainland
Planner for artificial reefs/features in provincial parks where it provided habitat enhancement and/or recreation opportunity.

Shaun Fluker: Associate Professor, University of Calgary, Faculty of Law

- Teaches environmental law and ethics, and endangered species law.
- Led Faculty's natural resources, energy and environmental law clinic since 2011.
- Author of articles concerning ecological integrity and Parks Canada (see Fluker 2009, 2010, 2013)

Evelyne Meltzer: BA, LLB, LLM (Marine Affairs and Asian Studies)

- Chief, Marine Policy, Fisheries and Oceans Canada (retired)
- Studied, practiced and taught International marine, coastal and fisheries law and governance
- United Nations Oceans and Law of the Sea Panel 2012, Speaker for Discussion: Fisheries and their contribution to sustainable development
- Author: *The Quest for Sustainable International Fisheries: Regional Efforts To Implement the 1995 United Nations Fish Stocks Agreement: An Overview for the May 2006 Review Conference* (see Meltzer, 2009)

Appendix B: Semi-Structured Interview Questions

Research Questions

PREAMBLE: Hello. My name is Dawne Mowbray. I am conducting interviews with individuals who have been involved in _____. I am interested in your perspective and your experiences _____. If at any time you are uncomfortable with anything you may stop the interview, and if you do not want to answer a question, just let me know. Thank you for participating!

General Questions

1. Please tell me a little about yourself and your experiences with this organization.

Experience Based Questions

2. I understand that you have been involved with x number of artificial reef projects. Can you tell me about these projects? Can you also provide additional details? Like, for example:
    a. the name of the ship
    b. where it was obtained
    c. where it was sunk (salt water, fresh water)
    d. how many years it took from the time the project started to completion
3. Looking at the big picture, what were the steps involved in taking this project from beginning to end?
4. Looking specifically at the legislation, what legislation and policies came into play during each of these steps?
5. Did any obstacles arise? If so, how did you deal with them?
6. In what ways is having an understanding of legislation and law helpful in getting a project like this accomplished?

National Marine Conservation Act, 2002

7. Are you familiar with marine protected areas in Canada and more specifically with national marine conservation areas?
    a. Are you familiar with the Lake Superior NMCA? If so discuss.

8. Are you aware that the *National Marine Conservation Act 2002* does not specifically mention sinking a vessel to create an artificial reef?
    a. Do you believe that such a project could be done under the current legislation?
    b. Do you believe that such a project could be done in Lake Superior or in the Lake Superior NMCA?
9. Do you perceive there to be sections in the NMCA Act that might prohibit the sinking of a ship? What would these be?
10. In a policy document predating the *NMCA Act 2002*, there is one sentence that reads as such:

    "The establishment of artificial reefs to attract marine organisms for display purposes, the intentional sinking of vessels or other man-made objects for recreational diving, and similar facilities will not be permitted in marine conservation areas." However Parks Canada also states, "As Parks Canada acquires operational experience in the establishment and management of marine conservation areas, it will be necessary to reassess elements of this policy to ensure that they are workable. Appropriate consultation will occur before any changes are made to the policy." What changes have you seen in Parks Canada marine policies over the years since the first marine park policy in 1986?
11. How much of an influence does the International Union for Conservation of Nature (IUCN) have on the management of marine protected areas in Canada?
12. Are there in your opinion, any other legislations, agencies, environmental groups, or Aboriginal groups that influence the management of marine protected areas in Canada? Please describe.