“WE ALWAYS DID FISH THE EELS”

Perceptions of the Qalipu Mi’kmaq First Nation Band Members’

Ecological Impacts in the American Eel Fisheries

of Western Newfoundland

by

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ABSTRACT

To help address the inherent lack of data and knowledge on small-scale fisheries, this research paper investigates the ecological impacts of a small-scale fishery in Western Newfoundland, Canada from the perspective of Qalipu Mi'kmaq First Nation Band members. Guided by a review of secondary data and semi-structured in-depth interviews, this exploratory study concludes that all research participants have the perception that the ecological impacts of Qalipu fishing practices and gear types in the American eel fisheries are limited both in number and severity.

Key words: small-scale fishery, ecological impact, American eel, Mi'kmaq First Nation

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Bonne Bay boat

"It's the only fishery that I miss."[1]

MY PERSONAL INTRODUCTION TO THE RESEARCH PROBLEM AT HAND

IT WAS A DREARY AUTUMN MORNING when we drove along the winding and pothole-ridden roads of the Great Northern Peninsula. The mainlanders[2] were set for an adventure. I was put on moose watch. "Is there a problem with the radio today?" my fellow graduate students enquired. Introductions to VOCM and the ways of rural Newfoundland were held with awe.

[1] Former Aboriginal River Guardian, interview by author, April 22, 2013.

[2] Mainland (n): The provinces of Canada, singly or collectively, other than Newfoundland and Labrador; Canada, upalong. Hence mainlander; *Dictionary of Newfoundland English*, s.v. "Mainland," accessed July 12, 2013, http://www.heritage.nf.ca/dictionary/d7action.html

The five of us were set off to attend the Community-University Research for Recovery Alliance's (CURRA) International Symposium on Rebuilding Collapsed Fisheries and Threatened Communities in Norris Point. Located in Bonne Bay, within an United Nations Educational, Scientific and Cultural Origination (UNESCO) Heritage Site and the heart of Gros Morne National Park, the symposium was a multi-stakeholder event that took a problem-solving approach to defining and addressing the wicked problem of fisheries governance.[3]

As we pulled into the parking lot of Norris Point's town hall, we were immediately directed by volunteers in neon-orange vests to "'ead 'round back." I had never seen the community so packed. Researchers from various disciplines and corners of the world along with industry, government, and community representatives gathered in Bonne Bay to explore lessons learned from fisheries rebuilding efforts.[4]

While nestled into the cozy town hall, I mulled-over presentations on topics that ranged from community food security to whether good governance makes us happy. I learned that devastating resource degradation as witnessed by my home province of Newfoundland was not a unique situation. I learned that policies and strategies for marine resources must draw upon the heritage and knowledge of fisheries-dependent households and communities.[5] And I truly learned that the sea runs through my blood.

It was after the CURRA symposium that I found myself in the office of a soft-spoken economics professor. Surrounded by jaw-droppingly beautiful panoramic photos of Iceland's rugged coastline, she explained to me how her travels solidified her beliefs in the importance of small-scales fisheries research. She discussed how small-scale fishers have been historically marginalized and ignored, and introduced me to the global partnership *Too Big To Ignore*. Her passion was energizing and it set me off on my own travels of both traditional fisheries and personal exploration.

[3] Community-University Research for Recovery Alliance, "About the Symposium," accessed June 22, 2013, http://www.curra.ca/symposium/about.html
[4] Ibid.
[5] Ibid.

OVERVIEW

It was after those introductions last fall that I embarked on a journey to explore some largely non-traversed areas of interest. I wanted to find out more about the First Nation Band in which thousands of people in my own backyard had recently applied for membership - the Qalipu Mi'kmaq First Nation Band (QMFNB); more about the mysterious beasty - the American eel; and whether there are perceived ecological impacts in small-scale fisheries in Western Newfoundland.

The research was carried out in the Bay St. George area of Western Newfoundland and St. John's, Newfoundland. Guided by the paradigm of phenomenology, in-depth semi-structured interviews were conducted with members of the QMFNB and fisheries management representatives in Newfoundland and Labrador (NL), and secondary-sources were analyzed throughout the research process.

I decided to structure this research paper into four chapters. The first chapter explains my rationale for choosing my exploratory area of research, and provides a background of the significant material steering the research project. The second chapter looks at the underlying theories and concepts of the paper and explains my chosen methodology. The third chapter outlines my key research findings and analyzes the perceived ecological impacts of the QMFNB members' fishing practices within the American eel fisheries in Western Newfoundland. Finally, chapter four offers some recommendations and a concluding discussion regarding QMFNB members' participation in American eel fisheries.

THE RESEARCH PROBLEM

SMALL-SCALE FISHERIES SUPPORT THE LIVELIHOODS OF MILLIONS OF PEOPLE, as they employ over 99% of its fishers and supply over half of wild-caught seafood throughout the world.[6] Unfortunately, it is often difficult to assess the ecological impacts of this sector. This is mainly due to the nature of the industry, as small-scale fisheries generally are conducted in

[6] Geoffrey G Shester, and Firenza Micheli, "Conservation Challenges for Small-Scale Fisheries: By-catch and Habitat Impacts of Traps and Gillnets," *Biological Conservation*, no. 144 (2011): 1673.

remote areas with a lack of monitoring systems, utilize several gear types, operate seasonally, target several species, and are often combined with other livelihood practices.[7]

Fishing, both large and small-scale, can cause damage to ecosystems.[8] While much research has been conducted on the damages of large-scale fishing practices such as trawling,[9] little is known about small-scale fisheries' ecological footprints. Shester and Micheli (2011) state that the little information known on the ecological impacts of fishing gears and practices is generally from studies of large-scale fishing ventures in industrialized countries.[10] To help address this knowledge gap, I formulated the following primary research question:

> *How ecologically sustainable are the fishing practices and gear types of the Qalipu Mi'kmaq First Nation Band Members in the American eel fisheries in Western Newfoundland?*

This study explores the ecological impacts of indigenous fishing gear types and practices in rural Newfoundland and whether they could be determined to be low-impact and sustainable according to criteria set by the Marine Stewardship Council (MSC). Please see Appendix A for an overview of the MSC's sustainability criteria. It is increasingly recognized in environmental policy that the indigenous technical knowledge (ITK) of indigenous fishers is useful to achieve ecologically sustainable fisheries management and conservation.[11] Therefore improved understanding of indigenous fisheries, technology and management approaches is needed. This study aims to contribute to this understanding through the specific example of the QMFNB member's participation in the American eel fisheries.

MY RATIONALE

"WHY ARE YOU NOT LOOKING AT OIL AND GAS ENVIRONMENTAL POLICY?" was a typical comment made by people when I told them about my research in small-scale fisheries. "Research in oil and gas would make you more employable"

[7] "Too Big Too Ignore Goal and Project Description," accessed October 23, 2012, 1.
[8] Ibid., 6.
[9] Joanna Alfaro-Shigueto, Jeffrey Mangel, Mariela Pajuelo, Peter Dutton, Jeffrey Seminoff, and Brendan Godley, "Where Small Can Have a Large Impact: Structure and Characterization of Small-Scale Fisheries in Peru," *Fisheries Research*, no. 106 (2010): 8.
[10] Shester and Micheli, "Conservation Challenges for Small-Scale Fisheries: By-catch and Habitat Impacts of Traps and Gillnets," 1673.
[11] Edward Nsiku, "Chapter 4: Indigenous Technical Knowledge of Malawian Artisanal Fishers," in *Fishers' Knowledge in Fisheries Science and Management*, eds. Nigel Haggan, Barbara Neis and Ian Baird (Paris, France: Unesco Publishing, 2007), 98.

they said. Although I am a born and bred Newfoundlander who grew up in rural communities surrounded by the salty sea, I found myself having to justify my research on fisheries policy.

Although the numbers of people depending on small-scale fisheries garners some government attention and support, small-scale fisheries throughout history have typically been marginalized and ignored.[12] Aboriginal fishers have been further marginalized historically. The purpose of this research is to add to a broad-based synthesis of knowledge in small-scale fisheries through the *Too Big To Ignore* Global Partnership[13] and the Mi'kmaq Alsumk Mowimsikik Koqoey Association (MAMKA), and, particularly, to explore the ecological impacts of small-scale, indigenous fishing gear types and practices associated with the QMFNB members and the American eel fisheries in Western Newfoundland.

During my research, two key questions guided me. Firstly, what traditional fishing methods and devices are utilized by QMFNB members in the American eel fisheries? Secondly, what are the ecological impacts associated with the fishing gear types and practices employed in the eel fisheries?

In today's society, the conventional approaches to development have proven to be lucrative in terms of increasing economic activity and have become standard in many states' political agendas.[14] However, critics have clearly highlighted the weaknesses of such conventional approaches in the face of emerging and acknowledged ecological constraints.[15]

So why should we care about the sustainability of small-scale fisheries? Studies show that small-scale fisheries are important at local, regional, national and global levels.[16] The Food and Agriculture Organization of the United Nations (FAO) indicates, "Fisheries support the livelihoods of 540 million people, or about 8% of the world's population. More than 90% of them are related to small-scale fisheries."[17] Similar to the findings of the FAO, the importance of small-scale

[12] "Too Big Too Ignore Goal and Project Description," 1.
[13] Too Big To Ignore, "Home," accessed February 14, 2013, http://toobigtoignore.net
[14] Mathis Wackernagel and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth* (Gabriola Island, BC: New Society Publishers, 1996), 1.
[15] Ibid.
[16] Ratana Chuenpagdee, "Chapter 25: Too Big To Ignore – Global Research Network for the Future of Small-Scale Fisheries," in *World Small-Scale Fisheries Contemporary Visions*, ed. Ratana Chuenpagdee (Delft, The Netherlands: Eburon Academic Publishers, 2011), 383.
[17] Ibid.

fisheries to Newfoundland cannot be understated as the fisheries have a long history of "economic growth, job creation, and food security for a large number of people living on the province's extensive coastline."[18]

My research attempts to assess the sustainability of the American eel fisheries for multiple reasons. One reason the American eel was chosen as a species of focus was due to the widespread nature of its stock depletion across North America. The American eel is currently listed by the Government of Canada as a threatened species and is under consideration for listing by the Federal *Species at Risk Act* (SARA). According to its *Endangered Species Act*, the American eel is also identified by the Government of Newfoundland and Labrador as a threatened species. In addition to its stock depletions, the American eel was also chosen because there have been very few studies on the American eel in the Northern portion of the species' geographic range, and even fewer studies of the American eel in Newfoundland.[19]

The American eel was also chosen for assessment due to its importance as a food source, medicinal ingredient, and ceremonial object to the Mi'kmaq people of Newfoundland.[20] The American eel fisheries have been traditionally important to the Mi'kmaq communities particularly in Western Newfoundland, as it has been "one of the few fisheries that can be harvested year-round and easily preserved."[21]

Furthermore, there is also a large knowledge gap pertaining to the QMFNB. Identifying as a relatively new and one of the largest bands in Canada,[22] the QMFNB's fishing gears and practices have not been widely assessed.

Overall, I embarked on my research project to document and tell the stories of fisherpeople. Tales that may not coincide with many readers' typical images of rural Newfoundland and the province's troubled groundfish stocks. Tales that could help readers form new perceptions of artisanal fishers and one of their largely undocumented fisheries. Tales that would hopefully highlight to readers that small-scale fisheries truly are too big to ignore.

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[18] Too Big To Ignore, "About Us," accessed April 3, 2013, http://toobigtoignore.net/?page_id=2

[19] BM Jessop, JC Shiao, and Y Iizuka, "Life History of American Eels from Western Newfoundland," *Transactions of the American Fisheries Society* 138, no. 4 (2009): 861

[20] Kerry Prosper and Mary Jane Paulette, "*The Mi'kmaq Relationship with Kat (American Eel)*," Paqtnkek Fish and Wildlife Commission, (March, 2002), 1.

[21] Department of Environment and Conservation – Wildlife Division, "Management Plan: American Eel (Anguilla Rostrata)," 2011, p. 18.

[22] Qalipu Mi'kmaq First Nation Band, "Qalipu FAQs," accessed April 3, 2013, http://qalipu.ca/faq/qalipu-faqs/

BACKGROUND

THE AMERICAN EEL AND ITS FISHERIES

THE AMERICAN EEL, *ANGUILLA ROSTRATA*, is considered a 'freshwater eel' and is the only representative of the genius *Anguilla* in North America.[23] However, the American eel complete a portion(s) of their lifecycle in salt water. American eels are a migratory species and have a wide distribution range. They can be found throughout "freshwater habitats, estuaries, and coastal marine waters of the Western North Atlantic coastline."[24] American eels can be found "throughout insular Newfoundland and as far north as English River Labrador."[25] English River is located north of Lake Melville and has been considered as the most northern extent of the American eel's range.[26] The American eel uses a mixture of marine and freshwater habitats throughout its life history, and inhabit a "variety of continental and oceanic habitats during their migrations to and from spawning areas in the Sargasso Sea" of the southern North Atlantic Ocean.[27] It is assumed by Fisheries and Oceans Canada (DFO) that the American eel "utilize all available habitats" within NL, and that the species is also known to inhabit brackish waters such as "salt marshes, barachois ponds and estuaries."[28]

The American eel has a unique and interesting biology compared to other fishes. The species spawn only once during their life in the Sargasso Sea, and larvae, termed 'leptocephali,' grows into a leaf-life shape.[29] As the larvae travels toward the continental shelf, they metamorphose into transparent 'glass eels' that are known to have the "serpentine shape of the adult form."[30] The glass eels transform into 'elvers' once they reach inshore waters and develop some pigmentation.[31] As

[23] Department of Environment and Conservation – Wildlife Division, "Management Plan: American Eel (Anguilla Rostrata)," p. 2.
[24] Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada" (2012), p.iv, www.registrelep-sararegistry.gc.ca/default_e.cfm
[25] Geoff Veinott, and Keith Clarke, "Status of American Eel in Newfoundland and Labrador Region: Prepared for the Pre-COSEWIC and Eel Zonal Advisory Process (ZAP), Ottawa, August 31 to Sept 3, 2010," (Canadian Centre for Science Advice, 2011), p. 1.
[26] Ibid.
[27] Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada," p.iv.
[28] Veinott and Clarke, "Status of American Eel in Newfoundland and Labrador Region: Prepared for the Pre-COSEWIC and Eel Zonal Advisory Process (ZAP), Ottawa, August 31 to Sept 3, 2010," p. 1.
[29] Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada," p.v,
[30] Ibid.
[31] Ibid.

the elvers become more pigmented, they are known as 'yellow eels' and reach a stage of sexual differentiation.[32] While density is known to be an important influential factor in sex ratio determination, sex ratios are relatively more variable in Newfoundland and the Maritime provinces than other Canadian locations.[33] Finally, the American eel reaches maturation during its final stage as a 'silver eel' during which it undergoes morphological and physiological modifications such as the degeneration of its digestive tract and the enlargement of its pectoral fins.[34] The size of American eels at maturation varies both geographically and with sex; males generally tend to have a smaller size and age compared to females.[35] For American eels permanently residing in salt water, the generation time can be as short as 9 years.[36] However, American eels residing in freshwater may have a generation time that spans as high as 22 years (average age of parents of a cohort).[37]

The American eel is considered an "excellent indictor of local habitat integrity and plays an important role as a top aquatic predator."[38] Unfortunately, stocks of the American eel have declined throughout its wide distribution range of North America.[39] The American eel has been designated as a threatened species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and as a vulnerable species under the Newfoundland and Labrador *Endangered Species Act*. While some organizations and governments have addressed the stock declines of the American eel, Canada's *SARA* has not listed the American eel as 'at risk', and the US Fish and Wildlife Service conducted a status review on the American eel whereby they determined that the American eel should not be presently listed for protection under the *US Endangered Species Act*.[40]

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[32] Ibid.
[33] Ibid.
[34] Ibid.
[35] Department of Environment and Conservation – Wildlife Division, "Management Plan: American Eel (Anguilla Rostrata)," p. 4.
[36] Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada," p.v,
[37] Ibid; Committee on the Status of Endangered wildlife in Canada, "COSEWIC's Assessment Process and Criteria," accessed, July 28, 2013, http://www.cosewic.gc.ca/eng/sct0/assessment_process_e.cfm
[38] Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada," p.iv,
[39] Jessop et al., "Life History of American Eels from Western Newfoundland," 861
[40] Ibid.

It has been suggested that the collapse of a "formerly large eel population in Lake Ontario, and decreasing indicators elsewhere" are evidence of a species-wide decline of the American eel.[41] Reasons such as "overfishing, obstacles to migration, turbine mortality in hydro dams, pollution, habitat degradation, and ocean changes" have all been proposed by DFO for population changes in the American eel.[42] However, DFO has stated that there is currently no clear cause identified for the species decline.[43]

In NL, eels are fished commercially, recreationally, and also for food, social and ceremonial (FSC) purposes. The species has a strong local importance. The American eel supports "seasonal commercial fisheries at the juvenile (yellow) and sexually mature (silver) stages," and is also the "focus of many fisheries which are of great importance to Aboriginal peoples."[44] The American eel fisheries do not have a total allowable catch managed by DFO. Instead, the commercial and recreational fisheries are managed through licence, gear and seasonality restrictions. Due to a DFO ban on the issuance of new American eel commercial licences in 1998 and recreational licences in 1999, the number of commercial and recreational licences has decreased approximately 50% to 192 as of 2009.[45] In Newfoundland, the commercial eel fishery occurs during the summer and fall seasons. Fisheries and Oceans Canada's commercial eel conditions specify that: the season in coastal waters using eel pots and fyke nets is June 1 - October 3; the season in inland waters using eel pots is July 1 – October 3; and the season in inland waters using fyke nets is August 15 – October 31.[46]

While a management plan was established by the Government of NL's Department of Environment and Conservation for the American eel in 2011, the management of the American eel in NL falls under the jurisdiction of DFO. Although DFO has published several research documents on the American eel (e.g. Veinott and Clark, 2010; Cairns et al., 2008) and has implemented several management practices related to the commercial eel fishery, little headway has been made towards policy generation surrounding long-term safeguarding of the American eel stocks in Newfoundland and Labrador.

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[41] DK Cairns et al., "American Eel Abundance Indicators in Canada," (Fisheries and Aquatic Sciences, 2012), p. 1.
[42] Ibid.
[43] Ibid.
[44] Jessop et al., "Life History of American Eels from Western Newfoundland," 861
[45] Department of Environment and Conservation – Wildlife Division. "Management Plan: American Eel (Anguilla Rostrata)." 2010, p. 15.
[46] Fisheries and Oceans Canada, *2013 Commercial Eel Conditions*, entered in NLFIN March 11, 2013.

Overall, there is a large knowledge gap surrounding the American eel species in general. In Canada, the best data coverage regarding the American eel can be found on the St. Lawrence River system; the poorest data coverage occurs in Newfoundland.[47] There are relatively few studies published on the American eel in Newfoundland. The Newfoundland sites represent the most northerly locations described in the literature, and unpublished studies generally examine the "biology and commercial fishery on the southwestern coast."[48] Currently, available data on the American eel in NL mainly comes from the commercial fisheries logbooks.[49] Most of the fisheries independent data on the American eel has been gathered during "surveys or sampling for other species."[50]

THE QALIPU MI'KMAQ FIRST NATION BAND & MI'KMAQ ALSUMK MOWIMSIKIK KOQOEY ASSOCIATION

WHEN NL JOINED CONFEDERATION, Mi'kmaq people living in Newfoundland were not covered under the Indian Act. In the 1970s, the Mi'kmaq people in Newfoundland joined together to form the Native Association of Newfoundland and Labrador, which later evolved into the Federation of Newfoundland Indians (FNI). The FNI's primary goal in the 1970s was to "obtain Government of Canada recognition of Mi'kmaq eligibility for registration under the *Indian Act*."[51] After a decade of frustration, the Mi'kmaq of Conne River were eligible for registration under the Indian Act.[52] However, Mi'kmaq residing outside of Conne River were not eligible for registration due to the Government of Canada recognition of only designated native communities. Exploratory discussions between the Government of Canada and the FNI commenced in 2002 to determine how the *Indian Act* could be extended to FNI members. Preliminary negotiations commenced in 2003. An agreement was reached between negotiators of the FNI and Canada in the summer of 2007 to address that inequality.

[47] DK Cairns et al., "American Eel Abundance Indicators in Canada," (Fisheries and Aquatic Sciences, 2012), p. v.
[48] Jessop et al., "Life History of American Eels from Western Newfoundland," 861; Committee on the Status of Endangered Wildlife in Canada, "COSEWIC Assessment and Status Report on the American Eel *Anguilla Rostrata* in Canada," p.iv,
[49] Veinott and Clarke, "Status of American Eel in Newfoundland and Labrador Region: Prepared for the Pre-COSEWIC and Eel Zonal Advisory Process (ZAP), Ottawa, August 31 to Sept 3, 2010," p. 1.
[50] Ibid.
[51] Qalipu Mi'kmaq First Nation Band, "Formation of Qalipu," accessed May 31, 2013, http://qalipu.ca/qalipus-story/formation-of-qalipu/
[52] Ibid.

On November 30th, 2007, Prime Minister Stephen Harper visited St. George, Newfoundland, to announce that an Agreement-in-Principle had been reached to provide an opportunity for the Mi'kmaq of Newfoundland to obtain official recognition as status Indians under the *Indian Act*.

It was not until 2011 that an Order-In-Council provided the legal basis for establishment of the QMFNB. The name Qalipu (pronounced hal-lay-boo), the Mi'kmaq word for caribou, was picked for the Band due to the caribou's historical level of importance to the survival of the Mi'kmaq people.[53] According to the supplier of the name Qalipu, William P. Duggan of Corner Brook, the name is well-suited to the landless Band as it is "linked to wandering and migration and exhibits how the native people lived a lifestyle similar to the caribou."[54]

More than 20,000 people have received status as QMFNB members under the *Indian Act*. Over 100,000 people have applied to become members of the QMFNB,[55] of which many are outstanding applicants that are waiting to hear about their membership applications.[56] In May, 2013, Motion 432 was voted down by the Federal Conservative Government which asked to "extend the enrolment application review process to all applicants of the QMFNB on a timely basis and in a manner fully consistent with the precedents, considerations and methods used by the Enrolment Committee and the Appeal Master in the first stage of the enrolment process."[57] The Qalipu Watchdogs, a group that represents members and applicants who have applied to the QMFNB, strongly believes that "any deviation from this would constitute a fundamental breach of the 2007 Agreement reached between the FNI and the Government of Canada."[58]

The decades-long dispute surrounding the legal recognition of Newfoundland Mi'kmaq by the Canadian Federal Government has not weakened the Aboriginal group's desire to fish American eels. The Mi'kmaq and other Aboriginal groups located throughout the Canadian range of the American Eel have traditionally fished American eels for food.[59]

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[53] Qalipu Mi'kmaq First Nation Band, "Qalipu Name and Logo," accessed May 31, 2013, http://qalipu.ca/chief-and-council/qalipu-name-and-logo/
[54] Ibid.
[55] West Coast Morning Show, "Qalipu Mi'kmaq," *CBC Radio*, May 27, 2013, http://www.cbc.ca/player/Radio/Local+Shows/Newfoundland/ID/2387814926/
[56] "Qalipu Negotiator Says Applications Overwhelming," *CBC News*, April 28, 2013, http://www.cbc.ca/news/canada/newfoundland-labrador/story/2013/04/28/nl-qalipu-applications-caron-428.html
[57] Qalipu Watchdogs, "About Us," accessed May 31, 2013, http://www.qalipuwatchdogs.com/?page_id=157
[58] Ibid.
[59] Department of Environment and Conservation – Wildlife Division, "Management Plan: American Eel (Anguilla Rostrata)," p. 18.

Known as 'Kat, Katew or Kataq,' the American eel has played and continues to play an important role in the "social, cultural, and spiritual fabric of Mi'kmaq society."[60] According to one report by the Mainland Nova Scotia Mi'kmaq, the American eel has primarily been used by the Mi'kmaq in Atlantic Canada for household consumption, and the second most important use of the eel has been 'for sharing.'[61] The practice of sharing their catch is part "of the traditional Mi'kmaq 'social security' system, and is still part of the traditional code of proper behaviour in Mi'kmaq communities."[62] As recreational eel harvesting and consumption is generally considered to be a group activity, the American eel also helps to "strengthen social cohesion" in Mi'kmaq communities.[63] The eel fishery is also typically introduced to 'young Mi'kmaq' by their fathers, grandfathers or uncles through teachings "that are permeated with a Mi'kmaq cultural perspective" and involves a wide range of topics from "life ways of the eel to conservation measures."[64] Those teachings are considered "in short, Mi'kmaq traditional knowledge."[65]

Similar to other Aboriginals in Canada, the Mi'kmaq in Newfoundland have a long history of participation in and knowledge of many fisheries. To help represent the Mi'kmaq people and their communities in issues relating to aquatic resource and oceans management, the QMFNB and the Miawpukek First Nation (MFN) came together to form MAMKA.[66] Under DFO's Aboriginal Aquatic Resource & Oceans Management (AAROM) program, MAMKA was formed to help the Newfoundland Mi'kmaq to "participate effectively in multi-stakeholder, advisory, and multilateral decision-making processes used for aquatic resources and oceans management."[67] The Mi'kmaq Alsumk Mowimsikik Koqoey Association has been actively involved in the collection of Aboriginal traditional knowledge on the American eel since 2009, and also has conducted several studies pertaining to eel grass surveys and American eel migration monitoring.[68]

The AAROM program was largely created in support of DFO's Aboriginal Fisheries Policy. Although many Aboriginals

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[60] Mainland Nova Scotia Mi'kmaq, *Mi'kmaq and the American Eel: Traditional Knowledge Relating to the American Eel*, (Shubenacadie, NS: Report to Environment Canada and Fisheries & Oceans Canada - Mi'kma'ki All Points Services, 2011), p. 10.
[61] Ibid., p. 25, 26.
[62] Ibid., p. 26.
[63] Ibid.
[64] Ibid.
[65] Ibid.
[66] Mi'kmaq Alsumk Mowimsikik Koqoey Association, "Welcome," accessed June 2, 2013, http://www.mamka.ca/MAMKA/Welcome.html
[67] Mi'kmaq Alsumk Mowimsikik Koqoey Association, "Banded Killifish: Monitoring the By-catch in the Eel Fishery," 2006.
[68] Mi'kmaq Alsumk Mowimsikik Koqoey Association, "Welcome," accessed June 2, 2013, http://mamka.ca/MAMKA/Updates/Updates.html

throughout Canada have "a long history of involvement in fisheries, in modern times they have been largely excluded."[69] The Aboriginal Fisheries Policy of 1992 was in direct reaction to the Supreme Court of Canada's Sparrow and Marshall decisions, and had the aim of enhancing financial support for Aboriginals entering fisheries.

During the 1990s, there were a slew of legal cases that concerned Aboriginal fishing rights.[70] In the 1990 Sparrow decision, the Supreme Court of Canada confirmed the right for Aboriginals in Canada to fish for FSC purposes. The Supreme Court of Canada decided in 1990 within the Sparrow decision that, "where an Aboriginal group has an Aboriginal right to fish for food, social and ceremonial purposes, it takes priority, after conservation, over other uses of the resource."[71] To assure consistency with the Sparrow decision, the Aboriginal Fisheries Strategy (AFS) was created in 1992 to help manage the Aboriginal fishery. It was also created to help bridge arrangements "in fisheries matters during the negotiation of comprehensive land claims and self-government agreements."[72]

Seven years later, the Mi'kmaq and Maliseet of Eastern Canada paved the way for Aboriginals to have the treaty right regarding access to fisheries for commercial purposes in a Supreme Court of Canada ruling that is now largely known as the Marshall decision. Largely unknown by many however is that the Marshall decision of 1999 dealt with overturning charges laid on Donald Marshall, a Mi'kmaq of Nova Scotia for fishing American eels out of season, without a licence and with an illegal net.[73] At the heart of the debate over native fishing rights was the American eel fishery, and the resulting Marshall decision changed the course of Aboriginal fisheries management in Canada.

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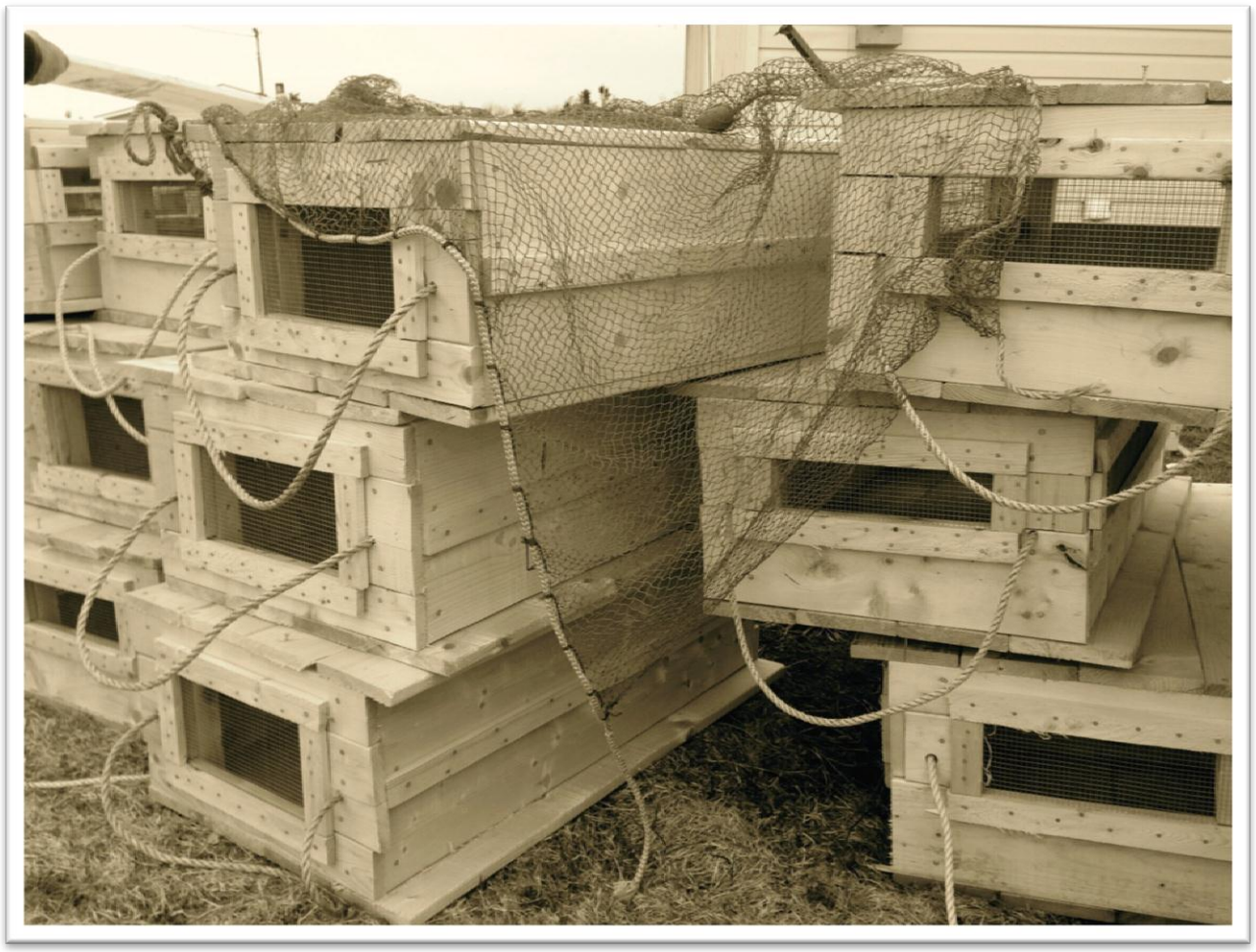
[69] Richard McGaw, "Aboriginal Fisheries Policy in Atlantic Canada," *Marine Policy* 27 (2003): 417.
[70] Ibid.
[71] Fisheries and Oceans Canada, *An Integrated Aboriginal Policy Framework* (Ottawa: Communications Branch Fisheries and Oceans Canada, 2007), p. 16.
[72] Ibid.
[73] "Indepth: Fishing – the Marshall Decision," *CBC News Online*, May 9, 2004.

CHAPTER 2



Crates and fyke

"I was raised to believe that conservation has to be first and foremost."[74]

UNDERLYING THEORIES AND CONCEPTS

SMALL-SCALE FISHERIES HAD ALWAYS INTERESTED me since I set off with my bamboo-fishing pole in search of trout as a youngster[75] on the Great Northern Peninsula of Newfoundland with my father. When I lingered in that crowded town hall in Norris Point, I discovered that I had many unanswered questions. I realized then that I needed to clarify for myself theories and concepts that helped build and further define the American eel fishery in Western Newfoundland. I determined that I had to better understand the nature of small-scale fisheries. I also wanted to better comprehend the notion of

[74] Aboriginal Elder, telephone interview by author, May 1, 2013.

[75] Youngster (n) - from 1937 Devine 57: The term applied to the young English and Irish apprentices to the fishery. *Dictionary of Newfoundland English*, s.v. "Youngster," accessed July 12, 2012, http://www.heritage.nf.ca/dictionary/d7action.html

sustainability versus ecological sustainability, and how common property and community based management theories can contribute to understanding issues of ecological sustainability in small-scale fisheries.

TERMINOLOGY

WHY ARE SOME FISHERIES CONSIDERED SMALL-SCALE rather than some of their larger counterparts? A universal definition of small-scale fisheries remains unavailable principally due to reasons of their complexities.[76] Widespread metrics such as vessel size and gross registered tonnage are often used to help define small-scale fisheries however.[77] The FAO defines artisanal fisheries as:

> Traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption…Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries.[78]

While the terms 'small-scale' and 'artisanal' fisheries are used generally interchangeably by the FAO, there are some qualms about the concepts from a technological viewpoint. For example, Anglophones commonly use the term 'small-scale fishery' to imply a relatively small vessel size with both a low level of technology and capital investment per fisher.[79] However, the term 'artisanal fishery' is more likely to be used by French and Spanish speaking areas to mean "a low level of technology which may imply a low level of organization and industrialization, but with little reference in size."[80]

Although there exists debate surrounding the correct usage of the terms small-scale and artisanal fisheries, it should be noted that the terms do differ significantly from industrial and recreational fisheries.[81] For example, the FAO suggests that while there are exceptions, industrial fisheries are "confined to the continental shelf where fish are more abundant,"[82] unlike artisanal fisheries that generally occur closer to the shoreline. Dissimilar to artisanal and industrial fisheries, recreational

[76] Alfaro-Shigueto et al., "Where Small Can Have a Large Impact: Structure and Characterization of Small-Scale Fisheries in Peru," 9.
[77] Ibid.
[78] Food and Agriculture Organization of the United Nations, "Small-scale and Artisanal Fisheries," accessed July 8, 2013, http://www.fao.org/fishery/topic/14753/en
[79] Ibid.
[80] Ibid.
[81] Ibid.
[82] Food and Agriculture Organization of the United Nations, "Industrial Fisheries," accessed July 8, 2013, http://www.fao.org/fshery/topic/13635/en

fisheries however are not often defined primarily by location, but rather by their *raison d'être*. The FAO defines recreational fisheries as fisheries that "develop in countries as pastimes, and in underdeveloped countries as tourist attractions."[83]

To follow suit with the FAO in hopes of decreasing confusion over terminology, please note that this paper uses both small-scale and artisanal fisheries interchangeably.

SUSTAINABILITY AND FOOTPRINTS

THERE HAS BEEN AN INTENSIFYING DEBATE over the past two decades regarding how to define sustainability and identify appropriate indicators amongst academics, organizations, regions and nations. For example, an academic may define sustainability as "the capacity to create, test, and maintain adaptive capability," whereas others may define the term through a lens that focuses on interactions amongst a range of factors such as social, ecological and global environmental problems.[84]

Researchers such as Wackernagel and Rees (1996) branched away from common sustainability definitions and chose to focus on the concept of 'ecological sustainability.' In doing so, they pioneered the calculation of sustainability through a concept now known as an 'ecological footprint.' Wackernagel and Rees have simply summarized ecological sustainability as, "individuals ensuring that they use essential products and processes of nature no more quickly than they can be renewed, and that those individuals discharge wastes no more quickly than they can be absorbed."[85] However, studies on ecological footprints have mostly surrounded terrestrial rather than marine areas. Wackernagel and Rees argue that future research on the 'human footprint in the sea' is needed and will have to address factors such as seafood consumption if findings are to support terrestrial footprint analyses.[86] Furthermore, it should be noted that although a marine footprint is a

[83] Food and Agriculture Organization of the United Nations, "Recreational Fisheries," accessed July 8, 2013, http://www.fao.org/fshery/topic/14831/en

[84] CS Holling, "Understanding the Complexity of Economic, Ecological, and Social Systems," *Ecosystems* 4, (2001): 390.

[85] Wackernagel, Mathis and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth*, 7.

[86] Ibid., 64.

"measurement of demand upon the productivity of the world's oceans by humans," it does not provide a measurement for either direct or indirect impacts of fishing.[87]

To help analyze the sustainability of fisheries, the MSC developed an environmental standard for sustainable fishing. Developed jointly in the mid-1990s by the "world's largest environmental organization, the World Wildlife Foundation, and the world's largest seafood buyer, Unilever," the MSC has emerged as a "clear-cut global leader in market-oriented efforts to reshape wild fisheries governance."[88] The MSC's principles and criteria were built on the "FAO's code of conduct for responsible fishers, the UN Fish Stocks Agreement, and other international fisheries agreements" during an "inclusive consultation process" between 1996 to 1999.[89] To assess fisheries as sustainable, the MSC generally tends to utilize science-based models that some academics suggest rely on imprecise and error-prone explicit knowledge on stock status and total harvests.[90] However, the MSC has stated that it is often difficult for "smaller and more traditionally operated fisheries" to be analyzed regarding sustainability."[91] To help address issues with conventional approaches' strong focus on assessing fisheries' sustainability via quantitative data, it developed a risk-based framework (RBF). The MSC started to develop a suitable methodology for data-limited fisheries in 2005, and in the end created a set of assessment methods that were contained within the MSC's certification requirements.[92] The MSC's RBF became fully integrated into the MSC's fishery certification requirements for use in 2009.[93] As stock assessments for both data-limited and data-rich fisheries can be expensive and time consuming, the MSC has made certification for its seafood standard and consequently ecological sustainability analysis of fisheries more accessible to various sizes and types of fisheries.

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[87] Robert Parker and Peter Tyedmers, "Uncertainty and Natural Variability in the Ecological Footprint of Fisheries: Study of Reduction Fisheries for Meal and Oil," *Ecological Indicators* 16, (2102): 77.

[88] Paul Foley, "National Government Responses to Marine Stewardship Council Fisheries Certification: Insights from Atlantic Canada," *New Political Economy* 18, no. 2 (2013): 286.

[89] Lars Gulbrandsen, "The Emergence and Effectiveness of the Marine Stewardship Council," *Marine Policy* 33, (2009): 655.

[90] Daniel Pauly et al., "Towards Sustainability in World Fisheries," *Nature* 418, (2002): 694.

[91] Marine Stewardship Council, "MSC Risk-Based Framework," accessed March 25, 2013, http://www.msc.org/about-us/standards/methodologies/fam/fam/msc-risk-based-framework

[92] Ibid.

[93] Ibid.

COMMON PROPERTY THEORY

AS SOCIETY HAS BECOME MORE AWARE of anthropocentric damages to the natural environment, a popular explanation for problems such as acid rain and fishery collapses has been the theory of 'common property resources.'[94] This theory has had a major impact on the management of resources throughout the world today, and in essence is concerned with the protection of resources that remain common property rather than public or privately owned goods.

Essential to common property theory is the hypothesis that all common resources such as "air, oceans, rivers, parks and forests will inevitably be overexploited."[95] This is due to the fact that those resources are not privately owed and therefore it is in no one's interest to protect and conserve those resources. Common property theory suggests that by securing property rights, externalities will cease to exist and then the property owner can use the resource to his or her individual best advantage.[96] Garrett Hardin's article *The Tragedy of the Commons*, originally published in the journal *Science* in 1968, paved the way for modern common property theory. At its core, it suggested that mutually agreed upon coercion by affected individuals would lead to the conservation of common resources.

Hardin's *The Tragedy of the Commons* was essentially an article on overpopulation that "has achieved rapid and widespread popularity, and still remains influential."[97] Appealing to scientists and non-scientists from various disciplines, Hardin captured his audience early in his article by narrating his beliefs of how the "'population problem' cannot be solved in a technical way."[98] Cairns suggests that Hardin emphasized several unifying themes:

1. "The human population explosion will damage the environment, deplete natural resources, and markedly degrade the quality of human life;
2. Individuals will exploit anything that is free in order to maximize their own advantage. The cost of this exploitation is paid by society as a whole; and

[94] James Acheson, "Clearcutting Maine: Implications for the Theory of Common Property Resources," *Human Ecology* 28, no. 2 (2008): 145.
[95] Ibid.
[96] Ibid.
[97] Kevin Ells, "Ecological Rhetoric through Vicarious Narrative: The Enduring Significance of Garrett Hardin's The Tragedy of the Commons." *Environmental Communication* 2, no. 3 (2008): 320.
[98] Garrett Hardin, "The Tragedy of the Commons." *Science* 162, no. 3859 (1968): 1243.

3. Some form of coercion will almost certainly be necessary to control exponential population growth. This coercion is justified if humankind wishes to live sustainably."[99]

Hardin's themes have "long been recognized with respect to fisheries" both domestically and internationally.[100] Many of Hardin's followers suggest that the sharing of fish stocks from either large or small portions of water has a negative effect on stock status.[101] While aspects of the theory have been criticized by popularized academics such as Elinor Ostrom, discussed further below, over-exploitation of resources remains a constant threat in modern times, lending credence to Tragedy of the Commons theorists.

COMMUNITY BASED MANAGEMENT THEORY

DIVERGING FROM HARDIN'S PESSIMISTIC 'Tragedy of the Commons' theory whereby individuals "only pursue their own self-interests at the expense of the welfare of the group," academics such as Elinor Ostrom have offered alternative approaches that recognize that there are several circumstances whereby individuals cooperate to govern common-pool resources such as fish.[102]

Common pool resources theory as popularized by Ostrom suggests that shared resources can at times be managed sustainably by "voluntary organizations rather than by coercive states."[103] Her work on collective action and the formation of rules and norms outlines eight key principles that are essential to successful self-organized resource regimes and challenged Hardin's conceptual underpinnings.[104]Ostrom's research furthermore suggested that Hardin's problems with 'the commons' were more so problems with 'open access' and that a common resource, such as fish, which is limited to a particular group of users may not become decimated.[105]

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[99] John Jr. Cairns, "Garrett Hardin: 21 April 1915 – 14 September 2003," *American Philosophical Society* 149, no. 3 (2005): 414-415.
[100] Stephanie McWhinnie, "The Tragedy of the Commons in International Fisheries: And Empirical Examination," *Environmental Economics and Management* 57, (2009): 321.
[101] Ibid.
[102] Maria Hauck, "Rethinking Small-Scale Fisheries Compliance," *Marine Policy* 2, (2008): 635.
[103] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, (Cambridge, UK: Cambridge University Press, 1990).
[104] Hauck, "Rethinking Small-Scale Fisheries Compliance," 635.
[105] Carol M Rose, "Common Property, Regulatory Property, and Environmental Protection: Comparing Community-Based Management to Tradable Environmental Allowances" in *The Drama of the Commons*, ed. Elinor Ostrom, Thomas Dietz, Nives Dolsak, Paul Stern, Susan Stonich, and Elke Weber (Washington, DC: National Academy Press, 2002), 234.

Although being highly popularized and having considerable potential, community-based and collaborative resource management is still often unrealized in many regions and particularly coastal fisheries of the world.[106] For example, according to Wiber, DFO provides limited resources to support the involvement of fish harvesters from the Canadian Maritime inshore sector in management decisions and places significant strain on fisherfolk organizations.[107] Wiber has further suggested that when involvement in research and management does occur, it often does not involve the collection of a social-science knowledge base. This is due to DFO becoming challenged with "further increases to the demand of their time that does not produce clear benefits" when undertaking social-science research initiatives, as opposed to marine science data collection such as biological sampling which is seen by some to yield clearer benefits.[108] Academics such as Wiber suggest that if "one cannot get collaborative research linkages right" (i.e. DFO's balance between the collection of both science and social-science based data), collaborative management institutions will be unlikely to follow."[109]

Overall, it has been argued that "a primary touchstone" in fisheries social science and ecology has been the notion that small-scale fisheries are ecologically sustainable.[110] Researchers of small-scale fisheries have documented self-organized resource regimes and shown that "access to and use of the commons in many cases were highly regulated."[111] Their research has helped to portray how small-scale fisheries "embody social and ecological values emphasized by their place in the FAO's Code of Conduct for Responsible Fisheries," and that small-scale fisheries truly are valuable because they emulate how "communities can be stewards of the environment."[112] This research paper seeks to explore the extent to which these observations also apply in the eel fisheries in which members of the QMFNB participate.

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[106] Melanie Wiber et al., "Enhancing Community Empowerment through Participatory Fisheries Research," *Marine Policy* 33 (2009): 178.
[107] Ibid., 172.
[108] Ibid.
[109] Ibid.
[110] Derek Stephen Johnson, "Category, Narrative, and Value in the Governance of Small-Scale Fisheries," *Marine Policy* 30 (2006): 753.
[111] Ibid.
[112] Ibid., 753-754.

METHODOLOGY

DESIGN AND STUDY AREA

THIS PAPER WAS BASED ON A PROCESS of self-reflection and used a mixture of personal experiences, photography, qualitative evidence based on the observations and experiences of eel harvesters and fisheries management professionals, scientific knowledge and academic research. The research project officially began in March 2013 and finished in August 2013. The study was completed in three phases as follows:

- *Phase 1: Literature Review (March 2013 – May 2013)* - During phase one, a review of secondary data and literature was completed. Themes of data analyzed included, but was not limited to: ecological footprints theory and analytical frameworks, reports on small-scale fisheries' footprints, reports on small-scale fisheries' gear impacts, studies on American eel fisheries, reports on the American eel fishery in Newfoundland and within the QMFNB, and reports on American eel technology and fishing methods. Reports reviewed were from a mixture of sources including provincial and federal government reports, newspaper articles, books, and peer-reviewed journal articles from journals such as Marine Policy.

- *Phase 2: Data Collection (April 2013 – July 2013)* - The research paper's literature review was supplemented with semi-structured interviews with 10 participants. The 10 participants in the study were:

    - Four active and former commercial and/or recreational eel harvesters (one of which was also a former River Guardian)[113];
    - Four representatives of DFO;
    - One representative of the Government of NL's Wildlife Division; and
    - One Aboriginal Elder.

    As the research project was an initial exploratory study, previous contacts and a 'gatekeeper' were recruited to

[113] Consistent with the Aboriginal Fisheries Strategy Agreement's terms and conditions, the Aboriginal Fisheries Guardians Program interest is in the "conservation, protection and management of inland fisheries resources." Although the Program started as a one-year initiative, it has been renegotiated each year since 1992. The designation of Aboriginal Fisheries Guardian is enabled by Section 5 of The Fisheries Act, R.S.C 1985; Fisheries and Oceans Canada, *An Integrated Aboriginal Policy Framework,* p. 16.

participate. The QMFNB was also contacted through MAMKA to seek the Aboriginal community's support and permission for the study. To ensure a spread of representatives from various positions who used an array of fishing gear types, a snowball sampling strategy was conducted, with additional contacts identified by initial contacts. All participants were asked questions primarily involving their opinions on the ecological impacts of Qalipu Mi'kmaq First Nation Band members' fishing practices regarding the American eel fisheries in Western Newfoundland.

Due to a cluster of eel fishing in the Bay St. George area, the study location had a particular focus on the Bay St. George area of Western Newfoundland. Interviews were conducted in both St. John's, where fisheries managers are concentrated, and throughout the Bay St. George region of Western Newfoundland. Two interviews were also conducted via telephone as scheduling conflicts did not allow for in-person interviews.

The identities of the participants are not disclosed in this research paper and will not be disclosed in any related future publication that is disseminated in the public realm. Only the cumulative results are and will be published.

- *Phase 3: Analysis, Reporting and Dissemination (July 2013 - August 2013)* - Analysis of qualitative data was completed using a phenomenological approach and based on sustainability principles and criteria set by the MSC.

  This research paper has been disseminated to the Environmental Policy Institute and to the QMFNB. A further 5-page report was also compiled for *Too Big To Ignore's* Working Group #4 "Enhancing the Stewardship" electronic report/book. Initial drafts of this research paper and the report for *Too Big To Ignore* were disseminated to participants and the QMFNB for comments and approval.

THE INTERVIEW

FREE AND INFORMED CONSENT WAS ENSURED by the provision of printed information through a brief project description (as a part of informed consent) and through the signing of a consent form. The research project's aim was explained to the participants including its risks and benefits to themselves and the communities. All collection of personally identifiable

information from the participants was treated with the utmost care.

The interviews were semi-structured in nature and lasted approximately 45 minutes on average for all participants. Interviews that occurred with QMFNB members were transcribed and given to MAMKA as requested. The transcriptions were only given to the organization with prior written consent from participants.

The interview guides were based on the MSC's RBF which focuses on the direct impact of fishing activities such as bait collection, gear loss and navigation. The interview questions revolved around topics such participants' perceptions of the MSC's indicators, issues and definitions pertaining to ecological sustainability, and critiques of the current management of the American eel fishery in NL.

INTERPRETATION & ANALYSIS

WHEN CONDUCTING ABORIGINAL POLICY RESEARCH, a holistic framework can only be achieved if the framework "employs a holistic attitude."[114] Effective research completed in Aboriginal communities seeks to understand aspects such as "Aboriginal people, their history, their experience with research, their current situation and their vision for the future."[115] This research project created a framework for holistic research that included honouring:

- "The past, present and future;
- The interconnectedness of all things; and
- The spiritual, physical, emotional and mental aspects of human beings."[116]

While honoring these aspects in Aboriginal research, my research attempted to share the stories of fishers and present meanings of those stories, while still providing the viewpoint of my research participants.[117] To help ensure an appropriate fit between the research problem and successful research frameworks in Aboriginal community research, I used the paradigm of phenomenology to help paint a narrative of both the recreational and commercial fisheries in which QMFNB members participate.

[114] Carolyn Kenny, "A Holistic Framework for Aboriginal Policy Research," Status of Women Canada, accessed March 25, 2013, http://www.turtleisland.org/resources/hresearch.pdf, 3.
[115] Ibid., 5.
[116] Ibid., 9.
[117] Ibid, 20.

Phenomenological research often requires a researcher to deeply reflect on both their stance in the research and the development of epoché, or suspended judgment, during the conduction of ethical research.[118] The underlying terminal goal of phenomenology, or axiology, is understanding. Phenomenology's general aim is to understand "what an experience means for the persons who have had the experience" and develop structures of the description of the experience.[119] The phenomenon that my research project intended to document was the ecological impacts of the American eel fisheries in Western Newfoundland, including impacts such as those outlined in the MSC RBF and others raised by participants who have an intimate understanding of the fishery.

I used phenomenology's common tool of in-depth semi-structured interviews so I could contribute to studies in ecological sustainability in a non-conventional manner. In essence, my research attempted to assess the ecological impacts of the American eel fisheries in Western Newfoundland based on the understanding of those involved in the fisheries.

Following in the footsteps of hermeneutical phenomenology, the research used interpretative phenomenological analysis (IPA). Through the use of this approach, I was able to focus on my interpretation of the phenomenon under review, rather than the creation of a structural description of the phenomenon. Elements of ethnography were also incorporated into my research approach. Although interviewees' behaviour in its everyday context within the American eel fisheries was not rigorously researched, my use of observation and field notes helped me to enhance a narrative description of both my own research experiences and with the phenomenon in question.

Jonathan Smith from the School of Psychology of Birkbeck University of London has helped to popularize the IPA method. Employing a thematic style of analysis, Smith's IPA uses five stages to enable a writer to create both an account of the phenomenon in question and an interpretation of the research participant's own interpretation."[120] These stages are:

1. "Familiarization with the data;
2. Identifying themes;
3. Clustering themes;

[118] Kenny, "A Holistic Framework for Aboriginal Policy Research," 3.
[119] Clark Moustakas, "Chapter 1: Human Science Perspectives and Models" in *Phenomenological Research Methods* (SAGE Research Methods), p. 14.
[120] Nigel King and Christine Horrocks, *Interviews in Qualitative Research* (Thousands Oaks, CA: SAGE Publications, 2010), 205.

4. Constructing a summary table; and
5. Integrating themes across all cases."[121]

Guided by Smith's five stages, my findings were determined through the identification and analysis of themes/patterns in collected data after thorough readings of all of my interviews' transcripts. I did not analyze each personal perspective, but rather attempted to develop a narrative of the phenomenon and themes buried in the data. I captured the themes in a summary table for each interview, and then integrated the common themes into summary tables for both the recreational and commercial fisheries. I hope that my interpretation of data not only outlines my participants' own interpretation of the phenomenon, but also gives them a voice in a much overlooked fishery in Newfoundland and Labrador.

LIMITATIONS

DURING THE COURSE OF THE RESEARCH PROJECT, there were some limiting factors that affected the overall outcome of this research paper. The primary limitation was time and geographic constraints during the fieldwork portion of the project. Due to time constraints there was only a short span of time in which face-to-face interviews with participants located in Western Newfoundland could be completed. The time limitation and geographic constraints between myself and interview participants in Western Newfoundland resulted in two telephone interviews, four interviews with Aboriginal eel fishers and one with an Aboriginal Elder. If these limitations were not a factor, I would not have conducted telephone interviews and would also have increased the number of interviews with Aboriginal eel fishers and Elders, therefore increasing the scope of primary data collected. That said, the interviews conducted were rich and this is not considered a critical limitation to this initial, exploratory study.

A second limitation of the research project was the sheer timing of the research paper's submission date due to the submission date coinciding with the harvesting of summer eels. More elements of ethnography may have been incorporated into the research paper if I had had the opportunity to participate in the American eel fishery (which was generously extended to myself by members of the Aboriginal community but not feasible given the timing limitations noted above).

[121] Ibid., 205-210.

A final limitation was the possible perception that my research participants had myself labeled as an ‘outsider.’ While I was a government employee when I interviewed government representatives from both DFO and the Department of Environment and Conservation, I am not a member of the QMFNB nor do I identify as an Aboriginal. I will never know the extent to which members of the Aboriginal community did not share sensitive aboriginal traditional knowledge with myself during interviews. However, I did perceive that when I clearly identified myself as a born and bred rural Newfoundlander hailing from St. Anthony, my interview participants from the rural areas in Bay St. George did feel more comfortable sharing their stories and having a good yarn with myself. I can only imagine the additional stories I may have been told if I was labeled as an ‘insider’ by the Aboriginal community.

CHAPTER 3

Winter eel spearing

"I was about four years old, I guess. We lived in a little community called Middle Brook. That's about eleven miles from here, west on the rail bed. About 20 families lived there, including us. One day, in the spring of the year, I was going with mom visiting to another house, and we had to cross the rail bed. Before we got to the rail bed – and it had been after a lot of rain - in the ditches kind of (and the ditches kind of spread out into the fields, into the tall brown grass), mom noticed little round black holes in the grass. So she got down and she opened the grass and I could see it too: it was an eel.

Oh my God, was she ever excited. And, of course, you learn, like imprinting at that age from your parents, it's a different kind of learning. Her excitement became my excitement. She took some dry grass and caught the eel, pulled it out – holy geez and it was a nice big one. And it was yellow. They're all different colours, but this was a nice yellow one. So she took that and she ran for the house with it. I remember trying to stun it and kill it on the chopping block, and then she put it in her mixing pan. Because the mixing pans then was deep.

I remember that so clearly. And then we went back and she took the mixing pan and water. The grass was full of holes; there was holes everywhere. And it was wet. I would say before we were done, we had pulled out at least, it was more than a dozen, probably 15 or 16, and every one was big. You'd take the handful of grass and that would absorb the slime. Give him a few smacks and put them in the pan. Oh, we were some excited about that. That was my introduction to eels."[122]

[122] Former Aboriginal River Guardian, April 22, 2013.

NARRATIVES OF FISHERIES

RECREATIONAL FISHERY

RECREATIONAL EEL HARVESTING OCCURS "YEAR-ROUND" for QMFNB members.[123] There are three primary periods of recreational eel harvesting by QMFNB members in Western Newfoundland. The first period occurs during the month of May when the fishers pursue eels that are travelling from inland down towards oceanic waters. The second period spans during summer months and typically occurs within "the first part of June, July and August" along coastlines during low tides.[124] The third occurs during late fall and early winter; It typically starts in November and continues until "the ice gets too thick to be able to cut through to get at the mud level" within the mud banks of inland waters.[125]

During the first two periods mentioned above, the main fishing gear used by QMFNB members is a traditional handmade gaff. According to an Elder, a gaff is " a stick about three feet long with a fishing hook on the end."[126] The practice of gaffing has been used to harvest both lobsters and eels by QMFNB members, and takes considerable patience and technique. As described by the same Elder,

> *"When the tide is out that you can get into the larger boulders that are along the coastlines…you use a gaff and you also have a longer, maybe about a 4-foot long rod, which would be much smaller; it would be about the size of your middle finger, and you'd have it sharpened, pointed on one end, and what you'd do is you'd look for rocks that have cavities under them, like where the sand is kind of washed out or there's no bigger rocks leaning against another size rocks. You'd shove that long, pointed stick under the rock and you'd keep moving it around to try to disturb anything that might be underneath that rock. What would happen is that any eels that were there, you'd torment them with the stick; you'd be moving them and they'd poke themselves out. When they move out their head or their tail – whichever comes out from under the rock – that's when you'd gaff them and take them ashore."*[127]

[123] Aboriginal Elder, May 1, 2013.
[124] Ibid.
[125] Ibid.
[126] Ibid.
[127] Ibid.

Fishing trips in May typically start in the late hours of the night and often run into the early hours of the morning. Recreational eel fishers often reminisced about " staying out until three o'clock in the morning chasing eels" and then returning home to clean and cook the eels.[128] One fisherman stated that they knew it would be a good night for fishing eels in May when "snipes make sounds with their wings."[129] He further suggested that after the eels have finished wintering in mud, the eels "want the darkest, dirtiest, rainiest, ugliest night" to travel from freshwater to saltwater.[130] Multiple eel fishers concluded that eels do not swim to the sea from the brook on moonlit nights.

Fishing trips during the summer months however often only last a couple of hours during low tide, and may only yield approximately eight to ten eels. Interviews revealed that there is "no desire to go and spend every day and try to get a couple hundred pounds of eels…that becomes work, that doesn't become recreation anymore."[131]

Another technique that was traditionally used in the summertime but may not have as much presence in the Aboriginal community today was 'bobbing' for eels. This technique overlapped with the salmon fishing season, as eel fishers would "go down to the shore when they [salmon fishers] cleaned their salmon, we'd take the gut out of the salmon."[132] The eel fishers would then,

> *"Tie a string around the centre of the gut, and you'd put it in a brook and let it go down in the brook. What would happen is then the eels would suck onto it. You let them take it until they took it right down inside their stomach, with the string and all, and then you haul them ashore by the string. The string and the salmon gut would be down in their stomach. That was another thing that was called 'bobbing eels.'*[133]

Upon inquiring, it was determined that another variation of bobbing existed whereby eel fishers would "set eel hooks at the mouth of inland waters [wherever the rivers dump out]. You could put a number of hooks on a string, bait them with salmon guts and just put the fishhooks on, and string them across them mouth of that brook. When you'd go back the next day,

[128] Ibid.
[129] Former Aboriginal River Guardian, April 22, 2013.
[130] Ibid.
[131] Aboriginal Elder, May 1, 2013.
[132] Ibid.
[133] Ibid.

you'd have eels."[134] Due to the eels' sharp and fine teeth, the fishers suggested that rabbit wire would help catch the most eels.

When a boat is occasionally used in the recreational fishery, it is generally used in the spring or summer. Typically, the boats would be a canoe or an aluminum rowing boat, approximately 14-16 feet and would not have an engine. However, most fishers stated that they never or rarely use a boat in the recreational fishery.

The greatest fishing effort exerted by QMFNB members is during the winter spearing period. Starting in November, the fishers will travel to frozen estuaries and cut holes in the ice of approximately 3 feet in diameter. The holes are cut intentionally small, so that "you don't cut them big enough that somebody could fall through and not be able to catch hold to the side of the stronger ice and be able to save themselves."[135] Eel fishers have generally crafted their own spears; each averaging approximately 12 feet in length. Although the water is generally no more than 4-5 feet deep, the handle of a spear is considerably long to achieve multiple angles underneath the ice while spearing. Spearing eels also involves a special technique:

> *"Start right in the centre of the hole… your spear handle vertical, and you'd be spearing the centre, and then as you moved out from the centre your spear handle went on more and more of an angle. By the time you were spearing the length of your spear handle, your hand and handle (which is called a latch) on the top of the spear, your hand was down to the water. You were almost touching the water and you were probably down on one knee, because you wouldn't be able to bend over far enough (or stay bent over long enough). It'd be too hard on your back. So you'd be down on one knee, your hand would be level to the water, but you'd be spearing 12 feet underneath the ice all around you as you went around."*[136]

Predating the usage of the common fyke net in the commercial fishery, spearing eels has been a longstanding recreational tradition for the Mi'kmaq of the Bay St. George area. As one eel fisher suggests, "We always did fish eels, from my

[134] Ibid.
[135] Ibid.
[136] Ibid.

grandfather's time right up to my father's time right up to me, to our time. We always did fish the eels. But those days – our parents' days – they never did fish with the nets; they always fish it with spears."[137]

Throughout interviews with QMFNB members, it was common for participants to express their passion and love for both eels and their recreational and/or commercial fisheries. For example, during interviews one QMFNB member stated that the only fishery they miss participating in is the American eel fishery.[138] Even when discussing their cooking and baking preferences for eels during the interviews, the QMFNB members spoke passionately about the species.

It was revealed during interviews that the area of Flat Bay was actually founded by the Mi'kmaq community due to the local abundance and significance of American eels. It was suggested by an Elder that, "I think it is very important that the reason why Flat Bay became a settlement by First Nations people in the first pace was because of the abundance of eels."[139]

Historically, eels have been harvested by the Mi'kmaq community in Atlantic Canada for a variety of purposes. However, in Western Newfoundland it appeared that eels were primarily used for consumption. For example, a former River Guardian suggested, "Whenever you wanted eels, you went either for yourself or for the dogs, you would go and spear eels."[140] Eels were slated to have been an important food source for dogs that were generally used for "travel to the interior or hunting caribou" in the past, and still as a "very important part of [QMFNB members'] diet."[141] Only one interview revealed a usage of eels for anything other than consumption; "I made a medicine bag from an eel skin…I dried it and made it pretty nice – different anyway."[142]

Overall, according to an Elder, there remains to be approximately in excess of "150-200 [members of the QMFNB] who pursue the eel fishery for recreation."[143] However, recent changes to fisheries management regulations from DFO appear to have made it more difficult for QMFNB members to traditionally fish for the pursuance of food due to a ban on new

[137] Aboriginal Commercial and Recreational Eel Harvester, interview by author, April 17, 2013.
[138] Former Aboriginal River Guardian, April 22, 2013.
[139] Aboriginal Elder, May 1, 2013.
[140] Former Aboriginal River Guardian, April 22, 2013.
[141] Aboriginal Elder, May 1, 2013.
[142] Former Aboriginal River Guardian, April 22, 2013.
[143] Aboriginal Elder, May 1, 2013.

commercial and recreational American eel licences. Interviews with QMFNB members revealed that many spearers were taken aback by the ban:

> *"They didn't like the idea of having to drive to Stephenville to pick it up, or why should anybody charge them $5. There was no reason given why it was $5. That went on, and anytime that you wanted to spear eels you just went and picked up a licence. But there was this one winter (and Fisheries didn't tell anybody), if you didn't pick up a licence, you wouldn't be able to pick up a licence next winter. So that's how it went down. So next winter arrived and some men went in to get their licences, and they said, 'Did you have a licence last year?' 'No.' 'Well, you can't get one this year or ever again.' But those who were fortunate enough that had picked up a licence made darn sure – whether they wanted to spear or not – they renewed it every year."*[144]

Furthermore, it was stated that the new regulations have made 'outlaws' of traditional eel spearers who are unable to purchase recreational American eel licences or have licences passed down through family generations.[145] While the purpose of the new regulations may have been to decrease the numbers of recreational eel fishers, it appears that there are still many active QMFNB members participating in the recreational eel fishery without recreational licences.

During interviews with QMFNB members, it became clear that they have tended to perceive their participation in the American eel fishery as artisanal or small-scale in nature rather than recreational. Although the Miawpukek First Nation in southern Newfoundland hold a FSC licence for American eel, the QMFNB does not possess such a collective licence. While members of the QMFNB have had to apply for recreational American eel licences in the past, their primary purpose to fish eels for personal consumption appears to side with the FAO's definition of artisanal fisheries rather than recreational fisheries. However, in the eyes of fisheries management, members of the QMFNB have conducted recreational eel harvesting for decades.

[144] Former Aboriginal River Guardian, April 22, 2013.
[145] Aboriginal Elder, May 1, 2013.

COMMERCIAL FISHERY

IN NEWFOUNDLAND AND LABRADOR, fyke nets and pots are the only two gear types allowed by DFO for the harvesting of American eel. According to DFO's commercial eel licence conditions, eel harvesters are only allowed to set their gear within their location coordinates that are indicated by their licence.[146] It was determined through the interviews that most QMFNB commercial eel fishers start their season by setting their fyke nets around the last week of August and first week of September. It was also determined that the majority of eels are harvested from "around the 15th of September to the 5th of October" as that is the "best run for eels" in the Bay St. George region.[147]

The interviews revealed that many QMFNB members generally use fyke nets instead of pots when commercially harvesting eels. For some, the reason for choosing to focus on utilizing fyke nets instead of pots has been due to the inconsistency of the number of eels harvested by pots. For example, one commercial eel harvester stated, "some years they'll [eels] pot good and other years they don't."[148]

The interviews revealed that QMFNB members who commercially fish eels set their fyke nets with either wooden or iron poles. With a pole for each wing of a fyke net, eel harvesters may barricade up to two-thirds of a watershed if they have coordinates located in rivers or streams.[149] However, if they are fishing in tidal waters, the harvesters must ensure that at "least two-thirds of the width of the mouth of the channel is open at all times during low tide."[150]

In addition to adhering to regulations that pertain to the location of fishing gear, commercial eel harvesters must include salmonid by-catch exclusions devices on all of their fyke nets.[151] Fisheries and Oceans Canada also requires that any by-catch that is found in fyke nets to be released in a manner that causes the least harm."[152] Interviews suggested that members of the QMFNB check their fyke nets regularly; checking fyke nets at least once daily is a common practice amongst QMFNB members and is highly dependent on the type of watershed the nets are set within and also weather

[146] Fisheries and Oceans Canada, *2013 Commercial Eel Conditions*, entered in NLFIN March 11, 2013.
[147] Aboriginal Commercial Eel Harvester, interview by author, April 17, 2013.
[148] Aboriginal Commercial Eel Harvester, interview by author, April 22, 2013.
[149] Fisheries and Oceans Canada, *2013 Commercial Eel Conditions*, entered in NLFIN March 11, 2013.
[150] Ibid.
[151] Ibid.
[152] Ibid.

conditions. For example, one commercial eel fisher stated that, “Every morning we check our nets. What’s there – we grade our eels, and the small fish we’ll just dump overboard.”[153] However, another commercial eel harvester stated that some days he would check his nets up to four or five times daily, especially when there was heavy rain.[154] It was revealed that eel harvesters appear to check their nets regularly for a multitude of reasons that range from reducing by-catch to mitigating gear loss occurring from storms or stealing.

Throughout the interviews, commercial eel harvesters often portrayed the eel fishery as requiring less equipment than other fisheries such as lobster and crab. Members of the QMFNB stated that they often do not use a boat in the commercial eel fishery and instead use waders when traveling to and from their set fyke nets. Furthermore, equipment in addition to fishing gear and maintenance supplies is generally not needed in the commercial eel fishery. For example, travel to and from the harvesters’ designated fishing coordinates from DFO is often done via vehicles already owned by the harvesters such as a truck or quad.

It was inferred by commercial eel harvesters of the QMFNB that the eel fishery was a very important part of their livelihood for financial reasons both in regards to fishing gear and revenue. This was portrayed when one Aboriginal commercial eel harvester stated that the eel fishery is “Very important because…[it has] less maintenance on it and is easier fishing for us, and not so much expense like it was with the regular fishing.”[155] Interviewed commercial eel harvesters suggested that on an average ‘good year’ they might land between 6,000-8,000 pounds of eels, which may yield upwards of approximately $10,000-$15,000 depending on the market price for eels. One commercial eel fisherman suggested that they currently, “do just as good at the eels as I’d do in any other fishery.”[156] Another Aboriginal commercial eel harvester’s opinion of the importance of the eel fishery for his livelihood echoed the previous fisher. He stated:

[153] Aboriginal Commercial Eel Harvester, April 17, 2013
[154] Aboriginal Commercial Eel Harvester, April 22, 2013.
[155] Aboriginal Commercial and Recreational Eel Harvester, April 17, 2013.
[156] Aboriginal Commercial Eel Harvester, April 22, 2013

> *"It's a fishery with not much expense. You go out with your boat and you row in the mornings. You actually can almost check your net any time during the day. You can check at high tide and low tide. There's very little stress on the fisherman. You don't have to battle the winds and the tides. So it's good, and as a fishery it's well organized. If you've got a really bad summer fishing – if you and your wife's fishing and you had a bad summer fishing lobsters (you make $15,000-20,000) – well then with the eel fishery it's another income. It's a great income if you don't make enough for the winter. Sometimes it can be bad, the lobster fishery. In the past couple of years it's been bad. It's another extra boost with no expense. It's a great fishery."*[157]

A new fyke net may cost an eel harvester approximately $250-$400, and as such it is common amongst members of the QMFNB to repair their own nets.[158] For example, a commercial eel harvester stated, "If a hole comes in, we repair it. If a hook breaks, we replace it."[159] By repairing their own fyke nets, the eel fishery has become a relatively inexpensive fishery for commercial eel harvesters belonging to the QMFNB. The eel fishery has also become a substantial portion of each harvester's revenue, as one Aboriginal commercial eel fisher interviewed suggested that the eel fishery can be worth upwards of approximately 25% of a fisher's seasonal income.[160]

Although the eel fishery is currently significantly important to the livelihood of many commercial eel harvesters who belong to the QMFNB, the fishery did not start out as a traditional Mi'kmaq fishery. One Aboriginal commercial eel fisher explained his entry into the commercial eel fishery in Western Newfoundland as follows: "You didn't know whether they were native. It's only recently since the band came out, everybody pried into their background…and then you found you were native, and then went on from there. But back then, no. It was just different altogether.[161] On the issue of the origins of the commercial eel fishery in Western Newfoundland, the research suggested that the regulated fishing gears currently used in the commercial American eel fishery do not have deep traditional roots such as gaffing, bobbing and spearing, but a substantial amount of commercial harvesters in Newfoundland are of Mi'kmaq origin.

[157] Aboriginal Commercial Eel Harvester, April 17, 2013.
[158] Aboriginal Commercial Eel Harvester, April 17, 2013.
[159] Ibid.
[160] Former Aboriginal River Guardian, April 22, 2013.
[161] Aboriginal Commercial Eel Harvester, April 17, 2013

Overall, according to an Elder, approximately eight to ten active commercial harvesters are remaining in the Bay St. George area and are members of the QMFNB.[162] If the ban on new recreational and commercial American eel harvesting licences in Newfoundland by DFO continues, it can be assumed that the number of eel fishers in the Bay St. George region will lessen as its residents average age continues to rise and there is no strategy for the passage of established licences.

ECOLOGICAL IMPACTS AND SUSTAINABILITY

AS THE INTERVIEWS WERE COMPLETED to comprehend the ecological impacts of the QMFNB members' fishing practices and gears types, the primary theme of the research findings revolved around the notion of ecological impacts and sustainability. The following analytical categories were identified through the analysis of the MSC's RBF criteria on direct impacts of fishing as applicable to the American eel fishery in Western Newfoundland: capture (e.g. fishing); direct impact without capture (e.g. gear loss, anchoring); movement of biological material (e.g. discarding catch); and the disturbing of physical processes (e.g. navigation). External hazards were not established as direct impacts of QMFNB members' fishing practices and gear types during this study.

It was found that the American eel fisheries by and large use 'passive' gears in which "the fish come to it" and have little affect on the local environment, such as river-bottom habitat alteration.[163] For example, one eel fisher concluded that fyke nets in particular have little ecological impact, as the "nets are just sitting there – it don't move, it don't drag."[164] Iron or wooden poles used to restrain gears in waters, and rope used to restrain boats to surrounding trees are also perceived to have little impact on the benthos and flora.[165] The interviews further revealed the perception that there are little ecological impacts as a result of gear loss. Reported gear loss in the commercial fishery was generally from instances of theft or damage by other fishers, and often only required the mending of fyke nets. Loss of fishing gear due to weather was perceived as infrequent, and participants were unsure of any ecological impacts that followed such loss.

[162] Aboriginal Elder, May 1, 2013.
[163] Fisheries and Oceans Employee-Science Branch, interview by author, May 8, 2013.
[164] Aboriginal Commercial and Recreational Eel Harvester, April 17, 2013.
[165] Aboriginal Commercial Eel Harvester, April 17, 2013; Fisheries and Oceans Employee-Fisheries and Aquaculture Management Branch, interview by author, May 29, 2013.

During the interviews, it was discovered that both fishers and government participants have the perception that there are small amounts of by-catch associated with spearing, pots and fyke nets. For example, It was mentioned by an Aboriginal Elder that, "I haven't heard of anybody catching any other species while spearing for eels."[166] Common by-catch species mentioned by participants in the commercial fishery include: 'frost fish' or 'plug eyes' (*Mircogadus tomcod*), banded killifish, trout, smelts, flat fish, and green crab. The volume of by-catch in the commercial eel fishery in NL has declined in recent years due to a mandatory salmonid exclusionary device on fyke nets by DFO, and all by-catch continues to be released alive. As such, reported by-catch in the eel fishery in Newfoundland has "not been flagged as a concern" by DFO and does not have a large ecological impact in terms of MSC criteria.[167] It in unknown whether the reported by-catch is currently being used by DFO to monitor the populations of species accidently caught in American eel fishing gears.

Bait is only collected in the commercial American eel fishery for pots. Commonly used bait amongst QMFNB members includes salmon guts, squid, mackerel, and herring. All bait used in the fishery has either been previously caught by the eel fisher or purchased from a local fisher that does not participate in the eel fishery. It was presumed by participants there are little ecological impacts in the commercial eel fishery associated with bait collection.

Another notable perceived ecological impact of QMFNB members in the American eel fishery noted by participants was transportation. Although the launching, navigation and anchoring of rowboats or canoes were perceived by participants to be 'environmentally friendly,' there is a considerable amount of gasoline used in vehicles that transport eel fishes back and forth to their fishing sites. Depending on the weather, it was discovered that Aboriginal eel harvester might check their gears multiple times a day. Ecological impacts such as carbon emissions associated with transportation to and from fishing sites were presumed to be uneven amongst fishers due to variables such as distance travelled to fishing sites, mode of transportation (e.g. truck or quad), and liters of gasoline consumed. Although the distances travelled by interviewees varied considerably, they all suggested that fuel consumption and carbon emissions were not a significant ecological impact

[166] Aboriginal Elder, May 1, 2013.
[167] Fisheries and Oceans Employee-Science Branch, interview by author, May 7, 2013; Aboriginal Elder, May 1, 2013.

associated with commercial eel harvesting in Newfoundland due to the low number of commercial eel fisheries among the QMFNB.

Although the American eel became a topic of concern for DFO when COSEWIC considered them a species of concern, the overall sustainability of eels located in Newfoundland and Labrador was perceived to be promising by research participants. However, perceptions of a decline in American eel stocks in NL was mixed amongst participants. While some government representatives mentioned that there "hasn't been significant change in [stocks] in NL," an Aboriginal Elder suggested that he has witnessed a decline almost yearly.[168] Although the fisheries use relatively passive fishing gears, that usage does not suggest that current gears cannot overfish the stock. To obtain a clearer perception of the sustainability of the American eel stocks and its fisheries, one must look at established management regulations and fishing practices.

Currently in NL, there are no quotas in either the American eel commercial or recreational fisheries. While logbooks are required in the commercial fishery, they were not required during a brief period in the 1990s and thus the perception by some government representatives is that they do not provide a lengthy stream of data. Upon closer inspection of commercial fishing gears, it was suggested by a government representative that the regulated mesh-size of fyke nets catches a mixture of both yellow and silver eels. Depending on the watershed, the average age of a harvested eel in NL is 15-20 years and the average size is just less than one kilogram. Male American eels are known to be significantly smaller than female American eels, and it was the perception by a government representative that the mesh-size used in the commercial eel fishery systematically targets female eels and may have significant reproductive consequences.[169] Unfortunately, the role of the American eel in the NL ecosystem is typically unknown, as is the exploitation rate. There is also no monitoring being conducted by DFO on juveniles entering rivers; there is only monitoring being conducted by DFO on harvested eels. Therefore it is difficult for research participants and myself to gauge an accurate picture of the ecological sustainability of the American eel in Western Newfoundland.

[168] Department of Environment and Conservation Employee, telephone interview by author, May 4, 2013.
[169] Fisheries and Oceans Employee-Science Branch, May 7, 2013.

In Western Newfoundland, the minimum retention size for eels is 20 cm within NAFO division 4R and sub-division 3Pn. It was discovered that all QMFNB members, regardless of participation in the commercial or recreational fishery, all believe in and frequently use grading as a stock conservation practice and tend to release eels that are below 35 cm (well above the 20 cm limit). Although the management authorities do not have the current capacity to monitor the American eel more closely, the interviews revealed that QMFNB members are using their own measures to enhance the American eel stocks in Western Newfoundland. It was found that many QMFNB members not only discard mandatory undersized catch of American eels, but also release eels above the minimum retention size. As one commercial fisher explained:

> *"Grading means a lot. I throw away, some days, probably $400-$500 worth of eels (I don't keep because they're small). When you look at it that way, you know you're going to have a good fishery for the future, because you're saving your small ones. You're only selling an eel that's probably 14 or 15 inches and up."*[170]

The American eel in particular is an excellent example of a common property resource, as it is panmictic and can be found in a variety of habitats from streams and rivers to estuaries and oceanic waters.[171] The widespread occurrence of grading in both the recreational and commercial fisheries left me wondering, why do QFMNB members choose to grade eels in a common pool resource?

On the issue of QMFNB members' choice to actively grade eels, the interviews support Hardin's analysis that coercion in the form of DFO regulations on the amount, location and type of gear outlined in a fisher's recreational or commercial licence has influenced fishers to conserve of the common property resource – the American eel.

Although the American eel fisheries are a common pool resource, it does not have open access. For example, each commercial fisherman is only allowed to fish in the area and with the gear that is indicated by DFO licence conditions. During interviews, fishers described themselves as having ownership characteristics similar to having an exclusive right of access. Contrasting Ostrom's analysis that there are several circumstances whereby individuals cooperate to govern

[170] Aboriginal Commercial Eel Harvester, April 17, 2013.
[171] Department of Environment and Conservation – Wildlife Division, "Management Plan: American Eel (Anguilla Rostrata)," 5.

common-pool resources such as eels, there was no evidence during interviews to suggest that the practice of grading by QMFNB members has been co-operative in nature. [172] As one commercial fisherman explains:

> *"Everybody got their own little area. They protect their area. There's nobody else allowed to come in, which is great. I'm protecting this area down here, me and another fisherman – it's great. We've got no worries about anybody coming in and setting up nets in front of you. We're designated to a certain area. It gives the fishermen a really great sense that you want to protect it. You're protecting it for your own benefits. It's great. And if you don't protect it, it's crazy. It's you who's making a living there. You shouldn't need the Fisheries Officer coming in and trying to protect something that you're making a living at."*[173]

The American eel commercial and recreational eel fisheries have little history of enforcement problems according to a representative from DFO. The only sizeable issue DFO has had with the American eel fishery in NL in terms of enforcement was a warning given to a commercial fisherman for improperly marked gears.[174] It is unknown whether that warning was or was not given to a member of the QMFNB.

A representative of DFO suggested to me during our interview that, "They [Aboriginals located in NL] looked at the ecosystems approach even before fisheries management did." [175] During interviews I perceived that government representatives however generally tended to have a different perception of their role in the preservation of American eel stocks. A DFO representative highlighted this through one particular comment: "We are not in the business of preserving fish. We are in the business of determining what the sustainable harvest is."[176]

On the issue of grading and supporting the ecological sustainability of the American eel population in Western Newfoundland, it appears that QMFNB members generally have a sense of ownership over their designated fishing area and believe that their stewardship practices have an impact on the American eel stocks. While grading and conservation

[172] Maria Hauck, "Rethinking Small-Scale Fisheries Compliance," 635.
[173] Aboriginal Commercial Eel Harvester, April 17, 2013.
[174] Fisheries and Oceans Employee-Fisheries and Aquaculture Management Branch, interview by author, May 9, 2013.
[175] Ibid.
[176] Fisheries and Oceans Employee-Science Branch, May 7, 2013.

are not among MSC RBF criteria, they were perceived by harvesters as the most important ecological impact of QMFNB members' fishing practices.

Overall, it was the perception of all research participants that the ecological impacts of QMFNB members' fishing practices and gear types used in the American eel fisheries within Western Newfoundland are limited both in number and severity. Where ecological impacts do exist, the interviews revealed that the ecological impacts of the American eel fisheries are reduced in comparison to other fisheries that use more destructive harvesting methods. The MSC's RBF was an appropriate choice for a framework for this study. The framework proved to help clarify perceptions of the sustainability of the QMFNB member's fishing practices and gear types within the American eel fisheries in Western Newfoundland. While sectors such as agriculture and aquaculture currently have multiple certification and labeling programs, the MSC has remained a global leader in wild fisheries sustainability efforts. As the MSC program and its number of products sold with the MSC's eco-label continues to grow, perhaps the number of voluntary small-scale fisheries' certifications will also grow in proportion to larger North American and European fisheries.

CHAPTER 4

Bye's shed

"I never needed to be policed.
I did my own policing because the resource was so important to me
that I didn't need somebody to tell me that I had to practice conservation."[177]

POLICY RECOMMENDATIONS

ALTHOUGH SMALL-SCALE FISHERIES have been a frequent research subject from anthropological, sociological and historical perspectives, discussions over small-scale fisheries development and resource management did not become significant until the 1970s.[178] There has been even less policy development surrounding the American eel both in NL and

[177] Aboriginal Elder, May 1, 2013
[178] Johnson, "Category, Narrative, and Value in the Governance of Small-Scale Fisheries," 748.

Canada, and discussions surrounding the sustainability of the stocks only began to amplify when COSEWIC considered the American eel a species of concern and the Mi'kmaq in Newfoundland were given an increased legal recognition by the Government of Canada.

To help aid future discussions and policy development surrounding the ecological sustainability of the American eel in Western Newfoundland, I have formulated the following recommendations for MAMKA to help better serve the needs of QMFNB members in the American eel fisheries:

1. ***Future Research***

   The knowledge gap of the American eel is widespread across topics such as its exploitation rates and its exact spawning grounds. However, the interviews conducted during this research project highlighted three key areas of research that MAMKA could undertake to better serve its members. The three key areas are:

   a. *Green Crab* – It was expressed during interviews with eel fishers of the QMFNB and government representatives that the emerging population of invasive green crab in Newfoundland waters may pose a threat to the American eel stocks and its fisheries. Many research participants articulated that green crabs are a "naturally aggressive and territorial crab species."[179] Green crab was suggested by participants to do considerable damage to fyke nets and eel habitat. For example, in areas of high density green crab the invasive species is known to damage eelgrass habitat when they dig for prey or make burrows in sediment.[180] Furthermore, commercial eel fishers of the QMFNB frequently made statements such as "I've seen the bags almost full [of green crab] and that the resilient creatures were "driving the eels off of the bottom-they're taking over the bottom."[181] It was implied by American eel fishers of the QMFNB that swift research is needed on the impacts of European green crab to help ensure the protection of the American eel stocks as the green crab population has exploded in

[179] Fisheries and Oceans Canada, "Aquatic Invasive Species: European Green Crab in Newfoundland Waters," (2011), accessed July 27, 2013, http://www.nfl.dfo-mpo.gc.ca/e0018298
[180] Ibid.
[181] Aboriginal Commercial Eel Harvester, April 22, 2013; Aboriginal Commercial Eel Harvester, April 17, 2013.

Newfoundland waters over the past three years.

b. *Population Assessments* - For the region of NL, there has been little data collected to help create an accurate portrayal of important aspects of the American eel stocks such as abundance trends. While data coverage remains the best in Canada within the St. Lawrence River system, it remains the poorest in NL.[182] To help ensure healthy fisheries for its members by contributing to the limited data series available in Newfoundland, MAMKA could gather biological data on the American eel with the help of its eel harvesters through approaches such as movement counts from eel ladders, fish fences, fishway traps, or rotary screw traps; elver series from ramp and habitat traps; estimated densities from electrofishing; glass bottom boat surveys; and age frequency distributions.[183] If the lack of biological data on the American eel is not addressed in NL, perceptions surrounding the conditions of American eel fisheries could be altered in the future due to the continued knowledge gaps that plague the species.

c. *Information on Eel Exports* - It was expressed by a commercial eel fisher of the QMFNB that it is currently difficult to obtain information on exactly what countries are purchasing Newfoundland eels and how much they are paying for the eels. Although there may be a barrier or challenge to obtaining such information, MAMKA could attempt to provide eel fishers with the prices its members' buyers are receiving for the export of eels from both Newfoundland and Atlantic Canada to help boost the prices its members are receiving for their catch.

2. ***Develop Clear Goals*** - It was suggested during interviews with both QMFNB eel fishers and government participants that MAMKA must have a dialogue with its members regarding what level of access to American

[182] DK Cairns et al., "American Eel Abundance Indicators in Canada," p. v.
[183] Ibid.

eels is needed and acceptable by the Aboriginal community. Although it was suggested by an Elder during an interview that the Aboriginal community's level of dependence on the resource has decreased in recent years, it was maintained that people in the Aboriginal community still need access to American eels for consumption purposes and that the community must establish a transition plan. As the average age of Aboriginal eel fishers continues to increase and American eel stocks continues to decrease with time, it is recommended that MAMKA should hold consultation sessions with its members to determine its goals regarding maintaining or establishing an acceptable level of access for the Aboriginal community to American eels.

3. ***Demographic Profile*** - During interviews with government representatives, it was suggested that MAMKA could better serve its members and aid in the development of clear goals by establishing a demographic profile of its eel fishers. As there have been no new commercial licences issued by DFO since 1998 and no new recreational licences issued since 1999, and remaining licences are non-transferrable to other eel harvesters, it is those fishers that truly speak to the future of the commercial and recreational eel fisheries in the Bay St. George area.

4. ***Education & Collaborative Resource Management*** - It was suggested by some government representatives during interviews that MAMKA already does a good job on educating both the public and its fishers about important topics or issues at hand. However, it was concluded by some members of the QMFNB during interviews that there is an opportunity for MAMKA to further communication between community residents and management authorities by developing educational consultations between appropriate parties. Derived from suggestions of QMFNB members, it is recommended that MAMKA facilitate information-sharing sessions between Aboriginal eel fishers and government representatives such as fishery officers to ensure a better rapport and knowledge-base. As DFO has started to move away from yearly advisory meetings towards multi-year management plans with associated meetings with stakeholders being held every 3 to 5 years, it becomes important for MAMKA to ensure that open, continuous dialogue occurs during the shift.

5. ***Licencing*** - Currently, reissuance of American eel commercial licences can only be completed via the transfer of a complete core fishery enterprise. However, some eel fishers belonging to the QMFNB that were interviewed conveyed that they would like to see the landings of some eel licences to be directed towards the Aboriginal community. As the QMFNB does not have the right to fish American eel for FSC purposes according to DFO, it is recommended that MAMKA further research the possibility of purchasing core enterprises from commercial fishers with eel licences to help ensure that the Aboriginal community has an adequate supply and access to eels.

CONCLUSION

It became apparent through this exploratory study that there are still many regulatory issues and technical knowledge gaps surrounding the American eel in Newfoundland. There are many opportunities for organizations and DFO to work with Aboriginal commercial and recreational eel harvesters and conduct research on matters such as the invasive green crab, population assessments, and the effects of carbon emissions and global warming on the American eel stocks in NL.

It was concluded that to obtain a clearer perception of the sustainability of the American eel stocks and its fisheries, one must look at established management regulations, fishing practices, and the narratives of the recreational and commercial eel fisheries. Even in the absence of long streams of scientific data of the American eel in Newfoundland, the research revealed that all research participants had the perception that the ecological impacts of QMFNB members' fishing practices and gear types used in the American eel fishery within Western Newfoundland are limited both in number and severity. The exploratory research further showed that the fishing practices of QMFNB members, such as the active grading of eels well above DFO fishing conditions, supported Hardin's analysis that coercion in the form of DFO licence regulations has influenced fishers to conserve the American eels located within their designated territorial area.

Due to a biased perception that only industrial fisheries can be profitable, small-scale fisheries continually are being unaccounted for in policy and decision-making and have led some academics to suggest that small-scale fisheries are 'too

big to ignore.'[184]The FAO suggests that, "Fisheries support the livelihoods of approximately 540 million people, or about 8% of the world's population."[185] Although 90% of those livelihoods are related to small-scale fisheries, "information and knowledge of small-scale fisheries remain scattered and scarce."[186]

I hope that my blend of both academic and local knowledge within my exploratory study has helped to create a dialog on not only the ecological impacts of the American eel fisheries in Newfoundland, but also on issues that may range from the perception of definitions of small-scale fisheries to management policy on small-scale fisheries. I believe that my attempt to share the stories of eel harvesters is only the first of many steps in helping address how small-scale fisheries in Newfoundland and across the globe are simply 'too big to ignore.'

[184] Ratana Chuenpagdee, "Chapter 25: Too Big to Ignore – Global Research Network for the Future of Small-Scale Fisheries," in *World Small-Scale Fisheries Contemporary Visions,* ed. Ratana Chuenpagdee (Delft, the Netherlands: Eburon Academic Publishers, 2011), 383.
[185] Ibid.
[186] Ibid.

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Appendix A:
MSC Sustainability Criteria[187]

Direct impact of Fishing	Fishing Activity	Present (yes/no)	Rationale
Capture	Bait collection		
	Fishing		
	Incidental behaviour		
Direct impact without capture	Bait collection		
	Fishing		
	Incidental behaviour		
	Gear loss		
	Anchoring/ mooring		
	Navigation/steaming		
Addition/ movement of biological material	Translocation of species (boat launching, reballasting)		
	Discarding catch		
	Stock enhancement		
	Provisioning		
Disturb physical processes	Bait collection		
	Fishing		
	Boat launching		
	Anchoring/ mooring		
	Navigation/ steaming		
External Hazards (specify the particular example within each activity area)	Other capture fishery methods		

[187]Marine Stewardship Council, "MSC Certification Requirements: Version 1.3," last modified January 14, 2013, http://www.msc.org/documents/scheme-documents/msc-scheme-requirements/msc-certification-requirements-v1.3/view