UNIVERSITY OF PRINCE EDWARD ISLAND

The Environmental Pre-History of Prince Edward Island 1769-1970: A Reconnaissance in Force

by

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Abstract

Academic analysis of the historical interaction between humans and the environment has been extremely limited on Prince Edward Island. The following thesis is one of the first studies to utilize Island Studies research methodologies to examine Prince Edward Island as a case study in environmental history. Prince Edward Island's "islandness" plays a significant factor in this history because any environmental changes are amplified by the compression of the limited geographical area of the Island.

The main question revolves around how Islanders' attitudes have evolved toward the environment. Before a conscious environmental movement began in the 1970s, Islanders have had concerns over the environment. These early concerns over the environment generally revolved around conserving natural resources that had economic value as opposed to preserving the environment for the sake of nature. However, there were some surprising examples of individuals who were ahead of their time as far as understanding the importance of preserving the environment. Thus, if such awareness toward environmental issues did not emerge in an organized way until the 1970s, this thesis examines changing attitudes over time, to create a "pre-history" of environmental concerns.

The thesis is organized chronologically and thematically. The introduction describes the research method, environmental history historiography, the importance of conservation law in environmental history, Island Studies research methods, and the idea of garden and Eden mythologies effecting legislation on islands. Chapter One reviews the impact of the Aboriginal and French impact to the environment, because their limited footprint justifies why the study focuses on the British Colonial and post-Confederation

periods. Chapter Two outlines the impact that the British settlement era had on the Island's environment. Chapter Three covers changing environmental attitudes from the post-Confederation period to the Second World War. The final chapter covers postwar environmental impacts until the watershed of the Comprehensive Development Plan in 1970.

The thesis examines the evolution of attitudes toward the environment on Prince Edward Island through one major research method: the provincial government's legislative records. The Journals of the Legislative Assembly provided the bulk of the research material because they contain records of the legislation and government reports. Researching environmental related legislation is often the most fundamental research method in environmental history because it can be used to illustrate when and why humans became concerned for regulating and protecting the environment.

This thesis adds to the historiography of Prince Edward Island by expanding environmental history scholarship. Aside from geographies, natural history articles, forestry research, and works by Alan MacEachern focusing on National Parks and the Institute of Man and Resources, environmental history has been limited on Prince Edward Island. However, Prince Edward Island has a long history of trying to protect the environment, which was accelerated by "islandness" and limited geographical area. It is hoped that this thesis will add historical perspective to policy makers working on sustainable development in the future.

Preface

Contemporary society still grasps the "garden myth"[1] on Prince Edward Island. However, in contradiction to the myth, the Island is currently facing a number of serious environmental issues. Some of the environmental issues are born out of simply being an island, and others are created by human practices. The Island is still a beautiful garden landscape, but under the surface of the beautiful landscape is a different story. Perhaps one of the key aspects to survival on the Island is maintaining the ground water supply, but it is slowly being polluted by human introduction of chemicals and toxins, along with the fact that islands are prone to sea salt water intrusion. In addition to ground water damage, interior waterways are being damaged by soil erosion run off, and also bulldozed for other purposes. Fish-kills in waterways have been consistently in the news throughout the last decade. The Island is slowly eroding away due to natural and un-natural practices. Insects, particularly bees, which are necessary for pollination, are decreasing due to changes induced by chemicals in the environment.

It would be easy to continue to recite many more contemporary environmental issues, but Prince Edward Island is not unique in facing environmental degradation. However, Prince Edward Island is an island and any environmental problems are "amplified by compression." [2] In other words, the closeness of the Island's geographical boundaries can make changes occur at accelerated rates. For example, ecological and evolution processes for plants are amplified on small islands, but the small geographical

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[1] The "garden myth" is a romantic desire to believe that Islanders live by more innocent, less destructive, traditional practices, in a pastoral environment. (Michelle McDonald, "Did the Figure in the Landscape really make the Landscape? The Garden Myth in Prince Edward Island History" (B.A. Honours; History, 2006, University of Prince Edward Island), 2.

[2] Dianna M. Perry, Stephen Blackmore, and Quentin C.B. Cronk, "Chapter 5, Island Flora," in *A World of Islands: An Island Studies Reader*, ed. Godfrey Baldacchino (Charlottetown, P.E.I.: Institute of Island Studies, 2007), 193.

area can also make islands susceptible to biological disturbances. The amplification by compression that occurs on islands can be useful to decipher trends that would otherwise be difficult to observe on a large continent.[3] Prince Edward Island is no exception to the rule, and the limited geographical boundaries can potentially accelerate human awareness of environmental changes.

Finally, the writer must divulge the personal motivation behind writing an environmental history of Prince Edward Island. I am one of a shrinking number of Islanders with heritage or roots in the agriculture industry. As a child, I spent every minute allowed by my parents on my grandparent's farm because my greatest interest was learning how to be a farmer. I craved the independence that the farming lifestyle had to offer, because stepping on to your own land to view the results of your hard physical labour and decisions can be one of the most rewarding feelings that life has to offer. I enjoyed so many aspects of farming, from admiring the large loft of a barn stuffed to the rafters with square bales of hay, every bale packed by your own hands, to the sense of satisfaction after all the crops are harvested in the fall. Farming is a way of life where you work closely with the environment every day, and the more I learned about environmental issues in the Masters of Island Studies program, the more I thought about ways to improve both farming incomes and the environment, because the two are interconnected.

When did my farming career end? It occurred sometime in high school, during the transition from childhood to young adulthood, when decisions regarding a career begin. Farming as a career was financially impossible for a young person to start on their own,

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[3] Ibid., 193.

so I headed off to university in hopes of finding some type of profitable employment after attaining a specialized degree. Without a doubt, the same decisions have happened thousands of times all across Canada and the Island.

Hopefully, this thesis will serve as a stepping stone for agriculture policy on Prince Edward Island, because it is difficult to move forward without learning from the past. Perhaps an analysis of historical government attempts at repairing the agriculture industry can serve as lessons for the future. The future of farming is bound up with the future of the environment, and perhaps charting the contours of attitudes toward the environment will be a useful step toward that future.

Acknowledgements

I would like to thank everyone who helped me out through the process of researching and writing this thesis, in no particular order. The writer wishes to acknowledge my supervisor, Dr. Edward MacDonald, who provided invaluable guidance, assistance, and copious amounts of editing throughout the entire project. Dr. Godfrey Baldacchino offered excellent support and advice, and instilled the Island Studies mindset. I would like to acknowledge Dr. Nagaragan, who inspired me to take on an environmental related topic and recommended the field of environmental history. My thanks to Simon Lloyd and Leo Cheverie at UPEI Robertson Library Special Collections, and the other library staff, who went above and beyond their duty when it came to scouting out primary and secondary sources. To the staff at the Provincial Archives and Records Office, who were also excellent in helping to find research material. Thanks to the PEI Museum and Heritage Foundation, Jason MacNeil, and the PEI Potato Museum in O'Leary P.E.I. for photographs. Professor John Cousins for the potato bug newspaper references. Additionally, I would like to acknowledge all others who offered their support and ideas: all MAIS students, Dr. Doug Sobey, William Glen, Rosemary Curley, and many others.

Finally, I must acknowledge the support of my parents throughout this process, since I definitely pushed their limits, and last but certainly not least, to my girlfriend Michelle, who put up with me through the process of researching and writing, even when it took much longer than expected.

Dedication

The following thesis is dedicated in memory of my grandparents, Bill and Louise MacIntyre. Additionally, this thesis is dedicated to my grandparents Ken and Betty Sweet, for it would have been impossible for me to write this environment-based thesis if it had not been for the insights I gained working on their farm as a child.

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In the realm of Nature there is nothing purposeless, trivial, or unnecessary.

-Maimonides, *The Guide for the Perplexed.* [4]

[4] Robert John McNeill, *Something New Under the Sun: An Environmental History of the Twentieth-Century World*, 1st ed. (New York: W.W. Norton & Company, 2000), 228.

Introduction

Humans living on islands must understand the fragility of island environments. Island ecosystems contain limited numbers of species, many of which are endemic, that have adapted to the local environmental conditions. Therefore, any minute changes to island ecosystems can result in species extinctions.[5] Outside of local changes, islands are also vulnerable to external global environmental change. Islands are often the first to suffer the consequences of global warming and climate change, such as, extreme weather patterns, sea level rise, salt water intrusion to fresh water supply, coastal erosion and loss of natural habitat.[6] Even a relatively modest natural disaster could leave an island victim to mass migration due to disruption of natural resources needed for survival.[7] As one environmental education researcher stated:

> Islands are among the most fragile and vulnerable resources on the planet, and as the rate of global change and the process of globalization accelerate, island societies face tougher challenges than ever before. In order to cope with this situation, island residents and local governments have a crucial role to play in decision making processes.[8]

This thesis seeks to understand exactly when the community and local government began to protect the fragile environment on Prince Edward Island. The 1960s illustrated the beginning of a pronounced environmental movement. By 2010, the Island political scene contained a number of environmentalist groups, supporters of the Green Party, and government departments with conservation mandates, all amid a broadening public concern about wind and soil erosion, groundwater contamination, climate change, and

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[5] Stefan Gossling and Geoffrey Wall, "Island Tourism," in *A World of Islands: An Island Studies Reader*, 435.
[6] Ibid., 436.
[7] John Connell, "Island Migration," Ibid., 460.
[8] Huei-Min Tsai, "Island Futures and Sustainability," Ibid., 518.

rising sea level. Islanders of 2010 are concerned about globalized environmental change, but also, about the sustainability of their own fragile small Island.

In the United States, the idea of environmentalism[9] originated after the Second World War. It was very different than the conservation movement because it challenged values for the "quality of life." The environmental movement gained power in the 1950s after an Eco Park debate, and peaked with the passing of the 1964 *Wilderness Act*. By 1970 there was even a *National Environmental Policy Act*; however, the movement lost momentum during the early 1970s.[10] Yet, Environmentalism emerged on Prince Edward Island after the Department of Environment became its own entity within government by the early 1970s.

Historians consider environmentalism, but environmental history is an intensely broad subject that goes beyond environmentalism. Before there were any notions of an environmental consciousness on Prince Edward Island, Islanders lived with an almost intimate connection to the environmental landscape that they had shaped and been shaped by. How did Islanders perceive this landscape and environment? What was their attitude towards it? And what was their relationship with it?

Getting at those attitudes is a difficult proposition. While descriptive and travel accounts often reveal how individuals perceived the Island landscape, it is hard to know how widely their attitudes were shared. Even newspapers are limited sources for judging changing attitudes. It is, in fact, impossible to know how all Islanders felt at all times or

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[9] "Environmentalism is activism aimed at improving the environment, particularly nature. This activism is usually based on the ideology of an environmental movement and often takes the form of public education programs, advocacy, legislation and treaties." *WordIQ Online,* "Environmentalism Definition," accessed December 2010, http://www.wordiq.com/definition/Environmentalism.

[10] For more information on Environmentalism and Conservation in the United States see Hal Rothman, *The Greening of a Nation?: Environmentalism in the United States since 1945* (Fort Worth, TX: Harcourt Brace College Publishers, 1998), 219.

even if they shared common attitudes. However, one possible method for gauging the general level of "environmental" attitudes is to examine how peoples' representatives, the government of Prince Edward Island, dealt with the Island environment, in their legislation and, as government grew more complex in the 20th century, through the reports of various government departments.

That is the approach taken in this study. It hopes to use government records, generated in response to a perception of public interest, in order to measure attitudes over time toward the Island's environment. Obviously, such a limited approach cannot yield a comprehensive history of Islanders relationship with the environment in the period before the modern environmentalism. This study is, rather, a "reconnaissance in force" of this historical terrain.

1

Since environmental history is one of the most interdisciplinary branches of history it can illustrate the dramatic consequences human settlement can have on the environment, as well as demonstrate how the environment impacted human inhabitants in their quest for survival.[11] Environmental history methodology can be sliced and divided many different ways, but in the case of this thesis, the major research approach is conservation-based legislation.

Examining conservation based government laws and legislation is one of the most important and fundamental research methodologies in environmental history. Conservation in the environmental history of the United States was explained by

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[11] Kathryn Morse, *The Nature of Gold: An Environmental History of the Klondike Gold Rush* (Seattle: University of Washington Press, 2003), Foreword, i.

historian, Karl Jacoby.[12] Jacoby describes the conservation movement in America, throughout the late 1800s and early 1900s, as a proliferation of governmental legislation, whereby law makers re-defined what was considered to be "acceptable" uses of the environment. Not unlike Prince Edward Island, the United States government laws ranged from preventing the cutting of trees, to the hunting of game. In other words, the beginning of the conservation movement in America involved the government regulating activities that affected the landscape. Jacoby contends that these early laws initiated the ways in which Americans continue to interact with the natural world.[13]

Jacoby analyzes how ordinary citizens or "the folk" reacted to such conservation policies. These laws were often not well received; for example, the Army had to be called into Yellowstone National Park to restore order in 1880 because of game law violations. Conservation laws created new rules regarding the use of the environment, and in many rural communities, these new laws made commonly accepted activities illegal. For example, hunting could be redefined as poaching or cutting timber could be redefined as stealing. Consequently, the reactions were more like "environmental banditry." Due to the often hostile attitudes associated with conservation laws, some small rural societies did not object to breaking conservation law.[14] The same reaction to conservation law could be true for Prince Edward Island.[15] The beginning of environmental conservation

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[12] Karl Jacoby, *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley University: University of California Press, 2003), 305, http://site.ebrary.com.rlproxy.upei.ca/lib/upei/Doc?id=10053512.

[13] Ibid., Preface, 1.

[14] Ibid., Preface, 2.

[15] For more information on conservation law and the salmon fishery in New Brunswick, Canada 1867-1914, see Bill Parenteau, "A 'Very Determined Opposition to the Law': Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867-1914," *Environmental History* 9, no. 3 (2004): 436-463.

began with government legislation, which continues to have repercussions for how Islanders interact with the environment.

When examining conservation-related legislation on Prince Edward Island, it is also important to consider how Islanders reacted to these laws; however, there are few examples. While it is possible to determine what the government was advocating, it is difficult to determine exactly how well conservation laws were received or enforced, adding yet another angle to an already complex narrative. Parallels from the narrative of the American conservation movement to conservation on Prince Edward Island are prominent. The conservation movement on the Island started with government legislation, was met with public resistance, and continues to affect how people interact with the natural environment. Although the research within the thesis did not uncover much opposition to conservation laws, at least in the public sphere, people quietly disregarded and disobeyed conservation laws on Prince Edward Island.

2

Since this is an Island Studies thesis, and given the collaborative and interdisciplinary nature of the program, a detailed description of the research method is necessary for those who are not familiar with history methodologies. Primary research began with Prince Edward Island government records as published in the *Journal of the Legislative Assembly* from 1769 to 1970. The years from 1769 to 1843 are preserved in their original handwritten form on microfilm. From 1843 to 1970, the journals can be found in their original printed bound paper copies in the UPEI Robertson Library Special Collections. The journals were used to determine the acts that the provincial government passed before the 1970s in terms of regulating the environment.

After researching *The Journals of the Legislative Assembly*, the environment related acts were located in another government publication called, *The Laws of Prince Edward Island*, where the actual text and stipulations of the acts were printed. From these, the intention behind the act could often be determined. The last step, after finding relevant environmental acts, laws, and their texts, was to search for any debate in the newspapers at the time, namely accounts of the debates in the legislature, editorials, and letters to the editor. The newspaper research consisted of a "flashpoint" approach to see whether there was public discussion in the newspapers of the various acts, since comprehensive newspaper research was impractical given the scope of the project. Where possible, the legislature debates were consulted to understand the genesis of the acts and attitudes toward them. Unfortunately, early debates in the legislature were not printed in a consistent manner. A Hansard containing the *Debates and Proceedings of the House of Assembly* was only published from 1855-1893, therefore, newspaper research was the only method to find debates over the acts. Finally, secondary historical sources were used to supplement the various themes unearthed from the primary research where appropriate.

3

This study falls broadly within the relatively new field of environmental history. The discipline of environmental history began in the 1970s, due to growing public concern over environmental issues. Environmental history includes narratives that are not traditionally included in history, because the narratives include the ecological consequences of the past. The main objective for environmental historians is to understand is how humans have been affected by the natural environment over time, and

how humans have affected the environment.[16] During the rise of environmentalism in the 1970s, the world began to reassess cultural practices, and that reassessment affected all branches of academia. However, after the initial hype over environmentalism waned, scholarly interest from historians did not, and environmental history was born.[17] Environmental history draws its roots from the *Annales* journal, which began in France in 1929, and was the first to write about the environment and how it shaped society and human life over time.[18]

Explaining the historiography of environmental history is by no means a simple task. In Canada, historians were not connecting the environment to their work in the early 1970s, and did not generally write about the environment's role in trying to understand Canada's past. Historians eventually began writing with an environmental perspective after history started to include narratives from all classes of people and broader relationships.[19]

How do historians research environmental history? Research material for environmental history has existed for hundreds of years, but it has only recently become popular with history scholars due to contemporary environmental problems. Data used to create environmental histories comes from many historical sources and include physical data such as winds, tides, ocean currents, history of climate, and weather. These environmental factors have affected the course of history because they affect everything

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[16] Donald Worster, *The Ends of the Earth: Perspectives on Modern Environmental History* (Cambridge England, New York: Cambridge University Press, 1988), 290-291.
[17] Donald Worster, *Doing Environmental History* in *Consuming Canada: Readings in Environmental History,* ed. Chad Gaffield and Pam Gaffield (Toronto: Copp Clark, 1995), 17.
[18] Ibid., 18.
[19] Ibid., 1-2.

from harvests to population numbers.[20] Again, environmental history is very broad and cross-disciplinary.

One of the research strategies in environmental history is to examine how nature was organized and functioned. Another research approach examines the socioeconomic considerations of the environment, such as the modes in which people utilized natural resources; for example, a fishing community is organized differently than a farming community. The decision-making power is never equally distributed through any society, therefore, power relations becomes part of the analysis. Finally, another research strategy is to examine intangible perceptions of ethics, laws, and myths that create the structure of meaning with nature.[21]

Environmental historians have to consider that every culture has different ideas about the environment. Nature is a creation in our minds, and it is understood though our personal webs of meaning. Environmental historians have conducted some of their best work on perceptions and values of the non-human world. Sometimes attitudes go back to the Bible and Genesis' ethos of asserting dominion over the earth, or even, the Greco-Roman idea of mastering the environment through reason. The effects of such ideas are difficult to trace, but human ideas and attitudes about animals, plants, soils, and the biosphere are part of environmental history. Environmental history thus includes ethics, myth, folklore, literature, landscaping, science and religion. The main objective of any environmental historian is to study how an entire culture perceived and valued nature.[22] However, there are many contradictions, such as an industrial country destroying land

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[20] Ibid., 19.
[21] Ibid., 20.
[22] Ibid., 28.

through deforestation, and then enacting laws to protect a few species of fish. Every culture has a great range of perception and value, and no culture has ever really lived in total harmony with nature. Ideas are socially constructed and reflect the organization of society and hierarchies of power. Historians have to resist generalizations about a culture or era, because ideas differ according to gender, class, race, and region.[23]

The conservation movement in environmental history has been better documented in the United States than it has been in Canada. By the late 1800s there were increasing numbers of Americans who were becoming aware that wilderness areas and the wildlife that inhabited those areas were beginning to disappear. The most telling example was perhaps the bison, which had a healthy population of over 3 million in 1865 and rapidly decreased to 3,000 by 1885.[24] Another rapid species extinction in North America occurred with the Passenger Pigeon. It had the largest population for land birds, between three and five billion. However, all were extinct by 1915. It was another case of taking natural resources for granting, thinking the supply was endless. Professional gunners were to blame for the extinction of the Passenger Pigeon, because they completely killed entire colonies between 1871 and 1880.[25] There was an emerging awareness among the upper class that destruction of natural habitat, along with unregulated slaughter of fish and game, was going to create extinctions. The 1870s, '80s, and '90s saw the rise of many conservation-oriented societies, and these non-governmental societies helped the

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[23] Ibid., 29.
[24] Peninah Neimark and Peter Rhoades Mott, *The Environmental Debate: A Documentary History* (Westport, Conn.: Greenwood Press, 1999), 80-81.
[25] Geoff Hogan, "An Infinite Number of "Wood Pigeons"," *Island Magazine*, no. 16, (Fall/Winter 1984), 23-24.

federal government to examine conservation of timber, water, mineral, and land resources.[26]

The conservation movement era, from 1890-1920 in the United States, emerged because there was no longer any more frontier lands to expand into, and the public became concerned about careless destruction of natural resources. In 1891 President Harrison created a 13-million acre national forest system. Human activity and population growth always change the natural landscape; however, it accelerated in the twentieth century and put many species at the risk of extinction. By 1907 President Theodore Roosevelt had emerged as an advocate for conservation, creating the first large-scale federal conservation policies. He also attempted to stop huge monopolies from controlling agriculture and natural resources. Canada and Newfoundland were even invited to a North American conservation conference in 1909, and Canada and the United States signed a Migratory Bird Treaty by 1916.[27] Again, even though Prince Edward Island is in a different country, it followed similar patterns of conservation legislation that occurred in the United States.

Prince Edward Island does not have many self-identified environmental history works; however, it is not without many environment-related histories. Perhaps the first environment-based history and geography was *Three Centuries and the Island,* by A.H. Clark published in 1959.[28] Tracing changing patterns of rural settlement and agriculture over three centuries, Clark's work was historical geography. Its main research objective was to increase the geographic, economic, and cultural history in Prince Edward Island

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[26] Neimark and Mott, *The Environmental Debate: A Documentary History*, 80-81.
[27] Ibid., 118-120.
[28] Andrew Hill Clark, *Three Centuries and the Island: Historical Geography of Settlement and Agriculture in Prince Edward Island, Canada* (Toronto: University of Toronto Press, 1959).

and the rest of the Maritimes. Historian Alan MacEachern is responsible for two Prince Edward Island histories with environmental themes. First, *Natural Selections,*[29] published in 2002, traces the selection, development, and management of National Parks in the Atlantic Region, and includes a brief history of the environmental consequences of the government's utilization of the toxic insecticide DDT. MacEachern has also documented the history of Prince Edward Island's attempt at establishing renewable energy during the early 1970s energy crisis in *The Institute of Man and Resources: An Environmental Fable.*[30] These histories have been supplemented by many natural histories, and examples are numerous in the *Island Magazine* from articles on weeds, marshes, skunks, bears, mice, forests, wood pigeons, walrus, salmon; as well as the Natural History Society and Francis Bain. The historiography of Prince Edward Island environmental history thus exists, but to a limited extent, and it is hoped this thesis will help to expand and broaden the field on Prince Edward Island.

4

In this study environmental history is also embedded in an Island Studies framework. Island Studies is very similar to environmental history, since it is an intensely interdisciplinary academic field. Island Studies scholarship has had a long history; many academics contend that the practice of studying islands because they are islands occurred as early as Charles Darwin.[31] But Island Studies is more than just material written

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[29] Alan MacEachern, *Natural Selections: National Parks in Atlantic Canada, 1935-1970* (Montreal: McGill-Queen's University Press, 2001), 328.
[30] Alan MacEachern, *The Institute of Man and Resources: An Environmental Fable* (Charlottetown, P.E.I.: Island Studies Press, 2003), 142.
[31] Baldacchino, *A World of Islands: An Island Studies Reader*, 7.

regarding islands. The lens can be expanded to view Islands as "synecdoches"[32] or places that reproduce in miniature what could happen in larger continental areas. For example, it was in the Galapagos Islands that Darwin's fieldwork initiated his ideas on evolutionary theory. Another example of Island Studies scholarship could be taken from scientific scholarship, where David Quammen uses island examples to prove that the world is facing ecological degradation.[33] Island Studies can thus be used for exposing ideas on the condition of nature, and the humans within that environment.[34]

Small islands can be considered bounded systems and can thus be more manageable units of study than mainlands. Island microcosms have helped to advance evolutionary biology, ecosystem ecology, and physical anthropology. Therefore, small island societies can illustrate the relationships between resources and carrying capacity, and it is also easier to understand interlinked economic, social and ecological changes. Interdisciplinary study of islands can provide socio-ecological models for larger continental regions.[35] In small islands, people can see their impact on the ecosystem and the feedback effects on island systems. Additionally, being able to understand the rise and collapse of some small islands such as Easter Island can be examples to modern societies. The issues facing islands are not unlike anywhere else, but again, it is the closed geographical boundaries that accentuate the environmental problems for study. For its part, Prince Edward Island has often been regarded as a useful laboratory for studying issues and for trying out solutions, perhaps most famously, in the

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[32] Ibid., 9.
[33] Ibid., 9.
[34] Ibid., 17.
[35] P. Nagarajan. "Collapse of Easter Island: Lessons for Sustainability of Small Islands." *SAGE Publications*, Vol. 22, no. 3 (2006): 295.

Comprehensive Development Plan of 1969-1984. With Prince Edward Island's bounded geography, it could perhaps become a useful lens for viewing larger environmental issues.

5

One defining feature of Prince Edward Island, of relevance to any environmental or nissological study is its particular mythology, "Garden of the Gulf," "Garden Province," "Spud Island," "The Million Acre Farm:" These slogans, used to describe Prince Edward Island, depict the image of the Island as a garden. The image of the Island as a garden connects both the physical environment and the cultural self-image of Prince Edward Island. The garden myth is part of the collective identity on Prince Edward Island, which includes an idealized perception of the land and people.[36] The myth has been around since the Mi'kmaq people. Their creation myth describes a great spirit declaring the Island "the most beautiful of all places on Mother Earth."[37] The myth continued with the settlement of European settlers, and basically casts the Island as an agrarian, classless society, with independent people isolated from the influences of the outside world. The garden metaphor has been embedded into the fabric of Island life since the early settlement period. The metaphor fit the Island because settlers entered a contained, almost garden-sized wilderness, which was not particularly rugged. Then, settlement created a pastoral landscape of farms, fields, and tidy woodlots. Embedded in this image is the pastoral nature of the landscape shaped by human hands in the settlement period. In this scenario, just as people shaped the landscape so the landscape shaped the culture. There

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[36] McDonald, "Did the Figure in the Landscape really make the Landscape? The Garden Myth in Prince Edward Island History," 1.
[37] Ibid., 7.

is a romantic desire to believe a garden myth in part because it depicts Islanders living by less destructive and innocent traditional practices, and it has been used in Prince Edward Island's development for almost four hundred years. Many Islanders have used the garden myth, to look back at a "golden age" that may have never existed.[38]

These types of garden metaphors beg the question: could such metaphors initiate concerns over protecting the environment? Richard Groove's *Green Imperialism* is a revolutionary publication as far as Island Studies is concerned. Groove exemplifies how Colonial expansion on tropical islands from 1660 to 1860 sparked a global environmental consciousness. Colonial expansion on these tropical islands created conservationist attitudes from insights gained after the ecosystems on these Islands were destroyed. The realization of ecosystem destruction was increased by the fact that the Western imagination at the time grasped these tropical islands as representations of Eden, and efforts to conserve them ensued.[39]

Colonization on tropical islands illustrates that concerns over the conservation of the ecosystem are not new. The effect of climate change was noted as far back as Classical Greece, and it was fear of climate change that initiated the first forest conservation policies in Britain. By the 1700s scientists influenced public policy through the realization that environmental degradation was a global problem that needed state intervention; for example, it was the island locations of St. Helena and Mauritius, where

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[38]Ibid., 2.
[39] Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism: 1600-1860* (Cambridge; New York: Cambridge University Press, 1995), 5.

extensive deforestation sparked environmental concern around the late 1700s to mid-1800s.[40]

With respect to Prince Edward Island, it can be noted that the idea of environmental degradation was evident elsewhere, even on other British colonized islands, before the Island was heavily settled. Since the landscape on Prince Edward Island has been historically viewed through the lens of the garden myth, there is the possibility that a place considered a "garden" could have elicited similar environmental protection. Conservation legislation was initiated to preserve Eden-like landscapes on St. Helena and Mauritius. This begs the question did Prince Edward Island receive conservation or preservationist legislation due to the garden myth? Given the conception of the Island as a garden and that image's importance, it might be expected that governments might have been inspired to introduce conservationist measures.

Therefore, Island Studies can easily collaborate very well with environmental history, given the interdisciplinary nature of both. In such broadly defined academic fields, it is difficult to construct precise scientific theories, where x plus y minus z equals the final answer. However, the research in this thesis draws on both theoretical backgrounds to uncover historical environmental issues on Prince Edward Island from 1769 to 1970. Again, the focus is to utilize Prince Edward Island as a case study in Island Studies for environmental history.

Why is a thesis on an environmental history of Prince Edward Island worth the effort? A fundamental shift in environmental policy is necessary to sustain our environment in the future, and it is difficult to move forward without learning from your

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[40] Ibid., 5.

past. Hopefully, this research will serve as a foundation for future environmental history research on Prince Edward Island, and help to advise future environmental policy from past mistakes.

Chapter One: **Prologue: The Pre-British Period**

Prince Edward Island is situated in the Gulf of St. Lawrence, 46 degrees north latitude, and 63 degrees west longitude on the north east coast of North America.[41] The Island is Canada's smallest province, with a land area of only one and a half million acres, and is perhaps the least studied by geographers and environmental historians.[42] The small geographical size of the Island is quite evident by the statistics: only one thousandth of the land area in Canada, only 120 miles in length, and no point of land greater than ten miles from the ocean.[43] Therefore, the very small, closed geographical boundaries of Prince Edward Island make an excellent case study for Island Studies research.

The geography of the Island is characterized by coasts indented with bays and tidal estuaries. The south and east of the Island exhibit natural harbours, while on the north shore sand dunes often block tidal entrances to bays.[44] The bedrock of the Island is exposed at eastern and southern cliffs, which consist entirely of uniform sandstone. Steam erosion has created some gently rolling plain areas under 200 feet of elevation; however, no point of land is more than 400 feet above sea level. Pedologically, the soil of Prince Edward Island is classified as "Podzols," which is soil leached of soluble salts, low in nutrients, and strongly acidic. The climate on Prince Edward Island fluctuated before the mid-1600s, and has remained more or less stable through to the twentieth

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[41] World Atlas, "Prince Edward Island," www.worldatlas.com (accessed August, 2010).
[42] Andrew Hill Clark, *Three Centuries and the Island: Historical Geography of Settlement and Agriculture in Prince Edward Island, Canada* (Toronto: University of Toronto Press, 1959), 3.
[43] Ibid., 17-18.
[44] Ibid., 18.

century.[45] Excluding swamp land, tidal marshes, and sand dunes, the Island's forest at the point of European contact around 1500 was a dense broadleaf deciduous type similar to north-eastern hardwood forests. As geographer A.H. Clark observes, "Before fire and axe changed the forests, the Island must have been a selectively representative botanical garden for a large area of the northern part of the continent." [46]

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Who were the first human inhabitants to alter the historical geography and environment on Prince Edward Island? When examining human impacts to the environment on Prince Edward Island, one of the common questions is what was the aboriginal people's impact to the natural Island environment? Did these people live as conservationists, carefully planning their consumption of natural resources? Or conversely, was it simply the limited population and technology that allowed the aboriginals to avoid the reputation of plunderers of the environment?

Before any human settlement on Prince Edward Island, during the Wisconsin ice age between 75,000 and 100,000 years ago, the Island,[47] and most of what is Canada today, was covered with thick ice. The ice began to melt 25,000 years ago, and 13,000 years ago the Island emerged out of the ice, allowing the first humans to inhabit Prince Edward Island. The first human inhabitants were Paleo-Indians, who foraged on the Island over 7,000 years ago. These people hunted herds of large mammals, fished, and

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[45] Ibid., 19.
[46] Ibid., 21.
[47] "The Island" will hereafter refer to an abbreviation for Prince Edward Island.

gathered plants; they however, did not utilize shell fish resources, nor used the bow and arrow for hunting.[48]

After the Paleo-Indian peoples, and before the Mi'kmaq, was a group of inhabitants classified by archaeologists as "shellfish people." However, these people were displaced relatively quickly, or developed into the ancestors of today's Mi'kmaq people.[49] The succession of cultures was related to adapting to a changing environment. It appears that the native peoples adapted to rather than adapting the environment. The Mi'kmaq were highly skilled at surviving on the Island, making food supply their greatest concern. The Mi'kmaq followed monthly hunting patterns beginning in January with the hunting of seal. Hunting in February and March included beaver, otter, bears and caribou. The fishing season began in March while the fish were spawning in rivers, and it was also a time when birds were hunted. May to September was generally devoted to fishing, gathering shellfish, and collecting roots and berries at summer campsites constructed at various locations across the Island. In mid-September the Mi'kmaq moved inland and fished eels from rivers. October and November were also hunting times, and in December the Ponamo fish were harvested. The Mi'kmaq's hunting cycle ended with winter camps and the distribution of the year's resources. [50]

The aboriginal-hunter gather societies had much less impact on the environment than European methods in agriculture, although there is the possibility that they hunted at least one species to extinction. The case of the caribou must be considered in the question

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[48] J.H. Maloney and Nicolas de Jong, "The First Centuries,"in *Canada's Smallest Province: History of P.E.I.*, ed. Francis W.P. Bolger (Charlottetown, P.E.I.: Prince Edward Island Centennial Commission, 1973), 1-2.
[49] Ibid., 3.
[50] Ibid., 3-5.

of aboriginal impact on the Island's environment. "Caribou" is a French Canadian term used to describe wild reindeer in North America. A member of the deer species, caribou can be recognized by their broad hooves, which have evolved to support their weight in deep snow. Both male and females of the species have antlers, making the caribou the only American female deer that grow antlers. The male weighs between 250 and 700 pounds, standing four to five feet tall. The species spend the summer in the Arctic tundra, but migrate to evergreen forests of the southern tundra in winter. Their range extends from Alaska to western Greenland, and they are not generally a species that overgraze because they keep moving from place to place. Native populations have utilized caribou for many uses: meat and marrow for soup; hide for clothing and shelter; bones for needles and knives; and horns for fishhooks and spears.[51]

The caribou were native to Prince Edward Island, however, as early as the French period, Nicholas Denys[52] reported that the Mi'kmaq were too fond of the caribou to allow them to increase. The last reference to caribou on the Island was made by French colonizer Jean Pierre Roma[53] in 1750. Roma's record could suggest that the caribou became extinct around that time.[54] There is an ongoing debate about whether the native peoples may have hunted the caribou to extinction, which would challenge the

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[51] *The World Book Encyclopedia*, Vol. 3, "Caribou."
[52] Nicolas Denys' description of the Coasts of North America (Acadia) is one of the primary sources for geography of the seventeenth century. (Clark, *Three Centuries and the Island*, 287).
[53] Jean Pierre Roma was a director of a company that received a large parcel of land in the eastern end of the Island. The proprietary grant included some of the best natural harbors around Brudenell, Montague, and Cardigan. (Clark, *Three Centuries and the Island*, 287).
[54] Douglas Sobey, "An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island," *Canadian Field Naturalist* 121, no. 4 (2007): 389.

widespread idea that they were conservationist-orientated people. However, one must be cautious in generalizing from one species, and on such slender evidence.

In addition to the subject of caribou, there is another ongoing debate surrounding the existence of wolves on the Island before European settlement. The Prince Edward Island National Park conducted a research project on the pre-agricultural forest vegetation patterns c.2006, and a canid burrow of a wolf or coyote was uncovered and sent for radiocarbon dating. Therefore, it is possible that the wolf or coyote was native to Prince Edward Island before European settlement.[55] There are, thus, at least two potential examples of significant mammalian fauna extinctions within the Island's environment during the pre-European era.[56]

Whatever the actual situation with respect to wolves and caribou, it seems generally true that the pre-historic natives did not alter the environment on Prince Edward Island due to limited technology and limited population. In particular, their numbers were small, and they followed cyclical hunting patterns, relocating approximately every six weeks, for approximately 10,000 years before the arrival of the Europeans. As observed earlier, the Island's native peoples were far more likely to adapt to their environment than to adapt it.

Researchers believe that 1650 was around the time the original Mi'kmaq culture was altered by Europeans due to their abandonment of stone tools, in favour of iron,

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[55] Elena Ponomarenko, *Reconstruction of Pre-Agricultural Forest Vegetation Pattern in Prince Edward Island National Park; Data Synthesis* (Ottawa: Parks Canada,[2006]).

[56] The beaver is another native species that was hunted to extinction; however, it did not occur until sometime in the 1800s. The case of the beaver will be elaborated in chapter three.

which may have increased their environmental footprint.[57] The disappearance of traditional practices corresponded to native peoples' growing relationship with European trade goods. Their reliance on European trade goods began to change the types and quantities of species hunted. Nonetheless, the "natural characteristics" or the environment of the Island was not significantly altered by the inhabitation of native peoples or the French fishermen that frequented the coast of the Island before 1650.[58] Perhaps there were fires that accidentally spread from humans, but the level of technology and small population limited human impact on the environment before permanent European settlement around the 1720s.

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The first European known to have visited Prince Edward Island (Ile Saint-Jean) was Jacques Cartier in 1534, who described the Island as, "the fairest land that might possibly be seen."[59] However, the first continuous European habitation of Prince Edward Island did not occur until the 1720s. In 1719 the Comte de Saint Pierre received a proprietary grant to create a French settlement on the Island at Port La Joie. By 1755 the French population on Ile Saint Jean was up to 4,700, but warfare between the French and British ended the French regime on Prince Edward Island with the wholesale deportation of the colony's French residents in 1758.[60]

From the beginning of permanent European settlement, descriptive reports emphasized that the Island had valuable natural resources to be exploited. One such

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[57] Clark, *Three Centuries and the Island*, 6, 8.
[58] Ibid., 17.
[59] Boyde Beck, "The Fairest Land that might Possibly be seen: The Image of Prince Edward Island in some Descriptive Accounts, 1750-1860" (MA, Queen's University, 1984), 6.
[60] Clark, *Three Centuries and the Island*, 287.

observer, Sieur de Gotteville de Bellisle,[61] assessed the resources on the Island for the first time around 1720, and reported to France that the Island contained fine timber, abundant cod, and protected harbours.[62]

One of the reasons that the French did not significantly alter the environment on the Island was due to their neglect of the pine industry in the early 1700s. The first official attempt to exploit the timber resources of the Island was by soldiers from the Port La Joie garrison when they surveyed pine forests that had the potential to be made into ship masts for the French navy. France's attempt to exploit the pine forest on the Island represented "in miniature" what occurred on a larger scale in the rest of Canada during French habitation. However, on Prince Edward Island, the quality of the pine did not meet the strict standards of inspectors. France's strict timber inspection policies were part of the reason that the thick stands of pine forest remained during the French period.[63] If it were not for these policies extensive forest clearance may have occurred much earlier on the Island.

The French settlement impacted the Island's environment according to their cultural practices. For example, Acadian settlers preferred not to clear the forest. Instead, they relied heavily on utilizing marsh hay as a food source for livestock. The Island contains bogs and marshes, but the French desired salt marshes where marsh hay was harvested. Salt marshes are very dynamic ecosystems where the tide comes in twice daily. The constant supply of salt water affects what types of vegetation grow, and in this

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[61] Sieur de Gotteville de Bellisle was the principal Island official during the early French period c.1720. (Clark, *Three Centuries and the Island,* 287).
[62] Clark, *Three Centuries and the Island,* 27.
[63] Douglas Sobey, "The Department of the Marine and the Search for Masts on Ile Saint-Jean," *The Island Magazine, no.50,* (Fall/Winter 2001), 10.

instance the settlers were relying upon *Spartina patens*, otherwise known as marsh hay.[64] A French commandant of Ile Saint Jean from 1726-1737 described their preference for utilizing marshland as cultural in origin. Even after the French deportation in 1758, mash hay from dykes would serve as an important livestock fodder until pasture lands could be cleared out of the forest.[65] Jean Pierre Roma even recorded that it was easier to get food for animals versus humans because of the ease with which Acadians could utilize marsh hay.[66] In fact, the Acadians had only limited interest in the Island due to the lack of tidal marshes. Thus, Ile Saint Jean became of little interest to the French, and was seen as a dependency of Ile Royale (Cape Breton).[67]

Aside from dyking practices and limited forest clearance, there were other factors that limited the French Acadians' impact on the environment. The French did not have many available firearms for hunting,[68] nor did they have many boats to establish a large scale fishery.[69] These factors combined with harsh living conditions seriously limited French development. For example, in 1752 settlers in Malpeque lost crops to plagues of mice and locusts, as well as scald on wheat, so it was not surprising that the French population remained small on the Island.[70]

In the end, the largest alteration the French Acadian people made to the environment were forest fires before the beginning of the British period, which altered

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[64] Rosemary Curley, "The Essential Salt Marsh," *Island Magazine, no. 41,* (Spring/Summer 1997), 20.
[65] Ibid., 23.
[66] Clark, *Three Centuries and the Island*, 27-31.
[67] Ibid., 38-39.
[68] Ibid., 39-40.
[69] Ibid., 35-37.
[70] Ibid., 35-37.

the primeval forest.[71] Two major fires occurred in 1736 and 1742 toward the north-east areas of the Island.[72] In summary, the French, like the Mi'kmaq, had a limited impact on the Island's environment; thus, it was only after the colony passed under British rule in 1763 that more drastic human alterations of the environment took place.

Why did British rule create significant changes to the environment on Prince Edward Island? It was simply a matter of numbers. By the first British census of 1798, the population had already grown to 4,372 people, and the numbers grew exponentially.[73] In the first half of the nineteenth century the population grew rapidly, thereafter from 7,000 in 1805; to 23,000 in 1827; to 32,000 in 1833; and 47,000 in 1841.[74] By 1891 the population had risen to 109,078.[75] Therefore, it was developing population and technology that allowed humans to shape the landscape of Prince Edward Island during the British period. Thousands of people began cutting trees, hunting, cultivating the land, and fishing interior waterways. The British period saw the Island go from being relatively unaffected by humans to having much of the original primeval forest cleared by the time of Confederation with Canada in 1873. So, yes, the environment was significantly changed with settlement in the British period. But would individuals or government do anything to protect it?

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[71] Ibid., 38-39.
[72] Douglas Sobey, *Early Descriptions of the Forests of Prince Edward Island: A Source Book; Part I the French Period 1534-1758* (Charlottetown: Prince Edward Island Dept. of Agriculture and Forestry, 2002), 22.
[73] Clark, *Three Centuries and the Island*, 60.
[74] Ibid., 66.
[75] Ibid., 128.

Chapter Two: **The British Colonial Period, 1769 - 1873**

The British took legal possession of the Island from the French in 1763, thus beginning the British Colonial period. During the initial years the Island government functioned as an annex of Nova Scotia's government. It was not until 1769 that the Island was granted its own separate government, which remained in place until Confederation with Canada in 1873. It may seem surprising that when the government of Prince Edward Island began functioning in 1770, and it came time to pass some laws, the very first act approved was not bland and jurisdictional. One might expect the first law on Prince Edward Island to have been regarding highways, ship licences, or interest rates. But in fact, the first law had to do with an environment-related issue. The first law ever passed on Prince Edward Island sought to regulate the widespread and excessive hunting of a large marine mammal, the walrus.

This is not to say that attitudes from the early British Colonial period were enlightened with the principles of environmentalism. These early laws tended to focus on conservation of natural resources for economic gain. The government in the early Colonial period focused on regulating the over-hunting of valuable species in nature, and promoted the destruction of unwanted species with bounties. The inshore fishery was surprisingly, another area of the environment that was in need of protection from human over-fishing throughout the early period. Not surprisingly, perhaps, the forest was not protected, but instead was widely viewed as an enemy to be destroyed, something that was in the way of farming. Farming itself did not receive any government regulation until

the early 1800s. As time passed and the colony grew, the government's interest in managing the resources of land and sea would grow.

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The system of the early Prince Edward Island government, under the rule of the Colonial administration in Britain, had an impact on the types of legislation passed. First, the early legislation on Prince Edward Island was influenced by absentee landlords or proprietors. When the British took possession of Prince Edward Island in 1763, the question of how to redevelop the Island was a problem. Samuel Holland was commissioned to survey the Island from 1764-1765, and he divided the Island into 67 townships.[76] From the beginning, the Island was considered a place whose primary purpose was to provide natural resources for the Imperial government, and it was the desire for these natural resources and the potential for establishing a fishery that prompted the British to hire Samuel Holland to survey the Island before any of the other Maritime Provinces.[77] Holland's survey represented a compelling example of describing land in terms of economic potential before settlement.[78]

After Holland's survey divided the Island into lots, in 1767, the British government allocated virtually all of these lots to proprietors. These proprietors became semi-feudal landlords who were supposed to pay annual quitrents to the British crown to finance the cost of governing and colonizing the Island. In the end, most of the absentee

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[76]Clark, *Three Centuries and the Island,* 42-46. Samuel Holland was a surveyor for the British Government. He published a survey of Prince Edward Island in October 1765, which included observations on the geology, landforms, climate, vegetation, and fauna. (Clark, 46).
[77] Frank MacKinnon, *The Government of Prince Edward Island* (Toronto: University of Toronto Press, 1970), 3-5.
[78] Clark, *Three Centuries and the Island,* 46.

landlords did not pay their quit rents and did not attempt to colonize their landholdings, but they inadvertently created a lasting legacy.[79]

It was petitioning from the absentee landlords that convinced the Imperial government to establish a separate government from Nova Scotia. The proprietors utilized the "great natural advantages"[80] of the Island in their argument. In their proposal for a separate government, the proprietors argued that Britain had the potential to benefit from the fertility of the soil, the timber in the forests, and the fish in the seas; but in order to fully exploit these resources, a separate government was necessary due to the Island's geographic isolation from law services in Halifax, Nova Scotia. The Colonial Office in Britain agreed to this plan because, as far as they were concerned, profitable colonies were needed to support the mother country.[81] So the potential for exploiting the Island's resources was a deciding factor in developing a separate government, and it only makes sense that the new separate government would pass conservation-based laws to protect valuable natural resources.[82]

In considering the legislation passed during the Colonial period, and by successive governments, it makes sense to chart the acts according to broad categories. In general terms, the legislation contained some common themes and motifs: hunting, farming,

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[79] J. M. Bumsted, "Land Question, PEI," http://refworks.scholarsportal.info.rlproxy.upei.ca/Refworks/mainframe.asp (accessed August, 2010).
[80] MacKinnon, *The Government of Prince Edward Island*, 6.
[81] Ibid., 6.
[82] The first Prince Edward Island government did not have an elected assembly; conversely, it was an appointed system of government. The British Crown always had the authority to name the governor. However, if a proprietor happened to be elected governor, the proprietors could push their own agendas over the dominant public opinion. An elected assembly was not established until 1773, after the Imperial government decided it was necessary to help force the proprietors to pay their Quit Rents. (MacKinnon, 9-14).

fishing, and timbering. The latter three can be characterized as industries, but first, hunting was less an economic activity in the Colonial period than a means of sustenance, a sport, or a way to control species seen as harmful to progress.

I Hunting

In the 1700s, walrus was a prominent species in the waters off the Gulf of St. Lawrence in the Atlantic Region. Sable Island, Cape Breton, St. Pierre and Miquelon, Prince Edward Island, and the Magdalen Islands were home to hundreds of thousands of walrus. Walrus are marine mammals that primarily consume molluscs and can range in size up to one ton in weight and twelve feet in length. Even though the sandy shores surrounding Prince Edward Island were an excellent natural habitat for these creatures, it did not take long for over-hunting to decrease their presence during the 18th Century.[83]

In the 1500s, walrus were found from the British Isles to as far as the Queen Charlotte Islands on the Pacific Coast of North America, down to Cape Cod in the Atlantic Ocean. However, when the species became extinct around the British Isles, Europeans looked to the New World for walrus. As late as 1765, there were an estimated 250,000 walrus on the Magdalen Island, and up to 100,000 on Prince Edward Island.[84] The walrus became a popular species to hunt for both necessity and economics. The walrus' prominent white, ivory tusks were considered a luxury item in Europe, though eventually elephant tusks became more popular. Perhaps of greater economic value was the hide and oil. Oil was the most valuable, often sold for the manufacture of many items,

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[83] Geoff Hogan, "'White Gold and Train Oil': The Walrus on P.E.I." *The Island Magazine, no. 20,* (Fall/Winter 1986), 19.
[84] Ibid., 19.

including soap.[85] The walrus hide was also of vital importance to the early settlers on the Island since it was utilized as a source of leather in times of scarcity.[86] Walrus were thus valuable in terms of export, as well as having a utilitarian purpose to the settlers on Prince Edward Island.

By the time that newly arrived Governor Walter Patterson convened his first council in 1770, walrus stocks were under pressure from European hunters. It would appear that the British government was already concerned about the industry, for Patterson's council seems to have addressed it at the direction of the British authorities. The first act passed by the governor and council on Prince Edward Island was an act for the preservation of the walrus ("sea-cow") in September, 1770.[87] An excerpt from a letter from Governor Walter Patterson to Lord Hillsborough in London on 25 October, 1770 helps to illustrate the context behind the walrus legislation:

> Agreeable to Your Lordship's directions, given [to] me at your office, the last time I had the honour of seeing you before I left London, I made as soon as possible after my arrival, all the enquiry I could into the manner of carrying on the Sea-Cow Fishery at this island, and finding there were likely to be disputes between a Mr. Gridley, who lives on one of the Magdalene Islands, for the purpose of carrying on the same sort of fishery there; as he generally sends people to this island either to take the Sea Cows, or to prevent their landing and by that means force them to resort to the Magdalene: and some New England fishermen, who frequently land for a few days, to kill Sea Cows; and the inhabitants of this island, who have endeavoured to carry it on for some time past and fearing

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[85] Ibid., 21-22.
[86] A. B. Warburton, "The Sea-Cow Fishery," *The Prince Edward Island Magazine,* June 1903, 145, http://etc.hil.unb.ca.rlproxy.upei.ca/UPEI/ (accessed 2009).
[87] *Colonial Office Acts,* (1770): 1. "An act to regulate the carrying of the sea cow fishery on the Island of St. John – At a council board held at the council chamber at Charlottetown the twenty fifth day of September 1770 and in the tenth year of his Majesty's Reign."

> by that means the fishery might be rendered useless to all parties, if not entirely ruined, I have, by the advice of His Majesty's Council, passed an Act for the better regulation of it, which will be herewith transmitted to Your Lordship, that I may know His Majesty's pleasure concerning it.[88]

According to the correspondence above, one of the intentions behind establishing the walrus act was to prevent non-Islanders from pilfering declining walrus stocks. The walrus was considered a valuable branch of potential trade within the Island, and proper regulations and restrictions were considered necessary to maintain the coastal walrus population.

The act stated that the walrus were being driven away, or frightened to other neighbouring islands and as of 23 October, 1770 no persons could "take or destroy" any walrus, except those who were issued a distinctive warrant by the governor of the Island. The act made specific reference to North Cape, because it was probably where the largest loss of walrus had been noticed. Those that had permits were entitled to hunt from 1 October to the end of November, and the penalty for violation of the act was twenty pounds[89] or imprisonment.[90] The walrus hunting season corresponded with the time of the year that the walrus contained the most oil.[91] Again, within the legislation, there appears to be the idea that non-Islanders were also responsible for the declining walrus population.

The problem of over-consumption continued even after the walrus legislation was put into force. Simply licensing hunters did not make the walrus any harder to hunt. By

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[88] Warburton, "The Prince Edward Island Magazine," 144.
[89] 20 pounds from 1770 is worth approximately $3000.00 in 2010. Bank of Canada, "Inflation Calculator," Bank of Canada, http://www.bankofcanada.ca/en/rates/inflation_calc.html (accessed July 20, 2010).
[90] Public Records Office London, *Colonial Office Acts*, 1-7., 1770.
[91] Hogan, "'White Gold and Train Oil': The Walrus on P.E.I.," 21.

nature, the walrus was an excellent swimmer in water, but became unwieldy and helpless on land. A popular hunting technique was to chase the animal inland with sharpened sticks. The animal would become disoriented and confused after being driven away from the water, and was particularly easy to kill.[92]

Other factors that contributed to the demise of the walrus included the absence of paid enforcement officers to enforce the hunting seasons. The walrus also did not respect Colonial boundaries, because they only lived part of their life cycle on the Island. Another factor that accelerated the decline of walrus numbers was the infiltration of American fishermen after the American Revolution in 1783. Once hunters became aware of the declining walrus population, hunting efforts intensified while the dwindling numbers only got smaller. Unfortunately, the legislation was not successful in conserving the species and by the end of the 1700s; the walrus no longer inhabited the coastlines of the Atlantic Region.[93] Casual observers, such as John Stewart,[94] reported that they believed the once profitable industry would recover after the protective regulation; however, such was not the case.[95]

Thus, the structure of the Island government affected the walrus legislation. The walrus statute was conceived by an appointed government, as opposed to an elected assembly and the act seems to have been inspired by Britain. It could be argued that the legislation was probably initiated to maintain the profitability of the industry for the

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[92] Ibid., 21.
[93] Ibid., 21-22.
[94] John Stewart was a prominent Island settler who penned an excellent description of the Island in 1806, which was reprinted in 1967: (John Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence, North America* (Wakefield, England: S. R. Publishers Ltd.; Johnson Reprint Corporation, 1967), 304).
[95] Ibid., 91.

benefit of the British. It is difficult to ascertain if Islanders were primarily to blame for the excessive hunting of the walrus given what little we know about the early settlers, however, Islanders were few in numbers and generally not involved in walrus hunting. From a contemporary environmental perspective, it is surprising that the very first act ever passed by the Prince Edward Island government involved conserving a marine species, but the concern was for British industry rather than the environment.

The attempt to regulate the walrus industry was the first in a series of hunting regulations enacted during the Colonial period. The period from 1770 to 1873 established a number of hunting statutes, and those regarding game birds gradually became a prominent theme. One of the most regulated game birds was the partridge. Historically, "partridge" or "tree grouse" were often terms used to describe what is now known as the Ruffed Grouse. These birds are the approximate size of a pigeon, but are an extension of the chicken family. They are characterized by brown "ruff" feathers around the neck. The grouse population follows cyclical patterns of high and low densities over approximately ten year cycles. An advantage for their survival on the Island is that they have a preference for younger, second-growth forest which became more common on Prince Edward Island as settlement spread.[96]

Reports as early as 1775 suggested that the partridge population was limited on the Island. One early settler described hunting partridge as, "This I thought was the worst sport I ever met with and in a country where I expected to have the greatest pleasure with

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[96] Ian MacQuarrie, "Wildlife Enhancement on Prince Edward Island: Ruffed Grouse (Bonasa Umbellus)," http://www.macphailwoods.org/wildlife/grouse.html (accessed February, 2010). For more information on forest clearance in the British Colonial period see Douglas Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis*, Vol. II (Charlottetown, P.E.I.: Prince Edward Island Dept. of Agriculture and Forestry, 2006), 304.

my gun."[97] The underlying sentiment from this early observer could suggest partridge numbers were naturally limited, even in the early years of settlement. It was not long after these comments that the first official restriction on hunting partridge was enacted in 1780. The text of the act described that killing partridge during mating and hatching season, along with before they could fly, had reduced the numbers of the "useful" bird so much that it threatened a "total loss" of the species. Hunting restrictions were established between 1 April and 1 August, with a penalty of ten shillings for each bird killed out of season.[98]

It took another ninety years, 1864 to be exact, before any further legislation was enacted to preserve partridge or tree grouse. A decade shy of a century is a long time without changing legislation. The text of the 1864 act highlighted the "great destruction" of partridge or tree grouse on the Island. The protective legislation was enacted due to concerns about the species suffering a fate not unlike their counterpart the walrus, extinction. The text of the act laid out hunting seasons, which banned hunting between 1 January and 1 October each year. During these seasons it was illegal for any person to "shoot, kill, destroy, or have in possession" partridge or tree grouse; but the penalty for each infraction remained at ten shillings. The method of enforcement did not include paid enforcement officers, and only required one credible witness to the crime who was

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[97] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence*, 304.
[98] Public Records Office London, *Colonial Office Acts*, 1-7. 1780; and William Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," Forestry Division Department of Agriculture Fisheries and Forestry, (Charlottetown, 1995).

willing to take an oath to Her Majesty's Justice.[99] As in 1780, the government's answer to conservation of natural resources was to create closed seasons, and impose fines.

What was the difference between the 1780 and 1864 partridge regulations? The living conditions on the Island had changed considerably between 1780 and 1864. In 1787 there were only 500 families on the Island and by 1871 the population was up to 94,021,[100] and the increase in settlement could explain the timing of the partridge legislation. The only change to the previous game bird legislation after eighty- four years was to extend the ban on hunting the birds from five months to ten months. Perhaps the intention was to allow the species to re-populate for ten months of the year, instead of only five months. However, the fine for violating the game act did not change.[101] Conditions on Prince Edward Island in 1780 were so primitive that simply finding enough food for survival was difficult. In fact, there were many references to the need for importing food around the 1790s.[102] Perhaps the difference between the 1780 versus 1864 legislation was the fact that the 1780 legislation may have been more concerned with maintaining a food supply for survival on the Island, while in 1864, when the Island was more established and settled, hunting for recreational purposes had begun to increase. Certainly, partridge were selling for a considerable amount of money by the 1860s.[103] In addition, forest cover would have been rapidly decreasing due to the excessive cutting for agriculture, and the timber and shipbuilding industries, limiting the areas for natural

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[99] *Laws of Prince Edward Island 1864.*
[100] Clark, *Three Centuries and the Island,* 60,128.
[101] *Laws of Prince Edward Island 1864.*
[102] Clark, *Three Centuries and the Island,* 64.
[103] Ian MacQuarrie and Daryl Guignion, "Hunting for Money: Market Gunning in Prince Edward Island," *The Island Magazine, no. 19,* (Spring/Summer 1986), 13. (The absence of fur trade regulation suggests that the industry was not important on the Island by the British Period).

habitat.[104] Perhaps the act was not amended simply because it was working, until changes in the landscape and population forced the government to re-visit the legislation.

The 1864 act to preserve partridge could be considered a forerunner in relation to the theme of sport or recreational hunting. Legislation supporting sport hunting is important to highlight when describing the official attitude toward conservation of natural resources, because it reflects that sport hunting evolved into an economically valuable industry over a period into the early twentieth century, with connections extending into the tourism industry.[105]

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Before the mid-nineteenth century, sport hunting was something that only rich gentlemen could pursue. However, after leisure time became available to a larger range of people, pressures on valuable game would also have increased. Therefore, select game hunting species had to be preserved for preferred hunters. The timing of the 1864 partridge act corresponds to a period when leisure time was becoming available to some Prince Edward Islanders, which increased the engagement in sport hunting. For a short time, around the 1860s, some Islanders even made their living by "hunting for money."[106] In this case, the "hunting" in question was predominantly game birds, such as waterfowl. Before government regulations, game and fowl were over-hunted. This was partly due to the fact that export markets to Boston were profitable, and wild fowl were considered

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[104] J. Dan McAskill, "The People's Forest," *The Island Magazine, no. 22,* (Fall/Winter 1987), 20.
[105] Further sport hunting related legislation will be discussed in subsequent chapters.
[106] MacQuarrie and Guignion, "Hunting for Money: Market Gunning in Prince Edward Island," 13.

more valuable than domestically raised game. In 1861, for example, partridge were selling for double the price of a pound of beef, at sixteen cents each.[107]

By 1873, attitudes toward hunting conservation were changing. Many hunters began to advocate conservation due to concern over the future of sport hunting, marking a shift in attitude from observing game as only economically valuable, to a part of the environment in need of protection for both economic and sport hunting reasons. It appears the problem of enforcing game laws has a long history; however, hunting for profit on the Island was essentially over by the time Prince Edward Island joined Confederation in 1873.[108] The last fowl-related legislation from the early period occurred in that year. Protective legislation was extended to include more species of wild fowl, in an act to, "prevent the killing of wild ducks, snipe, and woodcock at improper seasons." Once again, the fowl species were being over-hunted in mating and hatching seasons, as well as before they could fly. It was feared that the valuable species would become extinct, and so, hunting was banned between 15 April and 1 September, with a penalty of five dollars for each bird killed.[109]

While some of the hunting legislation focused on conserving species that were believed to have a monetary value, or a pleasure-hunting value, other acts actively encouraged the destruction of animals that were considered a threat to human safety or the safety of game and livestock. Perhaps the best example of this was the government's attitude toward the Island's largest predator, the black bear.

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[107] Ibid., 14.
[108] Ibid., 13-16.
[109] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 6. Note that when Prince Edward Island joined Canadian Confederation the currency shifted from the British system to dollars.

The type of black bear found on Prince Edward Island was known as the *Ursus americanus Pallas*, which was a species widespread across North America. Their diet was considered omnivorous, consuming approximately 70 percent vegetation such as berries, beech, oak, and ash seeds, along with ants and small fish. The forest on the Island consisted of trees that provided an ideal habitat in terms of shelter and food source.[110] At maturity, an Island black bear could weigh over three hundred pounds.[111] Approximately 1,000 bears had been hunted and killed by the 1920s on the Island, so their population numbers probably fluctuated in the hundreds.[112]

After winter hibernation, the black bears on Prince Edward Island were known to prey upon domesticated spring lambs, calves, and pigs. It wasn't long before a fierce reputation emerged that depicted bears as a threat. In other words, predators, such as bears, threatened livelihoods and settlers were not sympathetic to wildlife protection. No doubt, the threat to humans and livestock created another source of anxiety in an already harsh settler society.[113] The attitude reflected that of Genesis (1:28) that man was given power to rule over every animal on Earth. Moreover, in an early settler society where the priority was survival, fearing an animal that had the potential to kill does not seem out of the ordinary.

The fear of bears preying on livestock promoted the general attitude that the bear should be hunted. There was also, of course, settlers' own fear of bears. Most of the Island's European settlers had never encountered a wild animal much larger that a fox.

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[110] Jim Hornby, "Bear Facts: The History and Folklore of Island Bears, Part One," *Island Magazine, no. 22,* (Fall/Winter, 1987), 8.
[111] Ibid., 3.
[112] Ibid., 9.
[113] Ibid., 9.

Not surprisingly, they found the combination of an unfamiliar forest environment and a fierce predator greatly intimidating.

The black bear was perhaps a common sight for the first settlers arriving on Prince Edward Island, because reports from early observers consistently noted the black bear; however, the threat to humans may have been exaggerated. In 1806, John Stewart reported that in twenty years he had not heard of any person being killed by a bear. The perceived bear threat was at its peak throughout the Colonial period when settlements were separated by thick expanses of forest, and traveling in heavily wooded areas was common.[114] The actual danger of bears attacking humans was low, because the bears typically avoided humans. Bear attacks on humans generally only resulted around their cubs or if they were threatened.[115] But, of course, perception mattered more than actuality when it came to Islanders and bears.

The perception of the bear threat was fed by outlandish storytelling, so when the government decided to initiate bear hunting bounties, there would not have been many Islanders opposed to the idea. Stories ranged from the pursuit and killing of bears to stories about narrowly escaping being killed by a bear.[116] For example, in 1824, a woman from Charlottetown recorded in her journal escaping from a bear:

> She sat down to await her fate, when Bruin, instead of giving her a hug, as is the usual mode of salutation with the tribe, was contented with perambulating round her two or three times, and occasionally putting its face under her

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[114] Ibid., 4.
[115] Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 387.
[116] Hornby, "Bear Facts: The History and Folklore of Island Bears, Part One," 3-9.

> bonnet: after this ceremony, it withdrew, leaving her to feel happy at the civil behaviour of her fellow traveller.[117]

Beginning in 1781, the Island government rewarded the destruction of bears. The first bear-related act explained that the reason for the bounty was the possibility that bears were a threat to farm livestock.[118] An official bear extermination program was established between the 1790s and the 1860s, and the bounty paid per bear killed varied between fifteen shillings and one pound. Between 1820 and 1861, over one thousand bounties were paid by the government.[119] In the 1790s, fifteen shillings was a large sum of money in a cash poor economy, and illustrates that the perceived threat was very high. Between 1825 and 1861 a total of 678 pounds were paid out in bear bounties.[120]

In the 1820s, there was an account of a man who craved the blood sport component of bear hunting. The so called "bear hunter" was reported to have killed thirty-eight bears in twenty-nine years. Many hunters were interested in the "blood sport" component, but also the money from bounties was a successful incentive to hunt. Aside from the bounties, bear pelts were also economically valuable.[121]

In 1831 the reward for killing bears was amended to also include a reward for "the destruction of loup-cervier," otherwise known as the Canadian Lynx.[122] The lynx's natural habitat is forests of the northern hemisphere. It resembles a very large domestic house cat, with a short tail and long legs and feet. Another distinct feature is its

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[117] Ibid., 5.
[118] Public Records Office London, *Colonial Office Acts*, 1-7., 1781.
[119] Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 387.
[120] Hornby, "Bear Facts: The History and Folklore of Island Bears, Part One," 9.
[121] Ibid., 9.
[122] Public Records Office London, *Colonial Office Acts*, 1-7., 1831.

predominant ear tufts. Other members of this cat species include the cougar and the bobcat. The lynx's main food source is primarily snowshoe hare, mice, squirrels, and foxes; but on occasion it will attack large farm livestock and deer. It can be easily trapped, and was actively perused by hunters in Canada for the fur industry.[123] On Prince Edward Island, the lynx was sometimes hunted for fur, but was also most commonly hunted due to its reputation as a threat to farmers' livestock. As tales of the bear and lynx horror stories spread, hunters killed as many as they could. It is estimated that 357 lynx bounties were collected from 1820 to 1861.[124] This pressure, along with the disappearance of their natural habitat, meant that the bears and lynx on Prince Edward Island did not stand much of a chance for survival. In the end it was a combination of perceived threat, government bounties, and destruction of natural habitat that created the demise of the black bear and lynx on the Island.[125] The last bear on Prince Edward was reported to have been killed on February, 1927,[126] and the last lynx sometime before this date. Therefore, bears and lynx marked two more complete extinctions of native Island mammals.

The early hunting legislation has created a picture of the environment on Prince Edward Island at the time. Some of the very first settlers during the British period had to deal with non-Islander poaching of walrus, and game birds were also in decline from human factors. However, the protected species did not outnumber the species that were

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[123] Hinterland Who's Who, "Canada Lynx," http://www.hww.ca/hww2.asp?cid=8&id=84 (accessed August, 2010).
[124] Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 388.
[125] Hornby, "Bear Facts: The History and Folklore of Island Bears, Part One," 9.
[126] Jim Hornby, "Bear Facts: The History and Folklore of Island Bears, Part Two," *Island Magazine,* no. 23, (Spring/Summer, 1988), 27.

legislated to be destroyed, such as the bear and lynx. The decision to protect, regulate, or exterminate was, predictably, made according to humans' short term priorities.

II Fishing

Along with hunting, the Island government had the jurisdiction to regulate its coastal waterways, and the government's propensity to develop the inshore fishery on Prince Edward Island was surprisingly ambitious in the early Colonial period. During the Colonial period, the British government had high expectations for developing the economic potential of the fishery off Prince Edward Island. Given that the French did not do much to promote fishing, it is interesting that the British were so persistent to develop the industry.[127] The Americans dominated the cod fishery in the Gulf of St. Lawrence in the early 1800s, sending approximately 2,000 schooners per year. The American fishermen were tough for Islanders to compete with because they could outfit fishing vessel for less cost, and undersell their catches from Island waters.[128] With the Americans dominating the cod fishery, and since the Island government did not have jurisdiction outside the coastal areas of the Gulf of St. Lawrence, their focus to develop the fishing economy was on species of fish that came inshore.

Since aboriginal inhabitants crossed the land bridge to the Island over 13,000 years ago, the fishery on Prince Edward Island has been an essential means for survival. In 1763, after the Treaty of Paris granted control of Prince Edward Island to the British, the British Board of Trade sent a letter proclaiming that everything possible should be

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[127] Kennedy Wells, *The Fishery of Prince Edward Island* (Charlottetown, P.E.I.: Ragweed Press, 1986), 96.
[128] Ibid., 105.

done to establish the fisheries.[129] The curious case of the development of the fishing industry on Prince Edward Island can be illustrated through the legislation.

As the colony grew on the Island, the concern continued for conservation of economically valuable species of coastal fish. There are two general categories of fishing legislation from this period, first, attempts to preserve fish that entered inshore Island waterways for at least part of their life cycle. Therefore, in theory, since the fish entered Island territory for part of their life cycle, they could be somewhat protected by government control. The other branch of the provincial fishing legislation encouraged greater exploitation of off-shore species such as cod.

1

When developing a fishery, perhaps one issue to consider was the availability of Crown-owned land. That government could not actively encourage the fishery was due to the fact it did not maintain the land rights to inshore fishing. The reservation of land used in the fishery became a contentious issue in the Colonial period. On townships granted to proprietors, a 500 foot wide strip of shorefront was initially reserved to the Crown to allow access to the fisheries. Two of these lots, numbers 40 and 59, were also reserved for fishing companies already active in the area. Basically, the limits of the coast were not clearly defined, and settlement on the Island proceeded without taking the fishing reserves clause into consideration.[130] By the 1830s, the landholding system on Prince Edward Island had started shifting toward freehold, and the ownership of the 500-foot fishery reserve became exceedingly complicated. After decades of court battles, the

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[129] Ibid., 96.
[130] Ibid., 393.

eventual legal consensus by the Island Supreme Court was that the Crown owned fishing rights to the coasts in half of the townships. Plus, an additional twelve lots had public fishing rights attached to them. However, the Island government relinquished all of its rights to fishing reserves in the mid-1800s. The matter seems to have been an issue stemming from the history of proprietorial control, and the government's aversion to taking back any freehold land from the new owners.[131] In the end, these inshore fishing jurisdictions were not maintained, mostly because the Imperial and local government did not enforce these rights in the early Colonial period, and the law was not retained in public memory.[132] The simple fact to draw out of the complicated fishery reserves issue is that by the end of the early period, the Island government did not have land rights with which to encourage fishing.

2

The provincial regulatory acts for the inshore fishery tend to group together species of fish, and of these species, one of the most important was salmon. Atlantic salmon are a species that reach Prince Edward Island in limited numbers. Salmon spawn in interior river waterways and grow for up to three years in these waters. Once mature, the fish migrate to the Atlantic Ocean for one to three years, and the cycle is repeated. Salmon return to the river they were born in to spawn from late October to mid-November. The history of the salmon fishery in the Atlantic Region was characterized by

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[131] Rusty Bitterman and E. Margaret McCallum, "The One that Got Away: Fishery Reserves in Prince Edward Island," *Dalhousie Law Journal* 28, no. 2 (Fall 2005): 407-408.
[132] Ibid., 388.

overexploitation, destruction of their environment, and ineffective conservation attempts.[133]

Salmon were viewed as an important branch of the fishery on the Island, but even early accounts described the species as scarce.[134] The early settlement attempts on the Island significantly decreased salmon numbers due to the destruction of river habitat, and over-fishing. As early as 1780, concerns regarding the over-fishing of certain species became evident. "An Act to regulate the Salmon, Trout, and Eel fishery" stated that substantial quantities of each species were being taken at improper seasons of the year, which in turn reduced the amount that was being taken to market. The act's solution to the problem was to prohibit fishing between 1 October and 15 January, which corresponded to the time when salmon spawned. It also banned fishing at night with lights because it drew fish to the top of the water and made them too easy to catch.[135] The penalty for violation was five pounds. However, in the early period finding evidence for a conviction would have been difficult, since it was based on the public informing the Justice of the Peace of possible offences and there were no provisions for paid enforcement officers.[136]

As stated earlier, the Island's human population rapidly increased from 1800 to 1830, which also increased the local consumption of salmon. Salmon were reported to have disappeared from Island rivers as early as 1852, and legislation was passed in that

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[133] Todd Dupuis, "The Early History of Atlantic Salmon on Prince Edward Island," *The Island Magazine, no. 64,* (Fall/Winter 2008), 21.
[134] D. C. Harvey, *Journeys to the Island of St. John Or Prince Edward Island, 1775-1832*, ed. D. C. Harvey (Toronto: Macmillan Company of Canada, 1955), 62.
[135] Dupuis, "The Early History of Atlantic Salmon on Prince Edward Island," 22.
[136] Public Records Office London, *Colonial Office Acts*, 1-7., 1780.

year to protect the salmon and gasperau fishery. The legislation banned the use of spears and nets between 1 October and 1 March, and marked the first time paid "overseers" were appointed to enforce the legislation. Between 1857 and 1867 over 15,000 pounds of salmon were exported from Prince Edward Island, but even this modest amount proved too much for rivers to sustain.[137] One possible explanation behind legislation to regulate the salmon fishery was that new canning technology emerged around 1861, which created new export markets and increased pressure on stocks.[138]

After the first salmon conservation attempts, further legislation was enacted in 1869 to appoint more paid enforcement officers. The "overseers" received a yearly salary of six pounds for their service. In 1869, legislation for, "the better protection of the Salmon Fisheries" focused on appointing "Fish Protectors" or "Water Bailiffs" to oversee and protect the fishery. The Midgell, Morell, Dunk, and Winter Rivers received protection by paid enforcement officers. Seasons were established to prevent fishing from 1 September until the last of December, with a fine for violation of no less than one pound.[139] The act stated:

> No salmon shall be taken or caught on the coast of this Island, nor in any of the Bays, Rivers or Harbors, or in any fresh water stream or river thereof...nor between sunset on any Saturday night and sunrise on the following Monday morning.[140]

Protection of the salmon fishery thus marked the advent of the paid conservation officer on Prince Edward Island, however, in the early period much poaching continued

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[137] Dupuis, "The Early History of Atlantic Salmon on Prince Edward Island," 22.
[138] Wells, *The Fishery of Prince Edward Island*, 133.
[139] *Laws of Prince Edward Island 1869.*
[140] Ibid.

to occur due to the limited numbers of officers and the large area. The 1870s marked the rise of sport fishing, as well as awareness that fish stocks were declining, which intensified the need for paid enforcement to conserve fish numbers.[141]

Another branch of the inland Island fishery receiving government attention in the Colonial period was the Herring and Alewives fishery. Alewives and Blueback Herring are often fished together in rivers found within the Atlantic Region. These fish hatch in fresh water, non-tidal areas and swim out to the Atlantic Ocean for three to five years. After the fish reach maturity, their migration cycle continues with a journey back to freshwater tributaries for spawning. Alewives are found all the way from Eastern Newfoundland to North Carolina. Blueback Herring are the dominant river species in the Gulf of St. Lawrence area.[142]

It appears as though the timing of the legislation reflected the need for bait in the fishing industry. Acts for the preservation of herring and the alewives fishery began in 1833, and from that point received considerable official attention. The act for 1833 was entitled, "An Act for the Preservation and Improvement of the Herring and Alewives' Fishery of this Island." The legislation noted concerns over setting nets during the day time, which prevented the fish from coming into the rivers, bays, creeks, and harbours, and it forbade the practice. The penalty for a first time offence was 20 shillings.[143] The Prince Edward Island government did not have jurisdiction off-shore beyond the three mile territorial limit, so the legislation revolved around controlling the resources of

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[141] Dupuis, "The Early History of Atlantic Salmon on Prince Edward Island," 25.
[142] J. Ronald Kluda and others, *Alewive and Blueback Herring* (Queenstown; Maryland: University of Maryland Agricultural Experimental Station,[c.1990]), http: /www.dnr.state.md.us/irc/docs/00000260_10.pdf (accessed January 2010).
[143] Public Records Office London, *Colonial Office Acts*, 1-7., 1833.

territorial waters. That regulation of the herring and alewives fishery became a common theme in early legislation suggests the species were in decline due to human factors such as improper net setting. The acts do not mention any other potential causes for their decline such as erosion or sawdust interfering with spawning in the inland waterways.

By the 1840s, a newly important fishery was drawing government attention. The Canadian mackerel fishery is also an inshore fishery, primarily in the Southern Gulf of St. Lawrence from the months of May to September. The fishery follows the migration patterns of the mackerel, which migrate to American waters in the winter time, and do not return to Canadian waters until May. Spawning takes place between mid-June and mid-July in the shallow areas of the Gulf of St. Lawrence near the Magdalen Islands.[144]

Before the 1830s, American fishing vessels followed a longstanding migration pattern, fishing cod around the Gulf of St. Lawrence. However, after salt mackerel became a profitable industry in New England, American fishermen accustomed to the area had no hesitation about returning for more profits. By the mid-1850s, over 650 American vessels were engaged in the mackerel fishery off the waters of Prince Edward Island.[145] This infiltration of American fishermen to the Gulf of Saint Lawrence corresponds to the timing of the government's mackerel legislation.

The mackerel schooled in huge shoals in the shallow waters of the Gulf and were often found well inside the Island's three mile limit. In the process, they came within the Prince Edward Island government's legislative reach. The government's first protective

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[144] Alain Armellin and others, *Survey of Atlantic Mackerel Fishing in the Southern Gulf of St. Lawrence* (Quebec: Department of Fisheries and Oceans Canada,[1990]), http: /www.dfo-mpo.gc.ca/Library 184037.pdf (accessed January 2010).

[145] Edward MacDonald, "The Yankee Gale," *The Island Magazine, no. 38,* (Fall/Winter 1995), 18.

legislation concerning the mackerel fishery occurred in 1845, and corresponded to the presence of American fishermen. The stipulations were similar to the previous herring and alewives act in that there was a concern over nets being cast in the day time, blocking the entrances to waterways. Essentially, the same regulations and penalties were passed as for the other inshore species, in the form of season limitations and penalties. The fine was twenty shillings, but allowed for the fact that wind or gales could prevent a fisherman from taking in their nets. Setting nets to catch mackerel was also banned between sunrise and sunset.[146]

3

Regulation was one prominent theme that emerged from the early fishery legislation. But while the government sought to protect some species of fish from over-exploitation, it actively encouraged the exploitation of others. In the same year that the government passed protective legislation for herring and alewives, it also offered bounties to encourage the off shore seal and cod fishery.[147] The legislation, passed in 1845, could have been influenced by the success of the seal industry in Newfoundland, which was peaking around this period.[148] The sum of four hundred pounds was extended to encourage the seal fishery, two hundred pounds of which was devoted to bounties. Oil from the seals was a sought-after commodity, and vessels engaged in hunting seals received a bounty of ten shillings per ton for their vessel. Moreover, four hundred pounds was also appropriated to the cod fishery, with two hundred pounds also designated for

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[146] *Laws of Prince Edward Island 1842-1845,* (1845). Besides the protective mackerel legislation, the only reference to a bounty to encourage the mackerel fishery was in 1851.
[147] *Laws of Prince Edward Island 1842-1845,* (1845).
[148] S. W. Sanger, "Seal Fishery Background: Newfoundland and Labrador Heritage," Memorial University, http://www.heritage.nf.ca/environment/sealing1_e.html, 2010).

bounties. Bounties were paid to the seal and cod fishery periodically from 1844 to the mid-1850s.[149] A representative sample of the cod bounties paid out in 1848 sheds some light on how successful the incentive was.[150] Only eight fishermen received a bounty, which seems small by today's standards; however, if only 200 pounds were available each year, it appears as though it was completely distributed in 1848.

1848	Pounds	Shillings	(d) Pence
J. Wightman	21	15	0
R.B. Boggs	15	14	6
J. Knight	35	2	6
A. McIntyre	13	4	6
N. McLaren	18	6	0
L. Cambridge	14	8	0
B. Davies	25	0	0
T. Caie	8	10	0

[151]

Bounties for encouraging the fishery were a prominent tactic that the government utilized in the development of the early fishing industry on Prince Edward Island, but as mentioned previously, the lack of Crown land to develop the industry may have slowed progress.

In summary, the fishing legislation featured a flurry of early activity, reflecting the initial expectations of the Colonial Office stemming from the Island's perceived potential. However, the Prince Edward Island government did not start to promote the

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[149]Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island* 1844-1855.
[150] Prince Edward Island House of the Assembly, Appendix: Accounting Records 1848.
[151] Ibid., 1848.

development of the fishing industry until the 1830s. Perhaps one reason was because settlement on the Island had reached a point where it was considered safe enough to develop another industry outside of farming.[152] By the 1830s, the population was up to over 45,000 people and there may have been enough extra human and economic capital to put into another industry. In general, the fishing industry was an undeveloped aspect of the economy in the early period, and all of the positive reports and bounties did not establish the industry.[153] The potential of the fishery was one reason the Island was deemed valuable during the beginning of British rule, and that conviction spurred a flurry of legislative activity. But gradually the conviction formed in government circles that fishing only distracted settlers from their first priority, clearing the land for farming.

The failure of early fishing merchants to realize a profit on their investment probably confirmed the government's opinion, and a shift to an emphasis on agriculture as the key to development led to a period of legislative inactivity during the early 1800s. Thus, the early burst of fishing legislation was followed by decades of minimal activity.

After 1830, with settlement well advanced and the population rising, the government introduced a series of measures to protect and encourage the fishery. It was in contradiction to the prevailing attitude that agriculture should be developed first, and fishing legislation dominated official concern in the early Colonial period. John Stewart estimated that after the first seven years of British settlement, the government had spent ten times as much encouraging the fishery as it did for agriculture, which could be

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[152] MacDonald, "The Yankee Gale," 18.
[153] Wells, *The Fishery of Prince Edward Island*, 120.

considered an accurate assumption after researching the official legislation.[154] In the end, fishing was the first industry to be heavily promoted with legislation and government funding from approximately 1780 to 1800, with a gap in coverage between 1800-1830.

The proliferation of fishing legislation from the pre-Canadian Confederation period suggests that the government was doing much to promote the in-shore fishing industry. Two basic themes emerged from the early period fishing legislation. First, regulations were introduced to curb over fishing of certain species of fish. Second, at the same time that particular species of fish were being regulated, bounties were being issued to encourage other less developed aspects of the fishing industry. Finally, the government could not control the American fishing schooners in the Gulf of St. Lawrence fishing cod and mackerel, but it could at least try to prevent human interference with the fish when they entered tributaries. Without land rights to develop a large scale fishery, the only economic potential came from protecting small markets including salmon, herring, alewives, and mackerel.

III Watersheds

Another environment-related concern from the early Colonial period was government legislation that involved regulating watersheds. As early as 1773, there were concerns over preventing the throwing of ballast into rivers, creeks, and ports on the Island.[155] From the early 1800s, Colonial legislation regulated navigation channels within waterways until 1845.[156]

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[154] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence*, 122.
[155] Public Records Office London, *Colonial Office Acts*, 1-7., *1773.*
[156] Acts to prevent the unwanted dumping of ballast in waterways occurred in 1801, 1832, 1837, and 1845.

One method the government utilized to combat illegal dumping was to hire officers to police waterways. Acts from 1808, 1832, and 1844 stipulated the duties of these "Ballast Masters." Ballast masters were appointed to regulate ships and their ballast dumping activities. It was an important position, because without regulation, ships would not have been able to navigate waterways without hitting uncharted obstructions. It appears that preventing damage to the underside of ships, and ensuring the mobility of ships within waterways was the government's objective, rather than the health of the watershed and species within it. The dumping of ballast stone out of ships had the potential of reducing the depth of waters, and creating uncharted navigation hazards. By 1832, Ballast masters were directing where to discharge all stones, ballast, gravel, fish bones, or rubbish that would not float,[157] and by 1844 they were held accountable for preventing damage and accidents to ships in the various harbours across the Island. Violators who were caught dumping obstructions that damaged a ship were fined a maximum penalty of ten pounds.[158]

Clearly, then, the ballast-related legislation was more a practical concern for ships and navigation than a concern for environmental conservation or preservation. From a contemporary standard, legislation that prevented anything from being dumped in the water would be considered environmental protection. In this instance, the regulation was more reflective of the prime importance of the Island's shipping industry.

If legislators had a care for ease of navigation they were also concerned with passage along interior waterways. For example, the floating of logs down rivers began in

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[157] Public Records Office London, *Colonial Office Acts*, 1-7., 1832.
[158] The Government of Prince Edward Island, *Laws of Prince Edward Island 1842-1845*.

1840 with, "An act to regulate the floating of logs, scantling, deals, and other kinds of wood, down the rivers and lesser streams in the Island."[159] The act described how trees were floated down interior waterways for processing in saw mills, or were transported to other locations. These sawmills were constructed on waterways, and used hydro energy to turn the saw blade. The proliferation of sawmills across the Island greatly increased the speed at which the forest was cleared,[160] but the problem was that mill owners did not want to construct waste-gates to allow the logs to pass through their dams on the waterways. The purpose of the legislation was to establish co-operation between loggers and mill owners.[161] Again, the legislation did not articulate any concern for the actual health of the waterways; it was an issue over allowing loggers access through dams on waterways. Apparently dams built before Confederation did not have to include a fish passage through the dams, and perhaps regulations did not require timber passage ways either. As a result, tensions flared when timber had to be transported through Island waterways at the height of the timber industry.[162] Regulation of the floating of trees down waterways was thus not an environment related issue; the concern was over conflicting private entrepreneurs trying to capitalize on water as kinetic energy or water as a transportation route. The need to regulate the floating of logs reflected the rising importance of the Islands' forest industry during the early Colonial period.

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[159] *Laws of Prince Edward Island 1773-1852,* (1852).
[160] Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis,* 86-88.
[161] Variations of the 1840 act appeared in 1842 and 1843, as well as 1852 and 1872.
[162] Dupuis, "The Early History of Atlantic Salmon on Prince Edward Island," 22-23.

IV Forestry

During the early Colonial period, Island entrepreneurs began to export timber to Britain, Newfoundland, the United States, and the West Indies. By 1770, some proprietors attempted to exploit the timber resources; however, early shipping rates across the Atlantic Ocean to Britain were a disadvantage to the industry. All of this changed after Napoleon defeated Prussia in 1806, and he was able to block British shipping in the Baltic Sea, which was Britain's traditional source of timber. Consequently, the blockage created a sharp demand for timber and initiated the Colonial timber trade on Prince Edward Island.[163] The British government helped maintain the timber industry by increasing tariffs on Baltic timber, making it economically viable to ship timber from British North America.[164] The profitability of the timber industry on Prince Edward Island soared, and shipbuilding rapidly expanded after 1800. From 1830 to 1890, approximately 3,730 vessels were constructed at over 176 locations on Prince Edward Island.[165] As might be expected, the emergence of the timber trade and shipbuilding affected both Colonial legislation and the environment on Prince Edward Island.

Across Canada, settlers were ambitiously clearing the forests to create farms. Fields had to be cultivated, and the timber was used for the construction of homes, barns, roads, bridges, mills and fences. The development of communities in Canada required,

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[163] Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis*, 90.
[164] Ibid., 91.
[165] McAskill, "The People's Forest," 23.

"massive material transformations of the environment."[166] These accomplishments also required energy from what is known as the somatic energy regime: animal and human labour, kinetic energy from water, fire, and the release of stored energy from wood represented 80 percent of pre-industrial energy. How did this affect the environment? Game, fish, and agriculture crops were the fuel that cleared the forest to farms.[167]

If the forest was a resource, it was also an enemy. Emigrants to Prince Edward Island in the late 1700s and early 1800s were often overwhelmed by their first impression of the vast forest. In 1818 an observer reported that, "on approaching the Island it looks like an immense forest rising from the sea."[168] The feeling of being overwhelmed had, "a depressing and immobilizing effect on the emigrants."[169] One well known Island emigrant reported, "It is not possible for one who has been brought up in an old cultivated country to form a correct picture, in imagination, of one that is new in its natural state."[170] Another letter from the same observer stated, "From this you will learn that the whole Island might be cultivated if the woods were destroyed." [171] Therefore, for many settlers the forest was an obstacle, even an enemy that had to be overcome, and the forest had no aesthetic value for the early legislators.

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[166] Graeme Wynn, *Canada and Arctic North America: An Environmental History* (Santa Barbara, Calif: ABC-CLIO, 2007), 113.
[167] Ibid., 113.
[168] David Weale, "The Gloomy Forest," *The Island Magazine, no.13,* (Spring/Summer 1983), 8.
[169] Ibid.
[170] Harvey, *Journeys to the Island of St. John Or Prince Edward Island, 1775-1832*, 92.
[171] Ibid., 115.

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In general, there appears to have been two general trends regarding forest practices on Prince Edward Island: clearing the forest for farming by settlers; and exploitation of specific kinds of trees as a business. The pine industry fits into the latter category.

During the French period pine trees were often found growing together in large stands without other species mixed in, and from the beginning of European settlement in the 1720s, pine was a sought after resource. It received the most attention because it was the most valuable species in large quantity.[172] The French attempted to exploit Island pine for ship masts in the navy; however, a general concern over quality stopped any further development during the French period.[173]

During the British period, pine was surveyed as one of the five main tree species, and it was sought after for many uses. Pine was in high demand for lumber, boards and shingles, for the construction of houses, as well as interior furnishings and trim work. In particular, pine was in demand in the shipbuilding industry for inner and outer planking and masts. The hauling of pine to the mills thus became an important source of winter employment for early settlers.[174] Pine was also in great demand in the British Isles during the 1800s when the population and industries were rapidly expanding, creating a growing market for Island wood. White pine was the preferred variety for export to the British

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[172] Douglas Sobey and William Glen, "The Fall - and Rise - of White Pine in the Forest of Prince Edward Island," *The Island Magazine, no.65* (Spring/Summer 2009), 2. For more information regarding France's interest in Prince Edward Island pine see Douglas Sobey, "The Department of the Marine and the Search for Masts on Ile Saint-Jean," *The Island Magazine, no.50* (Fall/Winter 2001), 10.
[173] Ibid., 3.
[174] Ibid., 6.

Isles. However, the timber had to be squared for shipping, and the wood chips on the ground also added to the frequent forest fires in the Colonial period.[175]

Between 1770 and 1806, many proprietors attempted to export pine. However, as stated earlier, it was not until during the Napolenic Wars, and the introduction of preferential tariff rates, that the pine industry boomed. In 1806 only 375 tons of pine was exported but by 1809 that number had increased to 18,115 tons. Between 1811 and 1820, the amount of pine exported doubled each year.[176] The pine boom did not last long due to the limited pine stand on the Island, and by the 1820s reports suggested that pine was becoming an exhausted resource. By the 1850s, newspapers had begun advertising the importation of pine boards to the Island.[177] After the exhaustion of the pine forests on the Island, the trees processed in saw mills shifted to spruce, tamarack, cedar, and yellow birch. By the end of the 1800s there were still pine trees, but the large stands were long gone, which was a major alteration to the environment. [178]

The significance of the timber trade on Prince Edward Island was its contribution to the early Colonial economy. It developed a timber industry and encouraged the shipbuilding industry. The timber trade even contributed to immigration. Not only did timber ships provide a passage to immigrants, but many leasehold farmers benefited from the work the pine industry provided in the winter time in cutting and milling. It is important to recognise the significance white pine had in developing the early economy on the Island, as well as the effects on the forest and environment since pine was one of

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[175] Ibid., 6.
[176] Ibid., 8.
[177] Ibid., 9.
[178] Ibid., 10.

the first tree species to become over-harvested.[179] Pine is yet another early example of how economic value created environmental destruction. It would not be the last.

2

As illustrated with the case of the pine industry on Prince Edward Island, Island forests were not heavily legislated. In 1773, one of the first forest-related acts repealed, "An act for indemnifying persons who shall burn the small bushes, windfalls, decayed leaves, and all other bush and rubbish upon the land and in the woods upon this island."[180] To indemnify means to compensate for losses or damages sustained to something, which in this case was the forest. The text of this act is not currently documented; however, it could be speculated that in the beginning of settlement, the government wanted to safely burn rubbish that might create a forest fire, but the act was not successful because burning the rubbish ending up starting forest fires, and the act was repealed.[181]

An act "to prevent the cutting of pines or other trees" was enacted in 1780. The text of the act elaborated how "there has been great waste committed of Pine and other valuable Timber Trees in this Island." Curiously, the thinking behind the act illustrated some careful consideration of the future. The solution to the problem of wasting the valuable timber was charging ten shillings per tree cut less than twelve inches in circumference, and thirty shillings for trees with a larger diameter. A written licence from the owner of the woodland was also required. The issue was a matter of defence of the rights of private property for the proprietors. It appears the proprietors were irritated that

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[179] Ibid., 12.
[180] Public Records Office London, *Colonial Office Acts*, 1-7., 1773.
[181] William Glen, "Prince Edward Island Forest Legislation: 1773-1988" Department of Agriculture Fisheries and Forestry, Charlottetown, 1995.

tenants were stealing trees and wanted to get paid. Basically, the theme was preventing the theft of timber resources, presumably because the economic interests of the proprietors were being compromised.[182] In other words, the legislators were aware timber was being wasted in the sense of lost profits, and were aware that the problem needed to be stopped in the future.[183]

As the 1780 act illustrates, concern over exploitation of the forest on Prince Edward Island is by no means a new issue. However, there was minimal forest legislation to protect it. The forest may have been perceived as a vast obstacle to overcome, and not essential to regulate. Few shared John Stewart's awareness. In 1806, the proprietor, promoter and Island official wrote, "I am persuaded that no man who understands the proper management of wood lands will ever wish to see them killed."[184] Most held attitudes like one observer from the mid-1860s, who reported they cut down as many hardwood tree species as they could, because the trees were believed to be "cumbering the ground."[185] To an Upper Canadian pioneer poet, Alexander MacLachlan, every time an axe hit a tree was like a blow for progress and civilization:

> Together soon we at it went
> 'Twas like a kind of sacrament,
> Like to laying the foundation
> Of a city or a nation;
> But the sturdy giant stood,
> Let us strike him as we would;

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[182] Public Records Office London, *Colonial Office Acts*, 1-7., 1780.
[183] Depending on the nature of the lease between the landowner (proprietor) and tenant, some proprietors allowed tenants to cut timber. On the other hand, more stern proprietors reserved the timber for themselves and it was not allowed to be cut by tenants. The 1780 act to prevent the cutting of pines and other valuable trees was re-examined in 1817.
[184] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence, North America*, 140.
[185] Henry George Mellick, *Timothy's Boyhood: Pioneer Country Life on Prince Edward Island* (Kentville, N. S.: Kentville Publishing Company, 1933), 40.

Not a limb nor branch did quiver - [186]

More forest legislation started to emerge around the time that shipbuilding and the timber industry were expanding. In 1832 an act was passed to maintain the forests around Georgetown due to damage from fires, and a survey of timber resources was conducted in 1849.[187] While fires would have reduced valuable timber resources, the survey of timber also corresponds to the time when the large stands of pine were becoming depleted.[188] There were other concerns regarding depletion of timber resources in 1862 with an act that prevented the exportation of juniper, hackmatack, or "knees."[189] The timing surrounding the act probably related to the need for these products within the Island, as it was the peak of the shipbuilding industry. Essentially, the products were becoming scarce due to the external and internal uses, and the government responded by protective legislation.

The hodgepodge of forestry acts listed above helps to illustrate some trends. In the early period the forest received little official attention. When legislation did involve the forest, issues revolved around making sure those who controlled the forest got paid, and a concern that the most valuable species of trees remained for future consumption. In the eighteenth century, and much of the nineteenth, the forest was viewed as an obstacle to overcome. The emergence of shipbuilding and timber exporting in the early 1800s altered the forests and exhausted the pine species, but nothing was done about it. Fewer trees

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[186] Quoted in Weale, *The Gloomy Forest*, 10.
[187] Public Records Office London, *Colonial Office Acts*, 1-7. 1832; and Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1849.
[188] Sobey and Glen, "The Fall - and Rise - of White Pine in the Forest of Prince Edward Island," 13-25.
[189] In shipbuilding, a "knee" is a piece of timber, shaped somewhat like a human knee when bent, used to secure beams of a ship together.

equalled more land available for agriculture, which was another industry to significantly alter the natural environment of Prince Edward Island.

V Farming

Farming was often described as an industry with a promising future in the Colonial period. Promoting the future of agriculture in a positive light, John Stewart utilized an island analogy:

> The Bermuda Island does not contain as much cultivatable surface as one of our townships, and yet is said to have 20,000 inhabitants. The climate and situation it may be alleged are different, but acre for acre we can raise more of the necessaries of life than they can, and may therefore look forward to as high a state of population. [190]

Farming during the early 1800s on the Island was a hard and arduous job. The hardships included clearing land, primitive equipment, scarce seed, undeveloped markets, undernourished livestock, and settlers who had little knowledge about farming.[191] Agriculture struggled in the early years, yet the government did little to encourage development. In comparison to the other primary industries, agriculture legislation appeared later, despite the fact that agriculture was identified early on as the main industry to be developed. Little attention could illustrate that farming was advancing naturally, or simply that the government was not developed enough to promote the industry and because settlers had to clear the forests before farms could expand beyond subsistence living. Additionally, it might also reflect the government's reluctance to

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[190] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence, North America*, 257.
[191] Elinor Vass, "The Agriculture Societies of Prince Edward Island," *The Island Magazine, no.7,* (Fall/Winter, 1979), 31.

trespass on the right of private property or owners freedom to do as wanted on their own land. Farming legislation from the early period can be streamed into two basic themes: concern over soil fertility and the incorporation of agricultural societies. The one exception was a brief flirtation with a crop much prized by British authorities, hemp.

The first time that the government did anything to promote farming was encouraging farmers to grow hemp. Hemp and flax were considered major crops in the 16th to 18th centuries in North America, Europe and Russia. Bibles and maps were printed on paper made out of hemp, and lamp oil was made from hemp seeds. Perhaps even more important hemp could be made into rope,[192] and securing a supply of hemp rope was of particular interest to the British government, whose empire was protected by the Royal Navy and whose economy depended on a large merchant fleet, both of which consumed enormous quantities of rope in their rigging. It was considered a priority to ensure a sufficient supply of hemp from within the British Empire.[193]

During the 1800s, the British Crown distributed hemp to Canadian farmers and offered premiums to encourage production.[194] In 1801 an act encouraging the cultivation of hemp was passed on Prince Edward Island, and signified the first legislation to encourage farming in the Colonial period.[195] The two initiatives were likely connected; however, despite the encouragement, hemp did not become an important crop on the Island.

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[192] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence, North America*, 145. and Mellick, *Timothy's Boyhood: Pioneer Country Life on Prince Edward Island*, 51.
[193] Yves de Saussure, "Hemp in the British Isles," Boston Hemp Museum and Library, http://www.hempology.org/CURRENT%20HISTORY/HEMPHUSBANDRY.html (accessed 2010).
[194] Susan MacKinnon, *Hemp* (Charlottetown: Department of Agriculture and Forestry, [1997]), http: /www.gov.pe.ca/photos/original/af_factheml087.pdf.
[195] *Colonial Office Acts*, (1770-1842). 1801.

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Hemp was only a minor concern in comparison to all the government attempts to conserve soil fertility on Prince Edward Island. Beginning in 1832, government legislators paid considerable attention to the issue. One method that Island farmers used to offset the acidity of Island soil was to spread lime obtained by crushing oyster shells. This practice inspired legislation to prevent the destruction of oyster beds. Legislation from 1832 explained how the oysters were being burned so the lime from the shell could be extracted, and as of 24 March 1832, those caught burning oysters would be fined five pounds.[196] It was perhaps not logical to destroy oysters as a source of lime because the oyster fishery was considered quite valuable. The natural oyster beds in Malpeque Bay eventually came to dominate the Canadian industry and were probably generating revenues of close to $100,000 per year by 1873.[197]

One of the most disruptive practices to disturb the natural ecosystems of oyster beds was the digging of mussel mud. Mussel mud was another important source of lime for the soil, and many cart loads were taken from mussel and oyster beds. The term mussel mud has been used on Prince Edward Island since the 1800s. Although the mud did contain mussel shells, the oyster shells were more desirable in the mixture due to their high lime content. The mud was extracted from interior watersheds and spread on the land for fertilization. The innovation of machinery to dig the mud through the ice revolutionized the process, and it became a common farming practice from the early

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[196] Public Records Office London, *Colonial Office Acts*, 1-7.; *Laws of Prince Edward Island 1773-1834,* (1832).
[197] Wells, *The Fishery of Prince Edward Island,* 148.

1800s to the early 1900s.[198] Mussel mud was considered a great advantage in agriculture in the early period, "The stuff found in those banks, when laid upon the land, brings the best of any crops I saw upon the Island."[199] As the quote suggests, mussel mud produced excellent results, but tended to scab the skins of potatoes where it was heavily utilized. Where mussel mud was not available, black mud from swamps was utilized. The digging of mussel mud was very laborious and time consuming, and was quickly dropped after the more convenient, imported limestone became available. However, mussel mud continued to maintain the reputation that it was a better fertilizer than limestone.[200]

While the government wanted to protect its oyster stocks, it recognised the need for lime. To get it, the government promoted the construction of lime kilns. As the preamble to an 1844 act explained:

> Whereas the general introduction of Lime as a Manure would greatly tend to advance the Agricultural Interest of this Island, and promote its speedy settlement and improvement, and the want of capital prevents the establishment of Lime Kilns.[201]

The funding to construct lime kilns came from the government imposing a tax on cultivated land, and the revenue raised was used to construct the kilns on a per county basis.[202] This legislation encouraged conservation of the soil in agriculture because encouraging the use of lime was a way to increase the economic earning potential from agriculture. Further examples from the Journal of the Legislative assembly, toward the

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[198] David Weale, "The Mud Diggers," *The Island Magazine, no. 5,* (Fall/Winter 1978), 22.
[199] Harvey, *Journeys to the Island of St. John Or Prince Edward Island, 1775-1832*, 152.
[200] Wayne MacKinnon and Elinor Vass, "The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island" (Charlottetown, P.E.I.: Institute of Island Studies,[1989]).
[201] *Laws of Prince Edward Island* 1844.
[202] Ibid.

end of the Colonial period, revealed the incorporation of lime companies in Belfast, Pisquid, and New Glasgow, Prince Edward Island.[203] It is unclear whether or not these companies were utilizing imported limestone; certainly, the limestone importation would become a big business by the mid-twentieth century.

Another soil fertility concern in agriculture revolved around the right to harvest seaweed, which was used as a fertilizer for the land. Beginning in 1868, citizens petitioned for the right to harvest "Sea Manure" that was opposite to their shore frontage. In 1872, an act came into force to settle the law regarding seaweed and kelp on the shores of the Island.[204] The concern over the jurisdictional rights of seaweed and kelp was yet another extension of rights related to the Fishery Reserves dispute, a legal dispute over who owned the rights to the coast line.[205]

2

Not surprisingly, if soil fertility was an issue, soil erosion also appeared to be a concern in the Colonial period. References to soil erosion began as early as 1820 when a settler observed, "The Sea is wasting the land in exposed situations considerably."[206] Given the prevailing winds and the relative softness of the Island's red sandstone, erosion was inevitable. That the Island government might express concern over it is, perhaps, not surprising. Erosion was often more pronounced. As early as the late 1700s, Captain John MacDonald, the resident proprietor of Lots 35 & 36, showed a preservationist attitude in 1820. According to historian A.B. Warburton,

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[203] Ibid.
[204] *Laws of Prince Edward Island*, 1870, 1872.
[205] See the Fishing section in this chapter for an overview of the *Fishery Reserves*, a legal dispute over ownership of the Island coastline.
[206] Harvey, *Journeys to the Island of St. John Or Prince Edward Island, 1775-1832*, 102.

> It is said that he would not allow the spruce trees along the north shore of his property to be felled or the sand-hill grass to be cut, as he considered them to be a natural protection against the encroachment of the sands of the sea. In this he displayed foresight in advance of his time. After his death the woods were allowed to be removed, with the result of the encroachment of sand on the arable fields now to be seen on that shore. It is to be regretted that this practice has not been continued.[207]

It seems that MacDonald's concerns were not widely shared. It was not until 1866 that soil erosion sparked a petition to the Island legislation. The petition involved sand hills, or dunes, on the north side of the Island, around Brackley Point, with concern expressed that shifting sands were destroying valuable property on the sea coast. Certain harbours were also filling in with shifting sands. In both cases the problem was blamed on cattle grazing on land too close to the edge of the shore, and the solution was to begin using a dredging machine to clear out the harbours.[208] It is not clear how the government reacted to the petition, or if the dredging ever took place. Methods to stop further erosion were also not evident.

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Many pieces of farming-based legislation during this period, for example, the 1844 act encouraging lime kilns, were inspired or supported by the colony's agriculture societies. Agriculture societies had a prominent role in developing agriculture in the early period. Problems in early agriculture were many on Prince Edward Island. Livestock were so scrawny and inbred that legislation eventually only allowed "well-bred" bulls to roam the Island. Farm crop rotation and manuring were not usually conducted, nor was the use of

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[207] A. B. Warburton, *A History of Prince Edward Island from its Discovery in 1534 Until the Departure of Lieutenant-Governor Ready in A. D. 1831* (St. John, N.B.: Barnes & co., limited, 1923), 170.
[208] Prince Edward Island House of the Assembly, Petitions 1866.

manure, seaweed or mussel mud as fertilizers. By the 1820s, the deficiencies of Island agriculture were obvious, and the governor of the Island, John Ready, made it his own personal mission to improve the major economic engine of the Island. Over the course of thirty five-years, numerous agriculture societies across the Island worked to improve methods in agriculture.[209]

In March 1827, Governor Ready created the Central Agricultural Society, based in Charlottetown. Between 1827 and 1842, the central society was supplemented by the gradual formation of thirteen community-based rural agriculture societies, from one end of the Island to the other. All thirteen subsidiaries fell under the authority of the central society.[210] The society's original mandate was published in the *Island Register* on 27 March 1827. The main goals were to promote the best methods of agriculture, to import new breeds of livestock, to improve farming equipment, to encourage better seed production, and to encourage clearing and cultivating the land. The society functioned as an early form of a co-operative.[211]

Over the years, the agriculture societies[212] were successful in achieving their mandate. The Central Agricultural Society, later the Royal Agricultural Society, began with importing seed grain, and continually urged farmers to grow their own seed. The Society did not mention potatoes in the early years, even though they were one of the

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[209] Vass, "The Agriculture Societies of Prince Edward Island," 31-32.
[210] Ibid., 32.
[211] Ibid., 33.
[212] Due to a dispute between the patron of the Central Agricultural Society and the Legislative Assembly, the name of the society was changed to the Royal Agricultural Society in 1845. Vass, "The Agriculture Societies of Prince Edward Island," 35.

most important crops in terms of export and a staple food for survival.[213] Their biggest challenge was encouraging scientific agriculture. The primary idea in scientific farming at that time was utilizing manure in field crops, improving breeds of livestock, along with importing and distributing modern farming implements. The societies became involved with just about anything to do with agriculture on Prince Edward Island, including fairs and exhibitions, to continually urge its mandate.[214]

The eventual demise of the Society came about due to political affiliations and crop problems. Blight became a problem in potatoes around 1845, and rust in wheat also became a problem by the mid-1800s. The Provincial Legislature somehow held the society accountable for these two major crop failures, and ordered an inquiry into their affairs.[215] From that time on, the society focused on advocating crop diversification and opened a model farm in Charlottetown in 1856. Nevertheless, the model farm may not have been managed properly and fell into bankruptcy, which also divided the members of the society due to partisan politics, and it ceased to exist by 1865.[216] The agriculture societies were important in terms of helping the struggling pioneer farming community, and definitely improved seed production, livestock, equipment, and crop management practices in the Colonial period.

Research into *The Journals of the Legislative Assembly* reveals continuous documentation of agricultural societies' activities throughout the 1850s and 1860s.[217] The

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[213] Ibid., 33.
[214] Ibid., 34.
[215] Ibid., 35.
[216] Ibid., 36.
[217] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, c.1850-1860.

Royal Agriculture Society promoted scientific agriculture by hiring experts in the field to lecture in schools.[218] In 1855, one of these lectures was documented by, John M. Stark, a school inspector. The report illustrated that farmers were not adapting to the scientific agriculture practices the agriculture societies were preaching. Scientific farming lectures had been conducted in public venues across the Island throughout that year, addressing many topics. Topics included chemistry and chemical action in agriculture, soil properties like organic and inorganic differentiation, along with the advantages of face ploughing. Other topics included the structure of plants, how plants absorb nutrients, exhaustion of the soil after continual cropping, history of Colonial agriculture, maintaining soil fertility, crop rotation, and manuring practices.[219] It is impressive to find that such sophisticated scientific lectures occurred as early as 1855, given that the majority of Island farmers did not have the opportunity to gain institutionalized education. Mr. Stark stated that the people attending the lectures had an "earnest desire" to learn scientific agriculture, but stated:

> Though I have found many attentive listeners and many minds eager for information and improvement, I have met with few of the industrial practical farmers, who possess the knowledge necessary to fit them for fully appreciating what is purely scientific even when simplified and brought home to the concerns of their everyday life. [220]

The Royal Agricultural Society's lecture series illustrates that basic science had reached the Prince Edward Island farming community, to a limited extent, in the Colonial

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[218] Vass, "The Agriculture Societies of Prince Edward Island," 36.
[219] Prince Edward Island House of the Assembly, Appendix M, Department of Education, 1855.
[220] Ibid.

period. The idea of soil exhaustion and scientific solutions were present. It appears as though the objective of educating people about scientific agriculture was primarily to promote higher crop yields, because there were not any discussions regarding the future sustainability of these new methods. The gradual incorporation of scientific agriculture into day to day farming practices would prove to have serious environmental consequences, and is another watershed in the Island's environmental history.[221]

It is also important to note that those pushing scientific farming to Islanders were often very critical of the local farmers who did not adopt the strategies they were advocating. It appears to be another example of the middle class preaching to the lower class about what they should do. In the early 1800s there was much "high farming" propaganda promoted by the agricultural societies and newspapers.[222] One of the most well known promoters was Judge J.H. Peters, who later penned an agricultural treatise for the Royal Agriculture Society. It was essentially a manual detailing proper ways to utilize manure. Peters also included a section on crop rotation, but his major idea was that growing turnips would be the saviour of agriculture.[223]

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[221] Sampson's *The Spirit of Industry and Improvement: Liberal Government and Rural-Industrial Society, Nova Scotia, 1790-1862*, offers historical context to the promotion of scientific agriculture in the Atlantic Region. His history covers the formation of liberal government in Nova Scotia and how it affected local practices. In Nova Scotia it appears that ideas of scientific agriculture and increased mechanization emerged from the elite members of society and wealthy farmers. The elite "improvers" were misguided to believe Nova Scotia could duplicate England's success in agriculture. The elites were more about celebrating their own accomplishments than accepting the natural limitations of Nova Scotia's environment. They were also more likely to maintain the British ideology of maintaining a hierarchy over the poor farmers in the society. M. Kenneth Sylvester, "Review of Books: Daniel Sampson. The Spirit of Industry and Improvement," *American Historical Review* 114, no. 2 (April 2009): 432. For more information see Danny Samson, *The Spirit of Industry and Improvement:Liberal Government and Rural-Industrial Society, Nova Scotia, 1790 -1862* (Montreal: McGill-Queen's University Press, 2008), 432.
[222] Clark, *Three Centuries and the Island*, 104.
[223] Judge Peters, *Hints to the Farmers of Prince Edward Island* (Charlottetown: Queens Printer, 1851), 7-35.

According to Graeme Wynn, some of these early scientific farming activists were overly critical of farmers without just cause. Farmers from the Atlantic Region were doing what seemed most practical and what seemed most necessary for their survival. Settlers were practicing what made the most sense and yielded results that worked for them. The soil conditions were generally not nearly as bad as in the places they emigrated from, and it would take many more years to reach exhaustion levels representative of the emigrant's home lands. It is Wynn's contention that many early settlers to the Atlantic Region were not blind to ecological destruction, because the settlers had no choice but to be close to the land and nature. Often, the choices made were not of their own choosing and influenced by larger powers. [224]

Conclusion

References to conservation of the environment and natural resources were evident in all primary industries during the Colonial period. Hunting legislation attempted to conserve valuable game and birds while at the same time trying to exterminate predators such as the Black Bear and Canadian Lynx. Fishing, by far, received the most attention. Legislation regulated valuable coastal species that were in decline, but also encouraged exploitation of less developed branches of the offshore fishery. Legislation to regulate watersheds was not intended for preservation of the environment, but reflected more a concern to facilitate economic activity. Although the Island was covered with forest at the outset of the Colonial period, forestry legislation was very limited, only attempting to curb illegal cutting once the timber and shipbuilding industries became

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[224] Graeme Wynn, "Sustainability of the Atlantic Canada Region: The Long View," (lecture, Dalhousie University, Halifax, NS, September 17, 2009).

profitable. Finally, when it came to the principal occupation, farming, the official concern over the environment revolved around soil fertility.

For the most part the state's involvement was indirect. Although it tried to curb certain practices, its main involvement in agriculture was to encourage the activity of agriculture societies. Beginning in 1820, they encouraged crop diversity, higher crop yields, and better farming practices.

Awareness of the environment or conservation or preservation of natural resources was limited in the Colonial period. Nuisance species were to be destroyed, and the forest was viewed as an impediment to progress. However, Confederation with Canada would bring shifting attitudes and more drastic changes to the environment of Prince Edward Island. These in turn, would be reflected in legislative activity and government practice.

Chapter Three: **From Provincehood to "the Break," 1873-1945**

> No other country of equal size has the giver of nature's bounty been so generous; all the very best fish, flesh and fowl are to be had here in super abundance – "Truly a land of milk and honey."[225]

The previous statement was typical of some of the exaggerated accounts of Prince Edward Island's natural resources in the post-Confederation period. However, the Island of "super abundance" continued to require legislation to regulate dwindling natural resources. One of the biggest changes that affected Island legislation was joining Confederation with Canada in 1873. Henceforth, the province would share jurisdiction with a federal government. However, natural resource regulations continued in the new Province. Hunting legislation continued to regulate game, along with a less prominent concern for protecting recreational fishing. Meanwhile, the commercial fishing industry became a minimal concern compared to the pre-Confederation time period because of the change in jurisdiction. The development spotlight fell on the agriculture industry with a proliferation of legislative activity from acts concerning the destruction of weeds all the way to the introduction of chemical substances. Finally, forestry did not receive any protective legislation, despite warnings from a few farsighted individuals. In fact, there were important examples of individuals with emerging environmental awareness in this period, which illustrates the beginning of a shift in attitudes toward environmental awareness or preservation.

The government on Prince Edward Island was constantly trying to establish itself in the years leading up to and after Confederation. The Island was granted internal self rule

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[225] D. A. MacKinnon and A. B. Warburton, *Past and Present of Prince Edward Island* (Charlottetown, P.E.I.: F. Bowen & Co., 1906), 107.

from Britain in 1851, and from that time to Confederation in 1873, the roles of the political institutions were constantly evolving. The Cabinet had to learn to work as a team, the Legislative Council had to adjust to its status as a secondary chamber, and the Legislative Assembly had to adjust to more responsibility.[226] Prince Edward Island wanted to maintain this new independent government, and it was not surprising that the Island did not join Confederation on 1 July 1867.[227] In a government that was constantly growing and evolving, environmental concern may have taken longer to emerge.

Islanders wanted to maintain their political and economic independence, and feared that local institutions would not be recognised in Confederation.[228] When the Island eventually did join Confederation on 1 July 1873, it did not create an entirely new government for the Island. The British North America Act allowed for existing provincial government institutions to continue.[229] The British North America Act was passed in 1867 during Confederation, and the act intended to balance the powers of the former province of Canada and the other provinces. The British North America Act took away much of the Prince Edward Island legislature's power, and focused it on local issues after Confederation. At the same time, interpreting the boundaries of the new divisions became a complicated issue. However, a divided government was not new. Before Confederation, the Island had to share authority with the Imperial government in London. Therefore, the

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[226] MacKinnon, *The Government of Prince Edward Island*, 86.
[227] Ibid., 125.
[228] Ibid., 125.
[229] Ibid., 136.

transition to federalism made little change in the functioning of government on Prince Edward Island.[230]

The chief jurisdictional divisions of power of the new federal and provincial governments affected the types of provincial legislation passed. For example, since the province controlled education and the federal government controlled fisheries, it explains why there was not offshore provincial fishing legislation. Briefly, sections 91, 94 and 95 of the British North America Act listed federal powers, which included taxation, banking, criminal law, marriage, court procedures, military defence, and fisheries. The provincial powers in sections 92 and 93 included local issues, such as provincial tax, public works, property and civil rights, and education.[231] This thesis focuses on the provincial areas of jurisdiction, which are the most likely to reflect local concerns and attitudes.

The Prince Edward Island government, as a part of a new Province in Canada, did not receive excess financial capital from the federal government. Nor did the Prince Edward Island economy play a large role in national finances because it was basically a limited rural agricultural economy. When the Island joined Confederation the weakness of the Island's public finances were taken into consideration with special concessions such as purchasing landed estates, a promise of continuous steam connection with the mainland, and assuming all costs with the railway. Basically, the Island economy was cash poor, and had to rely on federal grants to create provincial revenues.[232] After Confederation, the Island government quickly found that their deal for federal funding

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[230] MacKinnon, *The Government of Prince Edward Island*, 138-139.
[231] Ibid., 137.
[232] Ibid., 304-305.

was not enough. The population dropped from 109,000 in 1891 to 88,615 in 1921[233], and the decrease was blamed on an economic disadvantage from federalism with Canada. There was a consistent belief that Prince Edward Island was not receiving its fair share of federal grants in this period.[234] So, if the Provincial government was struggling financially, it would not have been easy for the government to extend its role to include environmental protection. Therefore, the Island government had to contend with a of lack financial resources at its disposal to encourage or develop preservation of the environment, even if the desire were present.

When Prince Edward Island joined Confederation in 1873, almost 90% of the population was rural, but only forty-eight years later in 1921 the Island was down to 78% rural population. The demographics were shifting toward urban areas, or outmigration, to find profitable employment.[235] The number of Islanders engaged in farming also declined, after peaking in 1901 at 21,000 people, and steadily declined to 16,661 in 1941, which may have been an even more drastic trend than the statistics suggest.[236] Even with decline in the farming sector, it was still the main source of environmental change. The post-Confederation landscape was one completely fashioned by humans, due to the small size of the Island, and due to the fact that almost all of the soil had the potential to be farmed. In 1901, 1.2 million out of a total of 1.4 million acres were farmed. The small fields often resembled the patches of a quilt, stitched together with hedgerows.[237] The

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[233] Clark, *Three Centuries and the Island*, 128.
[234] MacKinnon, *The Government of Prince Edward Island*, 308.
[235] Clark, *Three Centuries and the Island*, 128.
[236] Ibid., 131.
[237] Edward MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century* (Charlottetown, P.E.I.: Prince Edward Island Museum and Heritage Foundation, 2000), 8.

pressures from farming would have greatly reduced the available habitat for wildlife, and was perhaps one of the factors that initiated legislation to protect wildlife after Confederation.

I Hunting

In the post-Confederation period, hunting shifted from an export business to more of a recreational activity. By the late 1800s and early 1900s, "hunting for money," as it was commonly called, or the hunting of wild fowl for export markets to Boston, was just about ending on Prince Edward Island. A conservation movement began because declines in game populations were becoming noticeable. Hunters wanted to ensure the future of their sport, and government wanted to protect the economic spinoffs associated with sport hunting. This was not a local trend. The post-Confederation era saw conservation legislation not only on Prince Edward Island, but all along the Eastern seaboard in North America. Although regulation of game hunting was a big step in the evolution of environmental attitudes, many people did not abide by the new laws. In the United States for example, it was the 1900 Lacey Act that brought game conservation to the federal level. The act was established to stop the destruction of game birds for their feathers, and selling game birds for business purposes.[238] Prince Edward Island thus seems to have followed the continental trend of game bird regulation in the post-Confederation period.[239]

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[238] MacQuarrie and Guignion, "Hunting for Money: Market Gunning in Prince Edward Island," 15.
[239] For more information on the history of New Brunswick's conservation laws see Bill Parenteau, "A 'Very Determined Opposition to the Law': Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867-1914," *Environmental History* 9, no.3 (2004): 436-463.

There were particular species of wild fowl, game, and fish that consistently received protective legislation after Confederation on Prince Edward Island. Since the legislation often bundled many species together it might be best to proceed by first listing the various species under conservation.

With respect to wild fowl, species regulated by legislation significantly expanded due to the popularity or promotion of recreational hunting. These birds inhabited interior waterways, wetlands, and coastal areas. Naturalist Francis Bain described the birds of Prince Edward Island in an 1891 publication.[240] In it, he describes over one hundred native Island fowl, but of these species, only the species sought after for hunting received protective legislation.

The Island's game birds comprised a diverse list of species. Two varieties of partridge were found on the Island in 1891, the Canada Grouse and the Ruffed Grouse.[241] The Canada Grouse inhabited evergreen and wetland areas, and the Ruffed Grouse was found in drier hardwood forest areas. These birds were ground nesters that required underbrush covering, so the disappearance of the forest would have decreased partridge numbers.[242] The Plover (Bow-Winged, Golden, Ring-Neck, and Kildeer) was also a scarce species of waterfowl. Its spring and fall migration pattern brought it to Island bays and wetlands. The Plover nested around coastal areas in the sand, which left their eggs

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[240] Francis Bain, *Birds of Prince Edward Island; their Habits and Characteristics* (Charlottetown: Haszard & Moore, 1891), 87, http://ia301519.us.archive.org/3/items/birdsofprinceedw00bain/birdsofprinceedw00bain.pdf.

[241] The partridge was also regulated in the Colonial period. To reiterate, partridge or tree grouse were often terms used to describe what is now known as the Ruffed Grouse. These birds are the approximate size of a pigeon, but are an extension of the chicken family. They are characterized by brown "ruff" feathers around the neck.

[242] Francis Bain, *Birds of Prince Edward Island*, 60-61.

open and vulnerable.[243] The American woodcock was a common species that arrived on the Island by May, and inhabited the wetland areas around streams. The American Snipe was classified in the same family as the woodcock, but was more slim and agile. It too, was a choice game bird, which inhabited wetland and coastal areas.[244] The Island also hosted several species of duck. The black duck stayed within the Island's rivers all year, and nested in long grass near waterways or in sand hills. The green, teal, and blue winged ducks migrated to the Island in large flocks during the spring and fall, while Bain described the wood duck as the most beautiful variety.[245]

The harsh weather conditions in the Gulf of St. Lawrence did not allow for many species of water fowl to stay all winter.[246] These included the Great Northern Diver or Loon, but many species were transient visitors. Wild geese were common in Island waterways from the summer to the winter,[247] and migrated over Prince Edward Island in the spring on their way to breeding grounds in northern Canada. Brant also migrated to Island waterways in the spring in large flocks, until migrating farther north in June. The American Coot, nicknamed the "marsh hen," migrated to Island rivers in the summer, and made nests that floated on the water.[248]

Several species of gulls were also regulated. These included the Great Black Back, the Herring Gull, and the Kittawake. All of which remained year round,

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[243] Ibid., 61-64.
[244] Ibid., 65.
[245] Ibid., 76-78.
[246] Ibid., 73-74.
[247] Ibid., 84.
[248] Ibid., 72.

scavenging around bays and harbours.[249] Finally, "sea pigeons" received protection. It is assumed the term meant "passenger pigeon." Once extremely common in North America, the passenger pigeon was well on its way to extinction by the late 1800s because of habitat destruction and over-hunting. It is unlikely that the Island played much of a role in its destruction and unclear whether Francis Bain was speaking generally about his own province when he reffered to,[250] "....the destructive propensity of humanity, which has frightened away the Pigeons."[251]

At this point, all the species receiving regulation were finding their way to the Island naturally to spend part of their life cycle. As Bain alluded, most of these species only spent part of their lifecycle on the Island, so the regulations could only hope to preserve their numbers while they were on the Island.

1

Game legislation in the post-Confederation time period also included fur-bearing species of mammals, and corresponded to the time when fur farming became big business. Fur traders and trappers had been present in the Atlantic Region for hundreds of years, but fur had never been a major industry on the Island until fur farming originated after Confederation.[252] Charles Dalton and Robert Oulton, from West Prince, were the first people in the world to successfully raise silver foxes in captivity. The silver fox was a mutant strain of the common red fox, and until Dalton and Oulton's innovative methods

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[249] Ibid., 80-81.
[250] For an interesting aside on the extinction of the Passenger Pigeon due to global factors, see: Hogan, "An Infinite Number of 'Wood Pigeons'," 23-24.
[251] Bain, *Birds of Prince Edward Island*, 60.
[252] F. A. Stilgenbauer, "Geographic Aspects of the Prince Edward Island Fur Industry," *Economic Geography* 3, no. 1 (Jan., 1927), 117: http://www.jstor.org.rlproxy.upei.ca/stable/140351 (accessed March 25, 2010).

to breed them in captivity, silver foxes were rarely found in the wild. From that time, in 1895, "the fox days" began on the Island. In the beginning of the industry, all the silver foxes were held by private individuals in what was known as the "Big Six Combine."[253]

The objective of the combine was to keep all breeding stock within their group, in order to maintain a monopoly on the industry. However, by 1910 some breeding pairs were sold outside of this group, and the industry boomed across the Island.[254] During the First World War, the "Silver Black Fox Breeders Association of Prince Edward Island" formed to help protect the industry, and after the Great War fur remained in fashion. From 1919 to 1930 the fox industry expanded.[255] At the peak of the fox industry in 1925, a Dominion Experimental Fox Ranch was established in Summerside to study nutrition, diseases, and other problems plaguing the industry.[256] Fox pelts continued to remain marketable throughout the depression years of the 1930s.[257] However by 1932, fox farming was only worth a quarter of what it was during the peak year of 1929. Even with the Great Depression, those that were able to hold onto their money still wanted fox furs, and stabilized the market for about a decade. Like any profitable industry on the Island, the bandwagon effect ensued, and everyone wanted in. The number of fox ranches doubled by 1937 to 1,215. The trend extended all across North America and fox ranchers flooded the market. By the late 1930s, the quality of the furs was down, the supply was higher than demand, and prices fell. Meanwhile, fashion trends shifted from dark furs like

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[253] Robert Allan Rankin, *Down at the Shore: A History of Summerside, Prince Edward Island (1752-1945)* (Charlottetown: Prince Edward Island Heritage Foundation, 1980), 129-130.
[254] Ibid., 129-130.
[255] Ibid., 142.
[256] Ibid., 145.
[257] Ibid., 150.

the silver fox, to lighter and more exotic furs, and it was not long before the cost of producing the fox pelts was higher than the selling price.[258] Fox prices declined during the Second World War, and by the end of 1948 were at record lows.[259]

The value of the fur industry was reflected in the legislation on Prince Edward Island, because any fur-bearing animal that had potential marketability received protection. Fur-bearing game animals receiving protection included hares, rabbits, marten, otter, mink, wild fox, muskrat, and beaver.[260] The muskrat and beaver also were considered valuable in addition to their fur because their dams created wetlands for game birds.[261]

The Island's natural habitat included a number of fur bearing mammals that were once considered nuisances, but received protective legislation during the height of the fur era. These species included the wild red fox, though to a lesser extent than the black or silver-grey fox. The American Marten was protected due to the value of its fur, but despite being protected became extinct sometime in the early 1900s on the Island.[262] The mink was a semi-aquatic fur bearing creature, considered a nuisance because it caused damage to dams and attacked poultry or fowl eggs, but it also became a protected species during the fur era. The River Otter was also protected for its fur, however, it was almost

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[258] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 179.
[259] Rankin, *Down at the Shore: A History of Summerside, Prince Edward Island (1752-1945)*, 154-155.
[260] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island.*
[261] Randall Louis Dibblee, "The Beaver on Prince Edward Island: Seeking a Balance," *Island Magazine, no. 35,* (Spring/Summer 1994), 20-21.
[262] Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 387.

completely extinct by 1890.[263] The Muskrat was never a plentiful fur-bearing species on the Island, and was adept at damaging mill dams, yet it was protected. One of the only fur bearing mammals that was not a nuisance was the Snowshoe Hare, and it was protected because it was used both as a source of food and fur.[264] Again, the government's regulation had an economic motive: protecting valuable species to exploit, or trying to eliminate predator species that threatened economic activity.

The commercial value of beaver pelts would not have been overlooked on the Island.[265] The beaver managed to survive on the Island until the 1800s, after which hunting led to its extinction.[266] Three quarters of the land was cleared on the Island by the late 1800s, leaving little room for wildlife. Beavers remained extinct until 1908, when the government of Ontario donated two breeding pairs to the Island. The re-introduction occurred around the same time as the fur industry was booming, and it was in fact, a fur farming company that pushed the government for the 1917 beaver protection legislation. However, by 1935 the beaver was extinct once again due to over hunting. Well-known Island wildlife advocate, Robert Spurgeon Jenkins, initiated the second reintroduction attempt in the late 1940s.[267]

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[263] Ibid., 388.
[264] Ibid., 390-391.
[265] Ibid., 391.
[266] On Prince Edward Island, there is a lively debate whether or not the beaver is a native species. There is a growing collection of palaeo-fauna evidence from archaeological sites that suggests the beaver may have been on the Island for 1,500 years B.P. (David Keenlyside – Executive Director, PEI Museum and Heritage Foundation. (Personal correspondence via e-mail 24 March 2009).
[267] Dibblee, "The Beaver on Prince Edward Island: Seeking a Balance," 18-19. By contemporary standards, the beaver is considered a nuisance when their dams obstruct and flood waterways.

2

In the beginning the new province of Prince Edward Island grouped game birds and fur bearing animals together in protective legislation. In 1879, "An act for the protection of Game and Fur Bearing animals" received assent.[268] The legislation established individual hunting seasons for partridge, woodcock, snipe, wild duck, hares and rabbit, muskrat, martin, and otter. The act not only imposed hunting seasons, but also restricted taking eggs and hunting woodcock at night. The method of enforcement was through fines of up to twenty-five dollars, and was enforced by constables, policemen, and market clerks. There were no paid enforcement officers for mammals and birds at this point in 1879; in fact, the people assigned to enforce the act were fined five dollars for any "omission of duty."[269]

Another act to protect wild fowl was passed in 1884. Again, the concern was over unfair methods of hunting. The act specified how "great injury" was occurring in the practice of "wild fowl shooting" through hunting at night with torches and other types of lights because the lights unfairly drew the birds to hunters. Another restriction included cornering wild fowl in any, "bay, channel, river, creek, inlet, pond, pool, stream, lake or water, in or round the shores of this Island." At the same time "sneak boats" and "contrivances" that created an unfair hunting advantage were banned. The destruction of game bird eggs was also prohibited. The fine for violation of the act was increased up to $50.00, suggesting the need for greater deterrence. Wild fowl protected in this 1884 act

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[268] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1879.
[269] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 17.

included wild geese, brant-geese, wild ducks, loons, coots, divers, gulls, sea-pigeons, and all other aquatic birds.[270] Most of these species were popular game birds, but they now included "scavenger" bird species such as gulls.

The partridge continued to be a popular bird for recreational hunting and received its own separate protection in an 1898 act. The act must have been an attempt to increase the population, because partridge hunting was completely banned for two years and offenders were fined upwards of twenty five-dollars. Unpaid constables, policemen, and market clerks continued to be accountable for the enforcement of the act.[271] As late as 1925, the partridge closed hunting season extended between 8 April to 15 October; but after 1927, hunting partridge was only allowed every two years for one month between15 October to 15 November.[272]

The piecemeal nature of legislation governing hunting-related species evolved to the point where it was brought together under omnibus legislation, with the Fish and Game Act of 1906. Many amendments to this act occurred over the course of the next forty years. [273] The "Game Act," as it was called, was the first in-depth fish and game government legislation, even though the first version of the law in 1906 failed to include anything about the fish component of the title. The act basically re-defined closed seasons for the various protected species. These species included partridge, duck (teal, black or

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[270] Ibid.
[271] Ibid.
[272] Ibid.
[273] Amendments to the Game Act occurred in 1907, 1911, 1916, 1928, 1932, 1934, 1935, 1936, 1937, 1940, 1940, 1941, 1944, and 1945.

blue winged), plover, wood-cock, snipe, wild goose, brant, hares and rabbits, martin, otter, and "shore birds."[274]

The 1906 Game Act increased restrictions to protect wild fowl and game. It was considered an offense to destroy game bird eggs, to let hunting dogs "run at large," and to set snares for partridges. Moreover, using poison bait to kill foxes or any animal became illegal, suggesting a concern for animal welfare, or simply a desire to prevent accidental poisoning of farm livestock. As of 1906, the only game bird that was allowed to be exported was wild geese and brant, suggesting that there was an export market still, and a perception of healthy population numbers. Fines for violation of the act were typically between ten to fifty dollars, depending on the offense. Typical of the attitude toward wildlife at the time, the fines did not include killing hawks, English sparrows, owls and crows because they were all considered "nuisance" species.[275]

These early regulations had a tendency to discriminate against non-Islanders.[276] Islanders did not have buy licences to hunt or fish throughout most of this period. On the other hand, non-Islanders were fined the amount of fifty dollars[277] for hunting without a game license in 1906.The cost of a game licence for non-Islanders was fifteen dollars.[278]

The 1906 game act also created paid enforcement officers. A "Game Inspector" was appointed and paid an unlisted salary to enforce the act, investigate offences, issue

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[274] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 27-37.
[275] Ibid.
[276] MacQuarrie and Guignion, "Hunting for Money: Market Gunning in Prince Edward Island," 15. An analogy to current Prince Edward Island legislation could be charging non-Islanders double the amount for property tax. Charging those "from away" is a way the government can generate revenue from non-voters.
[277] Fifty dollars was a hefty sum in 1906, amounting to approximately $900 in 2010. Bank of Canada, *Inflation Calculator*, 1.
[278] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 27-37.

licenses, and prosecute offenders. The inspectors were also expected to help out Federal officials in "preservation of inland fisheries of the province."[279] The Game Inspector was given the authority to confiscate illegal hunting equipment and game caught during closed seasons, and had the authority to arrest poachers on the spot without a warrant. Moreover, as back up to the Game Inspector, members of the Fish and Game Protection Association were appointed "game wardens" without pay. Any violation of the "Game Act" could result in prosecution under the Criminal Code of Canada.[280]

The last striking feature of the 1906 Game Act was that it included a stipulation for education. Students under the age of eighteen were allowed to apply for a permit to collect birds, nests, or eggs for scientific or educational purposes. However, references were required from "two well known scientific men" to certify the applicants' good character.[281] The fact that the government allowed valuable game to be collected for educational purposes was an evolution in environmental attitude. Studying nature was one of the first steps in educating young people to appreciate and conserve nature.[282]

In 1907, some alterations were made to the "Game Act." Mink were added to the list of protected game. There must have been protests over the policy of charging non-Islanders licensing fees, because relatives of "bona fide" Islanders were allowed to purchase a game license at the discounted rate of $2.50. If the non-resident owned more than $325 dollars of land, with the taxes paid, he or she could get a license for five dollars. In 1907, hunting limits on the non-resident game licenses were also enacted.

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[279] Ibid.
[280] Ibid.
[281] Ibid.
[282] The study of nature became part of Prince Edward Island's school curriculum for a short time in this period, and will be elaborated later in the chapter.

Non-resident game license holders were allowed to take up to twelve birds out of the province, but the birds had to be tagged and kept "within sight."[283] The idea of charging non-Islanders licensing fees may have reflected the governments' growing interest in promoting the tourism industry. By 1900 Islanders were only beginning to realize how to capitalize from tourism.[284]

A fishing component of the "Game Act" was finally included in 1907. Fishing licenses for non-Islanders were added, and regulations were enacted for salmon, trout, and bass.[285] Daily limits were set at two salmon, twelve bass, and twenty trout. These fish were not allowed to be exported or sold, and the fines for violation ranged between ten and twenty dollars.[286]

The mid-1920s was a time in which fur was considered most valuable, and closed seasons were in place for almost every fur-bearing animal. Amendments to the statute law included regulation for the martin, otter, mink, muskrat, and, surprisingly, the raccoon and skunk. The skunk and raccoon were species that had been imported for fur farming, but when the bottom fell out of the fur market after the outbreak of the Great War, they were eventually just released into the wild. Protection was given to the fox in that same year; hunting wild foxes during the closed season now carried a hefty fine of up to two hundred dollars. [287]

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[283] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951,"38-42.
[284] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 27.
[285] Even the Federal government was concerned about salmon shortages on Prince Edward Island during this time, because references to the need for salmon protection were reported in the sessional papers of the Canadian Parliament. Wells, *The Fishery of Prince Edward Island*, 211.
[286] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 38-42.
[287] Ibid.

Why would the skunk be receiving protection in the mid 1920s? It was the height of the fox farming industry, and anything with fur had some potential for the next big economic boom. In 1913, J. Walter Jones, a future premier of Prince Edward Island, wrote a book about fur farming in Canada, which was very optimistic about the economic potential of skunk farming. After all, the skunk had been known for a number of uses in the early 1900s, including high quality fur pelts, skunk oil used to treat rheumatism, and gall bladders for the aphrodisiac trade in the Orient.[288]

During the peak of fox fur boom from 1910-1914, only the rich could afford expensive garments fashioned by black fox pelts, but skunk furs offered a cheaper alternative. Since the Island was the birthplace of the silver fox industry, there was probably no other place that was as interested in starting skunk farms. However, the price of fur collapsed as a result of the First World War, which prompted many ranchers to release their skunks into the wild. Ranchers that had raccoons also released them into the wild due to the same decline in fur markets.[289] From the First World War to the Great Depression, the fur industry stabilized and skunks continued to be protected as a possible industry. With the Great Depression, fox fur prices drastically declined, and the potential for the skunk as an industry ended. Just as quickly as they were released into the wild, skunks and raccoons became pests. In 1932 the government issued a bounty on the skunk

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[288] Rosemary Curley, "Introducing the Striped Skunk," *Island Magazine, no. 17,* (Spring/Summer 1985), 20.
[289] Ibid., 22.

for fifty cents per snout, and 5,561 bounties were paid out[290] upon proof of showing the "fore feet, head, or any other part of the destroyed skunk."[291]

By the end of the 1920s, the Fish and Game Protection Act needed some amendments. In 1928, the Game Act was basically renewed, with some revisions. The most striking were the changes to the number of species regulated. Protection now included hares and rabbits, martin, otter, mink, muskrat, and raccoon. Any shore birds along the tidal waters of the Island were also regulated with hunting seasons. For the first time, persons who hunted and "wantonly allowed it [the species being regulated] to go to waste" were penalized. The same steep fine of two hundred dollars was in force for killing wild foxes, which continued to correspond with the timing of the fox farming industry. In 1928, Islanders continued to have free access to recreational hunting and fishing resources, while the same fees as in earlier years applied to Angler's and Game Licenses for non-Islanders. Fines for violation of the 1928 Game Act ranged from ten to fifty dollars.[292]

The next major revision to the Fish and Game Protection Act occurred in 1937. Some stipulations were amended, but the "Game Act" essentially remained the same. For example, the name partridge was dropped for the correct name Ruffed Grouse. Protection of animals like hares, rabbits, otter, mink, and muskrat continued, but the raccoon was dropped from the list, probably due to the decline in marketability of furs and a perception of it nuisance potential. The act continued to protect all the previously listed

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[290] Ibid., 23.
[291] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 46.
[292] Ibid.

coastal species of birds. The fines had increased as the years progressed, and violations could now result in a fine of up to one hundred dollars. However, unwanted species of birds continued to be unprotected, and the list was expanded to include hawks, English sparrows, owls, bronze grackle, starlings and crows.[293]

The 1937 "Game Act" featured more alterations.[294] Protection of the beaver was added, as well as prevention of the destruction of beaver dams or muskrat dens. This was probably added because of their potential to create wetlands for game birds, because the fur industry was in decline. As for export species, the goose and brant were dropped, and only hares and rabbits were allowed to be exported. Perhaps this was because hares and rabbits were the last abundant game species with a market by 1937.

It was at this time that the government began experimenting with introducing Hungarian partridge in an attempt to expand the sport hunting industry, and any hunting of the new introduced species was made illegal until the species had established itself. *The Guardian* newspaper contained some debate over amending the "Game Act" in 1937 to help establish the Hungarian partridge. Poachers were using whatever loop holes in the legislation that they could find to get away with hunting Hungarian partridge at illegal times of the year. For instance, it was legal to sell game from cold storage all year round, which meant some birds were being killed and sold during the closed season by claiming they had merely been taken from cold storage.[295]

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[293] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 83-97.
[294] 1937 was the first year that hunting on Sunday was banned.
[295] "Fish and Game Act," *The Guardian 20* April 1939, p. 3.

The 1937 legislation also made it illegal to feed trout and salmon to foxes, mink or any other animal. Wildlife advocate and Provincial Game Inspector A.E. Morrison[296] warned of this destructive practice a decade before any legislation was implemented.[297] Again, the fur farming business was still profitable at this time, and it was common to feed foxes with more plentiful herring and mackerel species. Salmon and trout were not plentiful and they were needed for recreational anglers.

In 1937 Islanders continued to have free access to all natural resources, but had to abide by angling catch limits for the first time. There were limits in place for both Islanders and non-Islanders: five salmon, twenty speckled or brook trout, and no more than three rainbow trout. However, it was just a restriction and Islanders continued to enjoy hunting and fishing without any fees.

Non-resident Islanders who hunted fur-bearing animals were subject to a more expensive fifty dollar licensing fee.[298] The high licensing fee suggests that the hunting of fur-bearing animals was reserved for wealthy tourists. It was undoubtedly beyond the means of many, because a general labourer, in Halifax N.S., for example, made only $0.35 per hour at this time.[299] Moreover, fifty dollars from 1937 has $764.00 buying power in 2010.[300] Perhaps during the midst of a great economic depression, the government was attempting to lure wealthy tourists looking for an escape, and to raise some revenue at the same time.

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[296] Albert E. Morrison's role as an environmental advocate will be described later in the chapter.
[297] Prince Edward Island House of the Assembly, Game Inspector Report, 1927.
[298] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 62-69.
[299] Statistics Canada, "Canada Year Book Historical Collection," Federal Government of Canada, http://www65.statcan.gc.ca/acyb_r000-eng.htm (accessed July 20, 2010).
[300] Bank of Canada, *Inflation Calculator*, 1.

It was not until the 1940s that Islanders were required to purchase game licences if they wanted access to fishing and hunting resources. In 1941, hunting and angling permits became mandatory for everyone above the age of sixteen, except all farmers, fishermen and rural labourers.[301] Islanders' "birth right" toward natural resources had become a thing of the past.

Why did it take so long to incorporate the practice of issuing hunting licences to non-Islanders and Islanders? Any government risks voter backlash against unpopular policies. In this instance, the licensing was affecting Islanders, so the licensing of natural resources may have been a risky move for government. Previous to 1940, there might have been greater voter backlash if the fact of dwindling fish and wildlife resources were not widely known. Or perhaps the government had reached a level of development where it could enforce licensing, and wanted to preserve natural resources during the Second World War. The reasoning behind the government's decision to initiate licensing is worthy of further investigation, but is beyond the scope of this reconnaissance of environmental legislation.

The early 1940s also saw increasing awareness of the negative effects of dumping substances in fishing waterways. In 1941, an amendment added to the "Game Act" made it an offense to dispose of "lime, chemical substances, drugs, poisonous matter, dead or decaying fish, mill rubbish, sawdust or any other deleterious substance or thing," in

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[301] Glen, "Prince Edward Island Wildlife Legislation: *1780-1951*," 81-85.

waterways containing fish.[302] So, the awareness existed between the correlation of pollutants in watersheds and healthy fish.

Just before the end of the Second World War, in 1944, exportation rights were repealed for hares, rabbits and domesticated foxes.[303] This marked the end of the "hunting for money" era, and appears to have been due to shifting market trends rather than a decline in species.

Coinciding with Confederation, the pioneer era came to an end on the Island. Inevitably, that affected attitudes toward hunting because the pioneers may have hunted to help feed themselves and to fend off predators. In the post-Confederation period the focus shifted toward recreational hunting and fishing, though certain species were still considered a threat, even if they were less a menace than a nuisance. The post-Confederation period witnessed fluctuating environmental attitudes toward hunting. In fact, it was a watershed for the development of recreational hunting and fishing. Now, in addition to maintaining economically valuable native species while exterminating nuisance species, government began to introduce new species. If anyone was concerned about the effect of introducing new species on the ecological balance on the small island province, their concerns were largely ignored.

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All of these changes did not go un-noticed by some early nature observers. For the most part early observers merely recorded species present on Prince Edward Island. The most

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[302] Ibid.
[303] Glen, "Prince Edward Island Wildlife Legislation: 1780-1951," 89.

prominent of these in the Colonial period was John Stewart.[304] After Confederation, however, some observers began to describe the environment in more detail, with more awareness. They even created interest groups outside of government that worked to conserve the environment and natural resources. The first of these environmentally aware individuals was Francis Bain. Bain lived a short life of only fifty-two years (b.1842-d.1894), but in his short life he was able to document much of the Island's natural history in his journals with detailed descriptions of shells, insects, plants, birds, rocks, and fossils. Bain was highly intelligent and much of his natural history knowledge was self-taught. He was in his element quietly observing and recording all aspects of the natural environment of Prince Edward Island. He appeared to value nature for its own sake, not simply as a resource to be exploited or an obstacle to be removed. He exhibited a scientific curiosity rare for its time on the Island, though typical of many late Victorians.[305]

Naturalists in the nineteenth century depended on catching and examining specimens. In a similar vein, Bain collected specimens of many flora and fauna species. By doing so he was able to take nature observations one step further than his counterparts by interpreting how each species contributed to the local environment.[306] Bain was also interested in geology, and mapped the bedrock of the entire Island, speculated about the

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[304] Stewart, *An Account of Prince Edward Island in the Gulf of St. Lawrence,* 304.
[305] Kathy Martin, "Francis Bain, Farmer Naturalist," *The Island Magazine, no. 6,* (Spring/Summer 1979, 3-4).
[306] Ibid., 5.

Island's geological history to the best of his ability, and amassed a collection of Island fossils.[307]

In addition to observing natural history, Bain, along some other Island naturalists, formed the Natural History Society of Prince Edward Island in 1889. From there he went on to write a natural history column in the *Daily Examiner* newspaper for eleven years, and also wrote two books, *The Natural History of Prince Edward Island* in 1890 and *The Birds of Prince Edward Island* in 1891.[308] Evidence from Francis Bain's detailed journals suggests that he made no reference to the need for conservation of any species; however, his understating of the relationships between all of the species that he observed and the environment made him the first "ecologist," in contemporary terms, on Prince Edward Island.[309]

During the post-Confederation Period, there were some interest groups outside of government that were focused on the study of nature, which could be considered an important step in the evolution of environmental awareness. Among these was the Natural History Society of Prince Edward Island that Francis Bain had helped found in Charlottetown in 1889. It was very much a reflection of broader cultural trends. Worldwide interest in natural sciences peaked in the 1880s, and it was considered fashionable during the late Victorian era to pursue intellectual endeavours for leisure. Members of the Natural History Society of Prince Edward Island studied and reported on natural objects to the best of their ability. This first incarnation of the society only lasted

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[307] Ibid., 6.
[308] Ibid., 7.
[309] Ibid., 8.

until 1909. Its decline reflected larger trends, as the Victorian era ended, but it also appears that some of the Society's most prominent members had passed away, depriving it of energy and leadership.[310]

Examination of the primary records or minutes of the Natural History Society reveals that their observations ranged from looking for remains of the "sea cow" to observing the problem of aphids in wheat. But there was little sense of conservation awareness in the records of material examined or discussions. It would appear, then, that the Natural History Society was a precursor to societal environmental awareness, but was limited to thoughts regarding observational and classification practices.[311]

In conjunction with the Natural History Society, the *Prince Edward Island Magazine* provided an outlet for Islanders interested in the local environment. The magazine was published from 1899 to 1905. While it served as an outlet for natural history writers, articles pertaining to environmental conservation proved limited. Articles promoting sport fishing and natural beauty to tourists were also common. Other articles celebrated the beauty of nature through romantic descriptions of woodland and wildflowers, while some articles were directed toward birdwatchers. Descriptions of animals were sometimes printed as well as photographs of nature.[312] In the end, the *Prince Edward Island Magazine* illustrates a love of nature in writing, but that did not seem to translate into preservationist attitudes.

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[310] Cairns Winifred Wake, "Prince Edward Island's Early Natural History Society," *The Island Magazine, no.37,* (Spring/Summer 1995), 27.
[311] Natural History Society, "Minutes" (Public Archives and Records Office of Prince Edward Island, henceforth (PARO) ACC 2541/6, Charlottetown, 1889-1909).
[312] Irwin Archibald, "The Prince Edward Island Magazine," 1899-1905, http://etc.hil.unb.ca.rlproxy.upei.ca/UPEI/.

If the Natural History Society was driven by scientific curiosity about nature, other Islanders' engagement with it had a very practical motivation. In conjunction with the passage of the "Game Act" in 1906, the Prince Edward Island Fish and Game Protection Association was incorporated.[313] The association was a volunteer society with a mandate to protect fish and game through replenishing streams and forests, and to aid fish and game officials in regards to the enforcement of game laws. The group was even given legal authority to function as game wardens or constables.[314] Fish and Game Association minutes from 1907 claimed that the vast majority of Islanders were in favour of strict enforcement of the game laws. However, the association continued to find it difficult to secure enough evidence to prosecute those who violated game laws through poaching.[315]

All of this attention regarding natural history did not go unnoticed by the Island's education department. It was difficult enough for Island schools to cover the basic subjects in a given year, let alone find the resources to add new curriculum. However, by 1903 education officials were investigating natural history as a school subject. One official stated, "Permit me to direct your attention to a little book called Public School Nature Study, published by Copp, Clark Co. Limited Toronto. I think it is worthy of a place on our list of authorized text books."[316]

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[313] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1906.
[314] Glen, *Prince Edward Island Wildlife Legislation: 1780-1951*, 36-37.
[315] Fish and Game Association Minutes, 1907, PARO Acc. 2353/122.
[316] Department of Education, *Report of the Education Superintendent* (Charlottetown: Journal of the Legislative Assembly,[1900-1912])., 1903.

In 1904, the Department of Education recommended that more nature study should be conducted in schools because it was important for students to notice the natural beauty and natural law of the earth. Moreover, it believed the study of natural history would help break the strain of exhaustive mental work, and help pupils to develop accurate powers of observation.[317] For a short time there was even a director of natural study in the Education Department, named Theodore Ross (B.A.). Ross made weekly visits to an unknown number of schools, beyond the Macdonald Consolidated School at Mt. Herbert, to instruct natural studies. He helped the schools initiate greenhouses and gardens on school grounds and stated,

> In the future, much more attention will be given to the training of the children, and we confidently expect that the value of the school garden in their education will be such to lead other districts to make them a part of their school equipment.[318]

The Department of Education illustrated an interesting interpretation of "natural history." Natural history was viewed as loving flowers and gardens in an attempt to make farm life more appealing. Through this lens nature was not viewed as unbounded wilderness, but rather a neat, tidy, and bounded garden – which is the most prolific Island metaphor.

In 1905, the sentiment for supporting natural history in the classroom continued:

> With many schools vacant and with a curriculum overcrowded, one does not see much room for an addition to the work specially intended for the teacher. But it was felt that some little should be attempted in order to fix the attention of the candidate-teachers upon the wealth of material that Nature supplies for the school room....Using

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[317] Ibid., 1904.
[318] Ibid., 1904.

> lessons about the material world instead of abstract books.
> "Back to Nature" is the modern watchword in education.[319]

By 1907, teachers who were interested in teaching natural history were invited to take a course at the Macdonald Institute in Guelph, which was completely funded by the government and Sir William C. Macdonald. It appears that Sir William Macdonald was partly behind the natural history movement in schools, and even set up the Macdonald Rural School Fund to help encourage natural studies.[320] Macdonald was the founder of Macdonald Tobacco, and a grandson to a Highland laird from Tracadie, Prince Edward Island. He was an eccentric philanthropist and distributed his fortune to become the most generous contributor to McGill University. Macdonald supported "manual training" based education, which was a more basic and practical "hands-on" learning type of education. Macdonald funded the movement toward consolidation of schools in rural Canada, to promote education that was believed to be more practical for rural agriculture areas.[321] Although school consolidation and manual training were two separate concepts, the Macdonald school incorporated both theories, with natural history in the mix.

Beautiful gardens were created across many of the school districts on the Island for educational purposes, and the education officials believed that it created an awareness of the natural beauty on the Island. "It [the gardens] developed a love for flowers and

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[319] Ibid., 1905. The latter quote referenced the teacher training program at Prince of Wales College, Charlottetown, PE. Many opted to add the program to their training in the hopes that they would be able to add natural history into their curriculum when they started teaching.
[320] Ibid., 1907.
[321] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 67-69.

beautiful home surroundings and they return to the farm without the old feeling that farm work is drudgery."[322] The report continued:

> There is also a growing feeling that our system is not practical enough for the present needs; that the tendency is to educate the boy away from the farm. Something to remedy this is being attempted along the line of "Nature Study." [323]

In 1910, during the height of hysteria over noxious weeds, all schools were supplied with a textbook called, "Farm Weeds," funded by Dominion Seed Commission. However, after a decade of incorporating natural history into the school system, the Macdonald funding ran out, and local taxpayers were not interested in taking over the bill. Rural schools were in decline as were teachers to work in them, and natural studies was discontinued for a more practical manual training program. In 1912, natural studies came to an end, as evidenced by an official in the education department, who reported, "School gardening is almost a thing of the past; and with it Nature Study is also going, and all attempts at teaching the beginning of agriculture, apart from the textbook. This is due to lack of interest on part of the ratepayers."[324]

Another nature observer who was ahead of his time as far as environmental awareness was Albert E. Morrison. He was listed as one of the original members of the Fish and Game Protection Association in 1903, and later became the first preservation-minded government Game Inspector from 1928-1945. Morrison was the first individual that actively promoted preservation of nature, rather than just making general observations and classifications. A native Islander, he was born on 1 January 1862. As an

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[322] Department of Education, *Report of the Education Superintendent*, 1908.
[323] Ibid., 1908.
[324] Ibid., 1912.

adult, Morrison had affiliations with numerous educational institutions, which may have influenced his progressive outlook toward protecting nature. He was an associate of the Institute of Electrical Engineers, member of the Maritime Electric Association, member of the Society of Arts, and Fellow of the Royal Colonial Institute and Imperial Institute. His *curriculum vitae* would include a number of impressive accomplishments, including a role as a pioneer of wireless telegraphy, and a person who successfully spliced a broken telegraph cable in the Northumberland Strait in winter.[325]

If Morrison's vocation was bound up with modern forms of communication, his avocation was hunting and fishing and the natural world. Morrison helped organize the Fish and Game Association in 1903, and was also a vice-president for the Queen's County Forest and Stream Association. He is a rare example of a person who was aware of, and voiced an attitude toward, the preservation of nature for its own sake in this period.[326]

Albert E. Morrison's role as a provincial Game Inspector was very significant in relation to spreading environmental awareness. His Game Inspector reports began in 1928, when he was sixty-five years old, and presumably, semi-retired, and were published in the *Journal of the Legislative Assembly*, within the Department of Agriculture Reports. The first report written by Morrison stated that the Game Laws were excellent but meant nothing if they were not supported by an "intelligent, sympathetic

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[325] "Death Yesterday of Mr. Albert E. Morrison," *The Guardian 2* February 1953, p. 1.
[326] Ibid.

public opinion."[327] For instance he argued that the Island would enjoy greater prosperity if the public were to protect birds on their own private land.[328]

In 1929, Morrison's Game Inspector's report continued the message of preservation. Although he often used the economic value of the species as justification for conservation, his quotes revealed a deeper preservationist sentiment:

> For educated people to exterminate a wild species of living things is a crime.... The wild things of the Island are not ours to do with as we please, they have been given to us in trust, and we must account for them for the generations which will come after us. Shall we hand down our Island to our children a game-less Island, with all the shame that such a calamity will entail. We have got to answer this question, or it will soon be answered for us by the extermination of our trout and birds.[329]

Here for perhaps the first time was a public articulation of the importance of preserving nature for future generations.[330]

As the years progressed, his game reports became more outspoken about the injustices toward nature.[331] In 1931, for example, Morrison reported on the dangers of importing a foreign species, the Hungarian Partridge, because of the risk of displacing the native partridge population. He was also aware of examples of introductions of invasive species into other islands, and cited examples like the Mongoose in the Barbados and Jamaica. Morrison asserted that the expertise of the Agriculture Department should have

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[327] Prince Edward Island House of the Assembly, Appendix: Game Inspector Report, 1928.
[328] Ibid.
[329] Prince Edward Island House of the Assembly, Appendix: Game Inspector Report, 1929.
[330] Ibid.
[331] Morrison's Game Inspector reports continued from 1929 to 1945, omitting the years from 1933 to 1938; as well as 1944.

been consulted before any foreign species was introduced.[332] It was also Morrison who pointed out that trout had absolutely no protection, and that fish were wasted in very large quantities for fox feed. A common method of procuring the trout was to place sticks of dynamite in the river, create a large explosion killing the fish, and retrieve the dead fish when they floated to the top. Morrison stated, "If this is allowed to continue it will soon mean that trout fishing in this province will be a thing of history."[333]

Morrison saw the beauty of nature, that preservation was necessary for future generations, and he believed that humans did not have the right to destroy nature. "It is of vital importance to the whole province," he wrote in 1931, "that protection of fish and game be rigidly carried on."[334] While Morrison might value nature for its own sake, his arguments in favour of preservation were most often practical. By 1938, the RCMP was making some convictions under the Migratory Bird Act, and Morrison continued to utilize the argument that game bird preservation was essential to agriculture because of their insect-eating capabilities. Morrison also advocated preservation of trout and salmon for recreational fishing by tourists around this period. He reported that many of the best fishing streams were being destroyed by erosion due to the clearing of land and bushes. He was also one of the first to initiate a dialogue regarding fishing licences, believing that those who wanted to hunt and fish should be glad to pay a fee, Islanders included.

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[332] Prince Edward Island House of the Assembly, Appendix: Game Inspector Report 1931. The early 1900s brought the introduction of non-Island upland game birds, beginning with ring-necked pheasants in 1917 along with grey partridge in 1927, 1929 and 1931. The 1940s brought the introduction of the sharp-tailed grouse, bobwhite quail, and chukar partridge. Perhaps it was trial and error, but experiments of this type were risky and had the potential to displace native Island species. Harry Arthur Smith, "An Experimental Introduction of the Japanese Green Pheasant (Pahsianus Versicolor Robustipes Delacour) into Prince Edward Island" (Master of Science, Acadia University), xiii-148 (accessed 2009).
[333] Ibid.
[334] Ibid.

Whether he influenced government's decision to charge Islanders for licences is, however, unknown.

There are many examples of Morrion's eloquent advocacy of preservation in the full text of his reports. They ended in 1945, although Morrison himself lived until 1953.[335] Why Morrison's Game Inspector reports stopped in 1945 is unknown, but there are a couple of possibilities. The Second World War may have created some changes and reorganization within the provincial government departments. More likely, however, he simply retired. In 1945 he was 83 years old after all. In fact, it was reported that in the last few years of his life, ill health even forced Morrison to give up his beloved pastime, fishing.[336]

Morrison's game reports suggest that a limited level of environmental consciousness had infiltrated Island society. The extent to which the message travelled within the official government departments is unknown. In any case, Morrison's descriptive reports are invaluable when assessing impacts to the environment from 1928 to 1945. As his obituary observed, "He was devoted to his church and home, and to his native province which he knew so well and intimately. He was indeed a model citizen, whose memory will be cherished and whose example may well be cited as worthy of emulation."[337]

In summary, the post-Confederation period illustrated shifting attitudes toward hunting and the environment. The game legislation from the late 1800s to the 1940s

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[335] For more information on the Island's native species and extinction, see Doug Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 384-396.
[336] "Death Yesterday of Mr. Albert E. Morrison," 1, 5.
[337] Ibid.

protected valuable fish, game, and fowl. The intention was to profit from the lucrative fur industry, and to develop the economic spin offs associated with recreational hunting and fishing. However, it was around the same time that people passionate about nature emerged, along with societies that appreciated the study of nature. With so many regulations in such a short time it seems apparent that the natural habitat on the Island was negatively affected by human settlement in this period. At the same time, the activity probably also reflects the increasing role of government in Island life. That willingness of government to intervene would dramatically increase in the next period under study.

II Fishing

Legislation to develop the fishing industry in the post-Confederation period drastically decreased compared to the early Colonial Period because under the British North America Act, Canada controlled non-coastal based fishing. When the Island joined Confederation with Canada, the BNA Act allocated coastal fishing jurisdictions under provincial control. However, the oyster was the only aspect of the fishing industry to receive conservation legislation. All other provincial fishing legislation was basically regulated through the "Game Act" as a recreational activity. One other reason for limited attempts at encouraging the fishing industry on Prince Edward Island could have been the recessionary economy between the First World War and the Second World War.[338]

The early history of the oyster fishery on Prince Edward Island was yet another example of human induced overexploitation in the shellfish industry. Fishing methods have changed little since oysters first became a valuable commodity in the 1850s. It only

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[338] Wells, *The Fishery of Prince Edward Island*, 158-159.

requires small wooden dories and a good set of long handled tongs to earn a living.[339] Between 1886 and 1887 33,125 barrels of oysters were harvested, then in just over a decade that number dropped to 14,779 barrels, a difference of 18,346.[340] For a short time, Prince Edward Island had dominated the oyster industry in Canada, with a value of upwards of $171,000 in 1882. But the figure was down to $83,000 in 1897.[341] When oyster shortages occurred, the price went up, as did efforts to cash in on the last remaining oysters.[342] The value of the industry, and its vulnerability, appear to have attracted government's attention.

A number of regulations were introduced over time to protect the oyster industry due to its economic value. As early as 1825, the legislature passed an act to protect oyster beds due to damage from extensive exportation of the oysters themselves and from them being used in agriculture as a source for lime.[343] Despite the legislative intervention, the pressure on oyster stocks continued. The natural oyster beds on Prince Edward Island were severely damaged in the 1880s and 1890s from overharvesting the oysters and from farmers gathering mussel mud from the oyster beds to fertilize their land. In 1874 the government had addressed the oyster shortage by establishing closed seasons from 1 June to 1 September. Then in 1893, the restrictions became stricter by prohibiting fishing oysters through the ice in winter, and prohibiting farmers from taking mussel mud any

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[339] Ibid., 47.
[340] Rev. J. M. Rev Withycomb, "Malpeque Oyster at Home," *The Prince Edward Island Magazine,* November 1900, 272, http://etc.hil.unb.ca.rlproxy.upei.ca/UPEI/.
[341] Wells, *The Fishery of Prince Edward Island,* 148.
[342] Ibid., 158-159.
[343] In 1825 the colonial legislature passed an act to regulate "Fisheries" on Prince Edward Island. The purpose of the act was to pass laws and regulations to encourage the fishing industry. The fishing season was established from 15 April to 1 November. The same session of the legislature passed the act to protect oyster beds. Wells, *The Fishery of Prince Edward Island,* 109.

closer than 200 yards from live oyster beds. There was also a minimum size regulation for the first time at two by three inches.[344]

By 1898, simply maintaining natural oyster beds was not enough, and the government investigated importing oysters to create and re-stock oyster beds artificially. The federal government established a research biological station at Malpeque Bay in 1898 to study the oyster problems on Prince Edward Island, but was unable to find a successful way to deal with decreasing oyster harvests.[345] After an extended jurisdictional wrangle with Ottawa the provincial government took the oyster problem into its own hands by surveying and leasing oyster beds beginning around 1900.[346] The hope was that re-stocking and creating new oyster beds would overcome the shortages to produce an ever more valuable industry. By 1913, 5,000 acres had been leased; however, the attempts at oyster farming did not help the industry rebound. Instead it inadvertently caused an ecological disaster.[347]

Some Island oyster companies re-seeded oyster beds leased from the province. The oysters were imported from Chesapeake Bay to Malpeque Bay in 1913 and 1915. Unfortunately, these oysters contained a pathogen that quickly became known as "Malpeque Disease"[348] and by 1916, 90 percent of the oysters in Malpeque Bay were destroyed. The disease quickly spread around the coastline and within less than a decade

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[344] Ibid., 158.
[345] Ibid., 158.
[346] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 71,91.
[347] Ibid., 90.
[348] Malpeque Disease was one of the first ever epizootic diseases to hit molluscan shellfish in Atlantic Canada. By 1950 it had reached the shores of New Brunswick. In areas of infestation, the oyster mortality rate is 99 percent. For more information see the Department of Fisheries and Oceans: Sharon E. McGladdery and Mary F. Stephenson, "The Maritime Shellfish Health Program and its Role in Molluscan Aquaculture and Environmental Monitoring," Department of Fisheries and Oceans Canada, http://www2.mar.dfo-mpo.gc.ca/science/review_1996/McGladdery/McGladdery_e.html2010).

virtually all oyster beds in the province had been destroyed. The few oysters that survived the disease had a resistance, but it took a long time to rebuild this aquaculture industry.[349] *The Journal of the House of Assembly* ceased to list anything about the oyster after the mid-1930s,[350] which suggests that the industry had reached a standstill in the 1920s.

Human intervention, through the introduction of United States seed stock, caused an ecological disaster. On a more positive note, the case of the oyster in Prince Edward Island history represents early governmental awareness and response to human-induced over-harvesting in the aquaculture industry, as well as studying the science behind a disease. The ups and downs of the oyster section thus represent emerging awareness of the consequences of human actions toward the environment, even if the motivation was largely economic.

III Farming

Shifting the focus from coastal waterways back to the land, farming in the "Garden Province" became the largest legislative concern in the post-Confederation period. This contrasts with the Colonial period, when fishing legislation was the largest concern. However, with the tradition of Islanders' focus on the land, and the spread of settlement to develop an agricultural industry, farming legislation significantly expanded after Confederation. As A.H. Clark observes, "In all three provinces economic man exploited the sea, forest, and land. In this Island however, the land itself was central to his interest."[351] Some basic themes emerge from a survey of the farming-based legislation,

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[349] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 91.
[350] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1930-35.
[351] Clark, *Three Centuries and the Island*, 121.

which addressed issues such as control of weeds, soil fertility, crop diseases, and the introduction of chemical fertilizers and sprays. In addition, there was a brief concern over draining marshland for agricultural use, and some attention to problems within the honey bee industry. The importance of the agriculture industry to Prince Edward Island became clear after it became the first industry to warrant its own government department in 1901.

In the immediate post-Confederation period, land tenure changed dramatically. The Land Purchase Act, passed in 1875, was the piece of legislation that delineated the Island's new landholdings. In 1861, less than half of the Island had been owned by the occupiers of the land. These statistics changed drastically after the passage of the act, and by 1881 ninety-three percent of the Island was owned by its occupiers.[352] Farm ownership would have a direct correlation with farming practices. The number of farms increased steadily until the First World War.[353] The raw statistic suggests the powerful influence farming constituents exercised in Prince Edward Island's legislation and economy during this period, as well as the influence that farming was having on the environment.

Throughout this period the farmscape consisted of family farms with mixed crops. Oral history describes a "typical" family farm on the Island as having four to five acres of potatoes, twenty acres of grain, twenty acres of hay, twenty acres of pasture, and two acres of turnips. Average livestock numbers were estimated at eight milk cows, two sows, three pigs, two hundred hens, and sometimes a few geese and sheep. Horses held a special place in all Island farms, and received special care and attention. Many farmers

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[352] Ibid., 133.
[353] Ibid., 134.

even grew a select type of black oats, believed to contain a higher fat content, for horses.[354]

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As of August 2010, Prince Edward Island faced sensationalized news reports over an uncontrollable weed called (Heracleum mantegazzianum) or hogweed. It can grow up to five meters tall, is highly invasive, smothering out native species, and even causes erosion along river banks after it becomes the dominant species. The weed is dangerous because of how rapidly it can spread; the sap can cause serious skin burns, and even blindness if it gets in the eyes.[355] Once an outbreak was reported in 2010, the hysteria surrounding the media coverage was intense. Islanders were sensitive to the fact that the weed was dangerous and had the potential to damage the picturesque landscape and ecosystem. In the fight against hogweed, Islanders received a taste of what it must have been like over 130 years ago when noxious weeds first became a serious problem.

Like the rest of Canada, Prince Edward Island has a history with weeds overtaking newly cleared land. Both indigenous plants and invasive weeds often competed with crops. "Portu-laca" invaded Canadian wheat fields as early as 1632, and Canadian farming practices from the era often allowed exhausted fields to revert back to bush or pasture land, which created fields consisting entirely of weeds. The spread of

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[354]MacKinnon and Vass, *The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island*, 4.

[355] National Invasive Species Working Group, "Giant Hogweed National Fact Sheet," http://www.invasiveplantcouncilbc.ca/images/stories/documents/tips/Giant_Hogweed_NISWG_Factsheet.pdf2010).

weeds was a serious problem because labour resources were limited to combat the threat to crops.[356]

As farms grew in size on the Island, the ability to control weeds became a huge problem. Weed control in farming was said to be the measure of whether or not a farmer was successful. If a farmer left weeds in the field, the farming society considered the person to be "lazy," and there was a reported pride in practicing weed control.[357] Of course, weeds had the potential to undermine crop yields and quality; but on the other hand, weeds were also used as soil fertility indicators. Weeds like sorrel, corn spurry and ox-eye daisy indicated acidic soil, while white clover was an indication of good soil.[358]

A campaign to destroy weeds began as early as 1878 on Prince Edward Island with "An act relating to the destruction of Canadian Thistle." The concern over weeds remained dormant until 1906, when "an act to prevent the spread of noxious weeds" was passed. Around the same time, farming exhibitions began holding competitions, judging fields for the least expanses of weeds, and the government began publishing diagrams of weeds in an appendix of the annual Department of Agriculture reports. At one such 1916 agriculture exhibition, in Queens County, the judge of the competitions reported that wheat crops were being affected by weeds:

> The perennial sow thistle, wild vetch, and couch grass are worthy of the most noxious characteristics.... The weed nuisance is becoming a very grave question. Sow thistle, couch grass, Canadian Thistle became permanently fixed on some farms. Fencerows are habitat for noxious weeds. A

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[356] Graeme Wynn, *Canada and Arctic North America: An Environmental History,* 117.
[357] MacKinnon and Vass, *The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island,* 10-11.
[358] Ibid., 10-11.

> few days spent a year on every farm would result in a clean province.[359]

From only one problematic weed in 1878, to more weeds than easily counted in the early 1900s, suggests that something was happening to promote the spread of weeds. In 1939, another act was passed regarding the spread of noxious weeds. The timing probably reflects the role of farm abandonment in the spread of weeds, since, when farms were left unattended, weeds could spread very quickly. While outmigration had accelerated in the 1880s, and populations actually began falling during the 1890s, widespread farm abandonment only became widely noticed in the 1920s. In 1927, the number of vacant farms was estimated at 657.[360] In extreme cases complete communities disappeared, leaving only empty farmhouses.[361]

Empty farmland meant thousands of acres were reverting back to their natural state. The 1939 legislation highlighted how every person on the Island was responsible to destroy, "Ragwort, Yarrow, Wild Tansey, Orange Hawkweed, Wild Mustard, Black-eyed Susan, and Sow Thistle," and any other weeds deemed noxious. Road Foremen were assigned the task of monitoring the weed situation along the road sides. If the weed was suspected of "going to seed," the owner of the land was required by law to cut down and destroy the weed. If the land owner could not be reached, the Road foreman had the authority to legally enter the land and destroy the weed. As in the acts before it, the penalty for violation was a fine. In this case it was no less than one dollar, a small fine in

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[359] Prince Edward Island House of the Assembly, Appendix: Report, Department of Agriculture, 1916.
[360] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 136.
[361] Ibid., 45.

comparison to those for game law violations.[362] It appears that the issue of private land owner rights was cast aside in the weed acts because Road Foremen were allowed by law to enter private property to destroy weeds. This is surprising given the history of the government's reluctance to dictate what private land owners could or could not do on their property.

The *Guardian* newspaper reported a debate in the Legislature regarding the weed act on 18 April 1939. The destruction of weeds along the roadsides of the province was proving to be a difficult undertaking, and it was stated that the province was literally, "going to weeds." Although the weed problem was province-wide, this particular debate only encompassed the public land along ditches and roadsides, because whatever the statutory power of Road Foremen, dictating what should be done on private land was always a contentious issue on Prince Edward Island. However, the 1939 weed control act did in fact dictate how private land owners were responsible to destroy weeds. Critics of the act argued that the act was useless because machinery did not exist for destroying weeds along Island roads, and urged that spraying roadsides with chemicals be investigated. Particular reference was made to the difficulty in destroying the mustard weed. In an exchange between two members, one stated that mustard weed could be controlled without spraying. "I think," replied the opponent, "if you can give them the remedy you could make a great deal of money." The speaker, Mr. Hughes, countered, "The remedy is easy, pull it out."[363] Although the motive for the comment may have been

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[362] *Laws of Prince Edward Island 1939.*
[363] "Noxious Weeds," *The Guardian* 18 April, 1939.

more political than environmental in nature the exchange marked an early argument against spraying chemicals to control weeds.

Indeed, throughout this period, spraying did not generally mean spraying for weeds. It appears that spraying was only used when most necessary, perhaps for financial reasons. It was far more likely to be used in the fight against the rise of insect populations. Instead of spraying, other methods of weed control were employed, such as ploughing in the fall to expose weed seeds to sunlight and frequent cultivating in the spring time to knock down weeds before they went to seed. In addition, when grain was cut with a binder it was easier to manually remove weeds.[364]

In summary, overall weed control was physical and not chemical during the post-Confederation period. Whether or not that was the reason, the methods were evidently either ineffective or under-utilized. By 1945, the Department of Agriculture reported that the distribution of noxious weeds was becoming a serious problem in the province.[365] The weeds in question were primarily wild radish and mustard. The department blamed their proliferation from farmers using poor seed, which caused an "...infestation that is almost beyond control. Farmers should arise to the grave danger."[366]

2

Weeds were not the only threat invading Island farms in the post-Confederation period. The infamous Colorado Potato Beetle made its début, creating much anxiety among

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[364] MacKinnon and Vass, *The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island*, 11.
[365] For more information on weeds see: Ian MacQuarrie, "Stinky Willie," *Island Magazine, no. 26,* (Fall/Winter 1989), 20.
[366] Prince Edward Island Department of Agriculture, *Annual Report* (Charlottetown, PE: Queens Printer, 1945).

Island farmers. Left unattended, the pest could completely destroy a potato crop by stripping the leaves of potato plants. This leaf eating beetle (*Leptinotarsa decemlineata*) is a species native to western North America, the Rocky Mountain region. It feeds on a type of wild potato plant in that region, but once cultivated potatoes became common, it spread wherever potatoes were grown.[367] The bug infiltrated the Island's insularity by 1881, first emerging in Cape Traverse, Prince Edward Island, and by 1882 it had spread to select locations in all three counties. By 1883 there was a complete, Island- wide infestation. The bug infestation was more severe in the western end of the province, and it was feared that the same would happen in the eastern end of the province if prompt measures were not taken.[368] In 1883, "An Act to Prevent the Spread of the Potato Bug"[369] attempted to annihilate the vicious plague of hungry insects that had infested the Island's potato fields. The act described how the concern was to prevent the spread of the bug by way of appointed inspectors to monitor the "Colorado Potato Beetle (*Doryphoradecemineata*) or ten-lined spearman, or the three-lined leaf beetle (*Lenatrilineata*)." The inspectors patrolled Island school districts and, like the Road Foremen monitoring the weed situation, were given the right to enter private land and "remedy" the situation with Paris Green or London Purple, which were popular

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[367] *Encyclopaedia Britannica Online, s.v.* "Colorado Potato Beetle," accessed August 2010, http: /www britannica com/EBchecked/topic 126486/Colorado-potato-beetle).

[368] "Our Farmers' Department: Agriculture no. 19; the Potato Bug Part 2," *Summerside Journal 2* May, 1883.

[369] This act was probably influenced by Donald Ferguson, a prominent member of the Conservative government in the 1880s. He gained a reputation as an outspoken advocate for agriculture; however, he was a dealer for agricultural chemicals for Nicolas Chemical Company which may have influenced legislation aimed at destroying potato bugs with Paris green and London purple. For more information on Donald Ferguson see Dictionary of Canadian Biography: L. Frederic Driscoll, "Ferguson, Donald," Dictionary of Canadian Biography, http ./www.biographi ca/009004-119 01-e php?&id_nbr=6709&interval=25&&PHPSESSID=ivi7488a5nbfbo3ce4mpaf1587, 2010).

chemicals utilized around this period in the fight against bugs. The penalty for interfering with an inspector was five dollars.[370] The early pesticide application methods were simple, utilizing a tree branch and a tin can with holes punched into it. The chemical powder was placed inside the can, and shaken over potato plants.[371]

Early Pesticide Applicator

Image courtesy of Prince Edward Island Museum and Heritage Foundation

Paris Green and London Purple were compounds known to contain arsenic, a very toxic ingredient in insecticides from the era. One grain of arsenic could kill a human or a dog. Ten grains of arsenic could kill a cow and thirty grains, a horse. Paris Green was classified as a "aceto-arsenite" of copper, which was about fifty-eight percent pure arsenic. One pound of Paris Green per two hundred gallons of water was the typical mixture recommended for spraying on potatoes. The other option, London Purple, was an

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[370] The Government of Prince Edward Island, *Laws of Prince Edward Island 1883*
[371] MacKinnon and Vass, *The Best of the Past Traditional Sustainable Agriculture in Prince Edward Island*, 11

arsenite of lime with an arsenic content of thirty to fifty percent. It was a finer powder that could sometimes be more harmful to foliage.[372]

The debate in the legislature surrounding the 1883 "potato bug act" was reported in the Charlottetown *Patriot* newspaper on 27 April 1883. A meeting was organized to appoint an inspector and to "assess the people" for funding, less than ten dollars, for purchasing Paris Green and London Purple, names that resonated more toward descriptions of paint colours than poisonous chemicals. The legislation made school trustees into the inspectors, because most of the rural school districts elected three trustees in each district, and were practically the only level of local government in most rural communities. The meeting addressed complaints about the chemical spraying machinery being "clumsy," and that the school trustees already had too much work to do on top of inspecting the potato bug situation. However, it was hoped that prompt action would completely exterminate the potato bug. The dangers of the chemicals were noted in the debate, and there was a concern that it would be too dangerous for inexperienced people to work with the substances. Extreme care was called for so that cattle and children were not "exposed to its influence." It was even suggested that small acreages infested with the potato bug be covered with straw and burned instead of being sprayed, and that poisons were to be used only in extreme cases.[373]

That legislators were willing to employ such lethal chemicals was a measure of their concern about the insect invasion. Hysteria associated with the infestation of potato

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[372] L. H. Bailey, "Farm and Garden Rule Book: Insecticidal Substances," in , 18th ed. (Norwood Press, Mass. U.S.A.: Macmillan Company, 1911), 587, http://chestofbooks.com/gardening-horticulture/farming/Farm-And-Garden-Rule-Book/Insecticidal-Substances.html.

[373] "The Bill to Prevent the Spread of the Potato Bug was Read a Second Time," *The Patriot,* 27 April 1883.

bugs was also evident in newspaper reports from the era. The deep concern in turn illustrated just how important the potato was to the Island in terms of economics and as a food source. One of Summerside's newspapers, the *Journal,* contained much coverage of the potato bug outbreak in 1883. "Look out for the potato bug, for [of] all of the drawbacks this Island has ever had to its farming, this great scourge will prove the worst." [374] These were the opening lines in the Agriculture section on 29 April, 1883. The article concluded, "It [the potato bug] resembles Sue's 'Wandering Jew,' being proof against scorching heat, freezing cold and driving storms, that would kill any other insect."[375] The *Journal's* Agriculture section continued its coverage regarding the potato bug on 2 May 1883 stating, "Any other means but poison has proved fruitless, the false confidence and time lost by employing them have always been followed by disastrous results."[376]

The anxious potato bug reports continued in a section called "Our Farmer's Department: Agriculture" on 10 May 1883. The article referenced the positives and negatives of utilizing the arsenic-based substance "Paris Green" in the fight against bugs. The surprising aspect of the article is that there was an awareness of the danger of the toxicity of the substance, and the danger of so many people using Paris Green: "The trees and the plants could become poisoned, and so their potatoes poison man." The problem of the soil becoming saturated with the chemical was also mentioned.[377] All of the

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[374] "Our Farmers' Department: Agriculture no.18; the Potato Bug," *Summerside Journal* 29 April, 1883.
[375] Ibid.
[376] *Our Farmers' Department. Agriculture no. 19; the Potato Bug Part 2*, 2.
[377] "Our Farmers' Department: Agriculture no. 20; the Potato Bug Part 3," *Summerside Journal* 10 May, 1833.

concerns sound like contemporary debates over spraying practices on Prince Edward Island, rather than 127 years ago.

The article emphasized the fact that even though there were some negatives associated with using Paris Green, "There can be no doubt, when it refers to our public prosperity, through the saving of our great staple crop the potato. The sooner we adopt its [Paris Green] use the quicker the benefit, while if delayed, it must be after suffering great loss."[378] How could a farmer decide? If nothing else, expenditures on Paris Green were also justified by its other use as a paint.

From the beginning of the potato bug plague, positive reports surrounding the usage of Paris Green were common on Prince Edward Island. Even though the substance was known to be dangerous,[379] it was believed that Paris Green could be handled properly. An analogy compared Paris Green to the example of children causing fires with gasoline. The idea also persisted that plants cultivated in soil mixed with Paris Green, "Do not contain one particle of it in their substance." The pro-Paris Green arguments attempted to persuade readers that it did not remain in the soil or impede plant growth. An estimate of four hundred years was given, after some simple calculations, before any accumulation of Paris Green would become a problem in the soil. The writer of the article boldly stated that, "arguments against using Paris Green are childish." Finally, the article

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[378] Ibid.

[379] In fact, the U.S. Federal government enacted a law in 1910 that Paris Green could not contain water soluble arsenic for safety reasons. The substance was mixed with either plaster, flour, lime, wood ashes, or even dust from the road. Paris Green was almost insoluble with water after the federal law, and had to be constantly agitated if being sprayed.Bailey, *Farm and Garden Rule Book: Insecticidal Substances*, 587.

stated that the profitable production of the potato could only be accomplished by the use of Paris Green.[380]

Such arguments illustrate two aspects of the issue. First, the frenzy surrounding exterminating the potato bug plague was high. Second, even though the negatives surrounding the use of the substance were known to a limited extent, productivity or economic reasons overruled the safety argument. Anyone who said otherwise was considered "childish." The narrative surrounding the potato bug could be said to exemplify the environmental attitude from the post-Confederation period: emerging, but generally short-sighted.

A few months after the pro-Paris Green newspaper reports, poisoning problems became evident after the first season of heavily applying Paris Green in the fight against the potato bug:

> Neglect to provide measures this season to exterminate the bug means expense of purchasing pans, shakers and Paris green; followed by the constant strain of labour in applying the poison, and the loss of cattle and the accidents to human beings, which result if the use of Paris green becomes as general in our potato fields as it is in other parts of the American continent. Both Potato Bugs and Paris green are enemies to be shunned. "Away with both," should be the cry of our people.[381]

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[380] "Our Farmers' Department. Agriculture no. 20; the Potato Bug Part 3," *Summerside Journal,* 10 May 1883.

[381] "Editorial," *The Examiner,* 16 August, 1883. Quoted in D. Edward Ives, *Lawrence Doyle: The Farmer-Poet of Prince Edward Island; A Study in Local Songmaking* (Orono, ME: University of Maine Press, 1971), 148.

A local news item from the Western end of the Island echoed the backlash against the near hysteria of early 1883: "The potato bug may be bad enough, but we think they could not do any more harm than a swarm of mill rats which infest this neighbourhood."[382]

Nonetheless, a high state of vigilance seems to have prevailed in many localities. Up in Lot 13:

> The potato bug is daily looked for, but every precaution is being taken to prevent its spread, as inspectors have been duly appointed and funds voted at the annual school meetings to give them a warm reception upon their first arrival. [383]

In the Brae, the battle had already been joined:

> The potato bug is quite numerous in this vicinity, but owing to the vigilance of our farmers they are not allowed to do much damage.[384]

The battle against the potato bug resumed in 1884:

> The potato bug has made his appearance here again notwithstanding the fact that Mr. Ferguson's bug act has had the effect of ridding nearly every district in the province of the pest. The farmers are making war against them and we think that between the two the poor bug will have pretty a slim chance for life. [385]

A correspondent from Alberton adopted a similarly hopeful tone:

> The mosquito and the bumble bee are upon us; if the potato bug followeth not we shall be thankful.[386]

Another report suggested the act was limiting, but not eliminating, the pest:

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[382] "Local News: West Devon," *Summerside Journal* 21 June 1883.
[383] "Local News: Lot 13 Notes," *Summerside Journal* 5 July 1883.
[384] "Local News: Brae Notes," *Summerside Journal* 26 July 1833.
[385] *Summerside Journal* 27 July 1884.
[386]"Alberton Correspondence," *Pioneer* 1 July 1884.

> The festive potato bug is reported to be at work at Tignish.
> Its progress is however hampered by the 'bug act' of '83.[387]

An editorial from *The Pioneer* acknowledged that the potato bug problem continued in 1884: "The man or boy with a Paris green sprinkler in his hand is no longer an object of curiosity... except to the bugs."[388]

Another method of fighting the potato bug was the "bug knocker," which was believed to have been invented by Allen Hunter from Dundas, Prince Edward Island.[389]

> It is pushed along between every second row like a wheelbarrow, and the bugs are knocked off by revolving beaters and collected into a box attached to the machine. A man will go over an acre of potatoes in an hour. The field which was likely to be destroyed is now pronounced out of danger, and the machine is likely to prove a blessing to the farmers of P.E. Island and a source of profit to the ingenious inventor.[390]

Potato "bug knocker"

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[387] "Home Racket," *Pioneer* 5 August, 1884.
[388] "Editorial," *The Examiner*, 1888. Quoted in Ives, *Lawrence Doyle: The Farmer-Poet of Prince Edward Island; A Study in Local Songmaking*, 148.
[389] Ives, *Lawrence Doyle: The Farmer-Poet of Prince Edward Island; A Study in Local Songmaking*, 148.
[390] Quoted in Ives, *Lawrence Doyle: The Farmer-Poet of Prince Edward Island; A Study in Local Songmaking*,148-149.

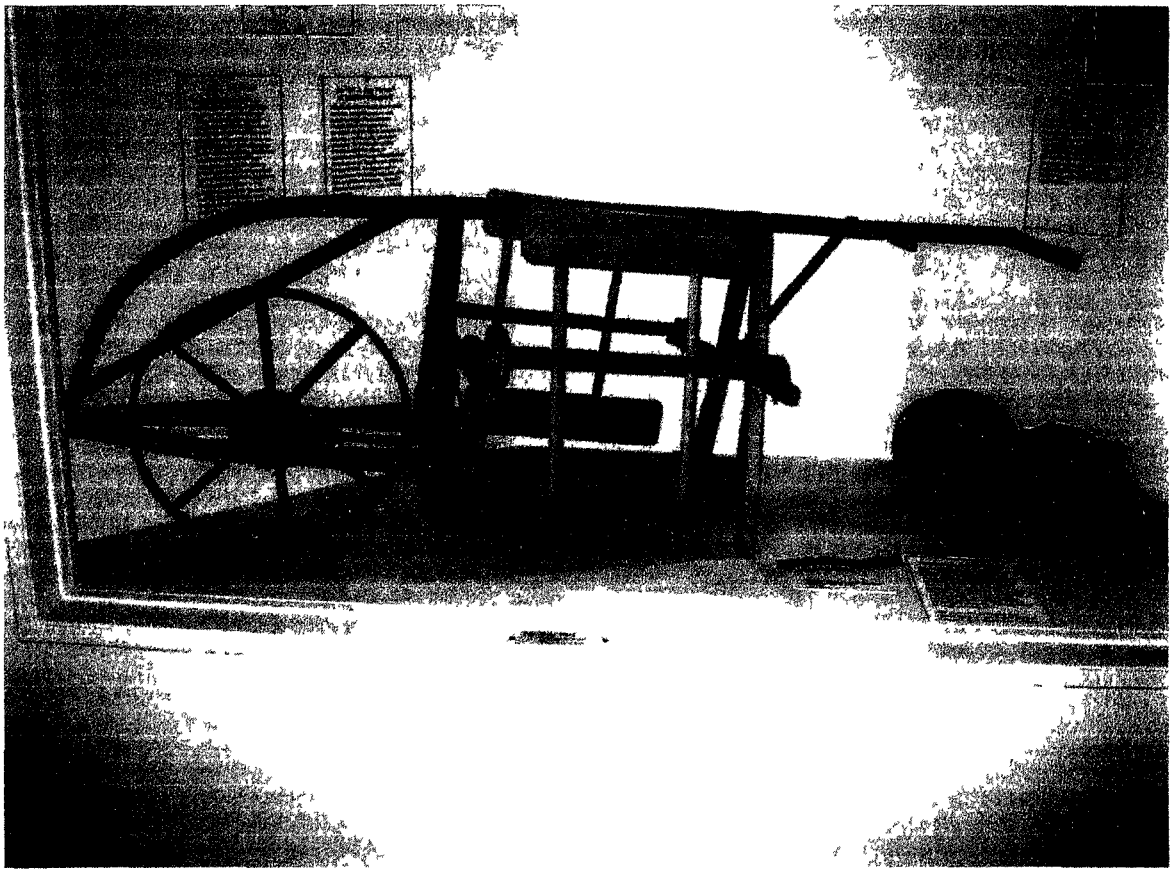

Image courtesy of O'Leary Potato Museum, Prince Edward Island.

Even with all the ingenious local inventions for pest control, the potato bugs did not go away. But like most media frenzies, the initial panic faded after a short time. The bugs were certainly not annihilated, and became another one of nature's threats that farmers had to contend with on a season-to-season basis.

The potato bug continued to be a chronic problem for Island farmers throughout the 1880s and 1890s, and even became a subject for local song makers. The following songs were transcribed by folklorist Sandy Ives through oral interviews c.1965-1970 in the eastern end of the Island. They often poke gentle fun at the initial hysteria the potato beetle had aroused. The author of the following song is unknown, and some lines are missing; however, it is believed to have originated in the early 1880s or 90s:

1.
Now, Tom by the way we are both getting gray
And our time in this country's not long,
But bedad while we're here we must keep in good cheer
And I'll now sing a bit of a song
2.
It's just past ten years, how short it appears,
My stars how this time slips away,
Since I've been to town and the news spread around
That the bugs have come over the sea.[391]

Another fragment of a similar potato bug song referenced government involvement:

1.
O ye government men with your interest in hand,
But [a hope he] sure none the best,
They had a meeting last night and they wasted the light
Til' two in the morning next day.

2.
They preached about drugs for to poison the bugs
That were coming far over the main;
They're expected to land but I'll tell you when,
When winter comes where will they go? [392]

The fight against the potato bug also continued in the official literature, with an evolution from powdered substances such as Paris Green to liquid sprays. Evidence of the shift occurred in Department of Agriculture reports in 1918, which documented how to mix and spray "Bordeaux Mixture, poison for the Colorado Potato Beetle."[393] Reports regarding the spraying of insects became common, and the provincial government even offered financial assistance for spraying by 1935. Surprisingly, after the initial potato bug

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[391] Ives, *Lawrence Doyle: The Farmer-Poet of Prince Edward Island; A Study in Local Songmaking*, 149.
[392] Ibid., 149-151.
[393] Bordeaux Mixture was used extensively before modern fungicides. It consisted of a mixture of lime, water and copper sulfate. It was used to kill fungi and insects. Sometimes Bordeaux Mixture was used as an insecticide by mixing in white arsenic. (*Encyclopaedia Britannica Online,* s.v. "Bordeaux Mixture" accessed August 2010, http://www.britannica.com/EBchecked/topic/73899/Bordeaux-mixture).

legislation, reportage on the potato bug remained minimal, suggesting that the early methods of bug control at least worked to ease the hysteria associated with the potato bug. The bugs did not go away and were always a problem, but now at least Island farmers were not defenceless against this new invading pest. The real significance of the episode was to usher in the use of chemical pesticides in the Province's agricultural sector.

3

Spraying did not encompass only the potato bug, but also grew to include spraying for Blight. Potato Blight or (Late Blight) has been a widespread problem for potato farmers at least since the Irish potato famine in the 1840s. It is a fungal disease that often occurs during wet weather, and which causes the potato to rot while in storage.[394] Blight first ravaged Island potato crops in the 1840s, causing much hardship for new settlers, and other potato diseases increased in frequency throughout the post-Confederation period on Prince Edward Island.

The government could do little to stop the spread of Blight until the advent of various types of chemical sprays. Blight eventually drew the attention of agriculture officials. Beginning in 1909, the Department of Agriculture began aggressive experiments with the previously mentioned spray, Bordeaux Mixture, in a mixture of eight parts bluestone, four pounds lime, and one hundred gallons of water, against the prevention of Late Blight.[395] The Department described how in the years leading up to

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[394] Michael Allaby, "Late blight of potato." A Dictionary of Plant Sciences,1998. In *Encyclopedia.com* Assessed 6 April 2010, http: /www encyclopedia.com/doc/1O7-lateblightofpotato.html.
[395] MacKinnon and Vass, *The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island*, 12.

1909, blight had been a widespread problem, which significantly decreased the production of potatoes. By 1909 Bordeaux Mixture had been a useful method of Blight control for twenty years, but the Department complained that Island farmers had not adopted its general use. The early 1900s marked the beginning of the Blight problem on Prince Edward Island, according to the agriculture officials at least, and it continues to be a battle that current farmers know all too well. A quote from 1922 illustrated the Department of Agriculture's propensity to push spraying methods in general, and more specifically, Blight:

> The growers would have a number one product if they keep plants covered with Bordeaux spray which if properly mixed and applied will prevent blight, even in the dampest seasons.[396]

The 1920s rise of the seed potato industry elevated the desire to combat blight. Anything that threatened the province's reputation of a disease-free Island had the potential to negatively impact the potato industry and the economy.[397] In 1927, The Department of Agriculture stated that the Prince Edward Island Potato Growers Association had reported the demand was so great for spray material that they had difficulty meeting the demand. The association boasted that there was "not one complaint of blight rot." The 1927 report also made reference to farmers purchasing "dusters" as illustrated in the picture below.[398]

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[396] Prince Edward Island Department of Agriculture, *Annual Report*, 1922.
[397] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 134-138.
[398] Prince Edward Island Department of Agriculture, *Annual Report*, 1927.

Potato "duster"

Image courtesy of Prince Edward Island Museum and Heritage Foundation

By 1928, the amount of potatoes planted in this era peaked at 51,890 acres, and approximately 62 percent were seed potatoes.[399] Even with the help of new spraying methods farmers continued to experience difficult years. In 1928, only one year after promising reports from the Department of Agriculture, insects and blight returned with a vengeance. Just when it appeared Nature seemed to be under control, conditions reverted very quickly. In fact, damage from blight was reported sporadically, depending on the year, throughout the mid-1920s to 1945 period. By the end of the post-Confederation period, complete potato crop failures from blight were being noted in areas that were not

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[399] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 137.

sprayed. Lack of spraying equipment and wet weather were blamed as the cause.[400] Science, in this case, chemical sprays, was seen as the solution.

4

Even as the fight against blight continued, another serious disease that caused rot in potatoes emerged in the 1940s. Bacterial Ring Rot originated in Germany in the 1800s and spread to the United States and Canada throughout the 1930s and 1940s. It is caused by a bacterium called "*Clavibacter michiganense subsp. sepedonicus.*" The bacterium can survive for three to five years in places where it has touched, and usually enters the seed potatoes when they are cut for planting.[401]

In 1941, legislation to prevent Bacterial Ring Rot was passed for the first time on Prince Edward Island, and by 1945, strict legislation was in place to prevent Bacterial Ring Rot in potatoes. Growers received a large fine of one hundred dollars if they did not disinfect areas where it occurred. In an effort to keep the bacterium from entering the Island, seed from outside of the province could no longer be planted without a permit.[402]

5

As if pestilence, weed infestations, and bacterial diseases were not enough, concerns over soil fertility continued in the farming industry. In earlier years, with the abundance of newly cleared land, soil fertility was not as much of a problem, however by the time the Island joined Confederation, the land must have been showing signs of exhaustion. After Confederation, lime companies continued to be incorporated, suggesting the farmer's

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[400] Prince Edward Island Department of Agriculture, *Annual Report*s, 1920-1945.
[401] C. Randall Rowe, A. Sandy Miller and M. Richard Reidel, "Bacterial Ring Rot of Potatoes," Ohio State University, http://ohioline.osu.edu/hyg-fact/3000/3103.html (accessed 6 April 2010).
[402] Prince Edward Island Department of Agriculture, *Annual Report*, 1942.

reliance on lime for reducing the acidity of the soil in farmland. According to the Department of Agriculture reports from as early as 1902, officials were conducting experiments with clover as a source of nitrogen for soil. By 1921 the Island began manufacturing its own limestone. There was a quarry at Miminigash, in the western end of the province and its method of "pulverizing" limestone was described as excellent for taking the acidity out of the soil.

Reportage on soil fertility became a common theme throughout the 1920s.[403] By the interwar period, local lime, seaweed, mussel mud and crushed shells were increasingly seen as old-fashioned and inadequate soil enrichers. Just as chemicals had entered the fight against pests and diseases, so now they were enlisted to enhance the productiveness of Island fields. Part of the push came from the emerging seed potato industry.

By the mid-1920s, The Prince Edward Island Potato Growers Association began importing chemical fertilizers by boat, directly from Baltimore, Maryland, to ports in Summerside and Charlottetown. From 1927 onward, thousands of tons were imported per year and the available supply was often less than the demand. In the beginning, the Potato Growers Association took on the responsibility of distribution of fertilizer to farmers. An impressive 20,000 tons of fertilizer were imported in 1928. From this point on, the implications for the environment and the soil were forever changed.

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[403] Prince Edward Island Department of Agriculture, *Annual Report*, 1902-1920.

In 1930, a slogan proclaimed that, "a generous application of fertilizer improves the fertility of the soil. The old theory that chemical fertilizers ruin your land is no longer discussed."[404] Not only were cash crops chemically fertilized, but this era also marked the beginning of a trend of fertilizing pasture lands. Fertilizing pasture land was another example of alterations to the natural environment.[405]

Fertilizer was more difficult to afford during the years of the Great Depression, resulting in decreased usage and crop yields, and around 1936, the depressed economy caused a reversion to traditional methods. More limestone was imported and farmers utilized more natural Island deposits from the Island's bays and rivers. This trend, however, was short term.[406]

The mid-1920s to 1945 period marked a dramatic increase in the importation of chemical fertilizers and ground limestone. The Department of Agriculture was applauding itself for its policy advocating the use of lime and barnyard manure as methods to increase soil fertility. However, by 1941, the consequences of overusing commercial fertilizers and underusing lime was becoming evident in reports of "lack of life" in some soils.[407] It appears as though artificial joy, known as chemical fertilizer, only lasted a short time.

c.1939 Fertilizer Advertisement

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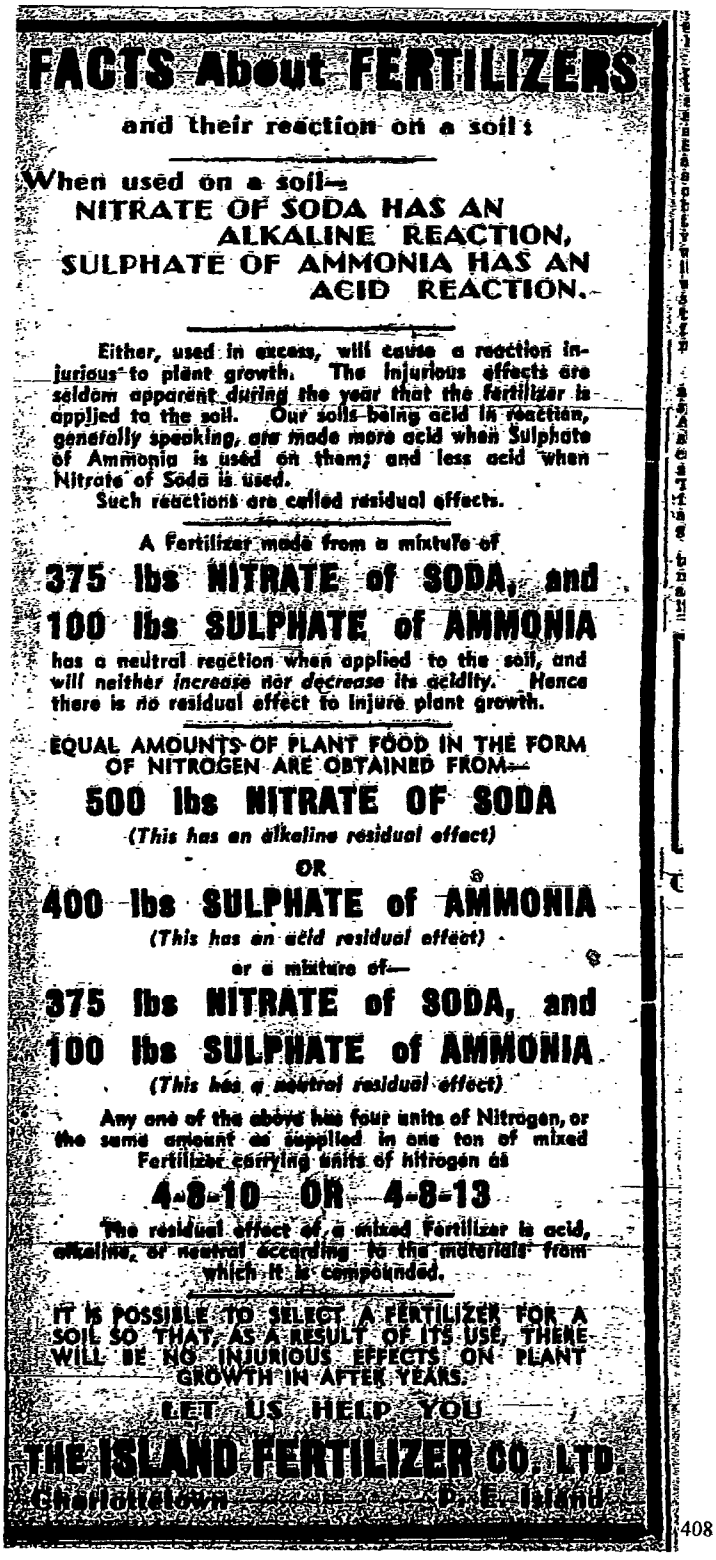
[404] Ibid., 1920-1930.
[405] Ibid., c.1935.
[406] Ibid., c.1936.
[407] Ibid.



FACTS About FERTILIZERS

and their reaction on a soil:

When used on a soil—

NITRATE OF SODA HAS AN ALKALINE REACTION,

SULPHATE OF AMMONIA HAS AN ACID REACTION.—

Either, used in excess, will cause a reaction injurious to plant growth. The injurious effects are seldom apparent during the year that the fertilizer is applied to the soil. Our soils being acid in reaction, generally speaking, are made more acid when Sulphate of Ammonia is used on them; and less acid when Nitrate of Soda is used.

Such reactions are called residual effects.

A Fertilizer made from a mixture of

375 lbs NITRATE of SODA, and

100 lbs SULPHATE of AMMONIA

has a neutral reaction when applied to the soil, and will neither increase nor decrease its acidity. Hence there is no residual effect to injure plant growth.

EQUAL AMOUNTS OF PLANT FOOD IN THE FORM OF NITROGEN ARE OBTAINED FROM—

500 lbs NITRATE OF SODA

(This has an alkaline residual effect)

OR

400 lbs SULPHATE of AMMONIA

(This has an acid residual effect)

or a mixture of—

375 lbs NITRATE of SODA, and

100 lbs SULPHATE of AMMONIA

(This has a neutral residual effect)

Any one of the above has four units of Nitrogen, or the same amount as supplied in one ton of mixed Fertilizer carrying units of Nitrogen as

4-8-10 OR 4-8-13

The residual effect of a mixed Fertilizer is acid, alkaline, or neutral according to the materials from which it is compounded.

IT IS POSSIBLE TO SELECT A FERTILIZER FOR A SOIL SO THAT, AS A RESULT OF ITS USE, THERE WILL BE NO INJURIOUS EFFECTS ON PLANT GROWTH IN AFTER YEARS.

LET US HELP YOU

THE ISLAND FERTILIZER CO. LTD.

Charlottetown [illegible] P. E. Island

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[408] *Guardian* 20 April 1939.

6

The major environmental trends within agriculture between 1873 and 1945 often took on the nature of crusades: to battle and eradicate weeds, the campaign against the potato beetle, the advocacy of pesticides and chemical fertilizers. Within these broad trends, government also addressed many minor issues. Among them were the clearing of marsh land and disease in the honey bee industry.

When conventional methods of maintaining land begin to fade, the only other way to acquire fertile land is to clear new land. On an island "new" land was inevitably limited. One option for Island farmers when choice land became hard to acquire was draining marshland. Prince Edward Island's area is approximately 1.4 million acres, of which 72,490 acres are considered wetlands, and only twenty percent, or 15,420 acres, are considered salt marshes. Salt marshes are resilient ecosystems because they are immune to evasive species of weeds, as well as having many other unique attributes.[409] Throughout this period, however, Islanders did not understand the interconnectedness of all the plant, animals, and organisms in the web of life, and how destruction of marsh land disrupted the ecosystem.[410] To them marshland was, in agricultural terms, wasted potential.

On Prince Edward Island, marsh lands have been altered ever since the Acadians' dyking practices. In the post-Confederation period, as farmers tried to squeeze as much production as possible out of the Island landmass, they turned once again to the marshland. In 1895, "An act for the Reclamation of Marsh Lands" was passed by the

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[409] Curley, "The Essential Salt Marsh," 20.
[410] Ibid., 26.

Legislative Assembly. The text of the act noted that there was a great quantity of land "overflowed" by salt water that would be considered of greater value if it could be drained and put into use. A commissioner of sewers was appointed to devise methods of dyking and draining the marsh land, which was accomplished through the construction of weirs and aboiteaux.[411] Due to the large number of stipulations within the text of the act, it must have been considered a very important undertaking.

Interest in draining marshland peaked in the early1900s, but little mention occurres afterward in the official legislation, presumably because the costs versus productivity were not favourable. Construction of aboiteaux occurred around 1900 at Mount Stewart,[412] and by 1916, "Under Draining" demonstrations were being carried out in the Mount Carmel area. Thereafter, however, there was little mention of land draining in the official legislation.[413] Draining marshes for agricultural land suggests that they were not considered valuable, and the future consequences to the ecosystem were not prioritized. Marsh lands were considered more of a hindrance to agriculture and a nuisance because they were breeding areas for insects.[414]

By the end of the 20th century the Island had lost over fifty to eighty percent of marsh lands through conversions to agricultural land. Almost all marsh land had been altered by some kind of ditching, dyking or draining. Some marsh lands had even been

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[411] Aboiteaux were introduced by the Acadians in the 17th Century. They are essentially wooden channels with a clapper valve that allowed marsh land areas to drain at low tide, and prevented the water from returning at high tide. This method allowed Acadian settlers to farm salt marshes. (Universite De Moncton).
[412] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1900.
[413] Prince Edward Island Department of Agriculture, *Annual Report*, 1916.
[414] Curley, "The Essential Salt Marsh," 20.

saturated with diesel fuel and burned in the spring in attempts to control mosquitoes. This destruction of marsh land has been a large alteration of the Island's natural environment.[415]

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While some farmers were carrying out a war against pestilence with Paris Green, other farmers were trying to make a living from insects. The bee farming industry was always small compared to other industries on Prince Edward Island. However, small as they may have been, and whether they were aware of it or not, bees were particularly important to every farming operation for pollination purposes. In 1920, bee populations on the Island faced their first problem with infectious and contagious disease. Provincial legislation involved sending inspectors to check colonies for the disease, in hopes of eradication, in "An act for the suppression of Infectious or Contagious Diseases among Bees." [416] The pandemic marked a turning point in the bee industry, illustrating that the Island's natural insularity did not necessarily make the Island immune to diseases.

IV Forestry

Forests play a very important ecological role within island environments. Nevertheless, in the early Colonial period, forest conservation was a minimal concern, due to the prevailing attitude that the forest was an obstacle to overcome in the settlement of Prince Edward Island. During the 1700s and all of the 1800s, forestry was considered very important for heating, lumber, and the shipbuilding industry. However, by 1900

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[415] Ibid., 28. (For more information on marsh land see: W. Lawrence Watson, *The Prince Edward Island Magazine*, "Swamp Land," August 1900, 192, http://etc.hil.unb.ca.rlproxy.upei.ca/UPEI/ (accessed 2009).)
[416]The Government of Prince Edward Island, *Laws of Prince Edward Island 1920.*

over-cutting and the collapse of the shipbuilding industry had made forestry an almost negligible part of the Island economy.[417] Given the limited size of the Island's forests the decline of the industry might have been anticipated, yet, the late 1870s and 1880s did not witness any concern or legislation regarding the forest. The first forestry-related act from this period related more to horticulture, in an act to prevent the spread of "Black Knot,"[418] a disease in fruit trees. The text of the act stipulated that all Islanders were responsible for cutting and burning any Black-Knot found on plum and cherry trees. The main concern seemed to be to encourage development of the horticultural industry, because Fruit Growers Associations were being established during this time period.[419]

Aside from the care of fruit trees, the main legislative concern regarding forests was the prevention of forest fires. An act to "prevent the destruction of woods by fire" was passed in 1901.[420] Further concerns over forest fire prevention continued in 1919, 1921, 1934, and 1939.[421] The legislation regarding forest fires was probably due to concerns over loss of valuable timber, loss of firewood, loss of fences, loss of soil fertility, blackened landscapes, and destruction of valuable game. However, enforcing the fire prevention would have been difficult due to lack of paid officials and large areas to patrol.[422]

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[417] Clark, *Three Centuries and the Island*, 145.
[418] Black Knot is caused by a fungus and effects plum and cherry trees. (*Encyclopaedia Britannica Online*, s.v. "Black Knot Disease," accessed August 2010, http://www.britannica.com/EBchecked/topic/67975/black-knot).
[419] *Laws of Prince Edward Island, 1895.*
[420] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island* 1901.
[421] Ibid., 1900-1939.
[422] Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis*, 58.

Aside from concern over forest fires, the early 1900s marked the first attempt at forest conservation. The idea of forest conservation emerged in the legislature in 1903 with an act to establish a "forestry commission."[423] The act to establish the commission was passed in 1904, and three men were assigned to prepare a report regarding the Island's forests. The conclusion of the report predicted a "timber famine" if the current cutting practices continued. Their solution to prevent a timber famine was to educate citizens about reforestation and to promote Arbour Day as a holiday where citizens could devote a few hours to planting trees. Finally, the commission also recommended the creation of a tree nursery to assist in creating hedgerows and in forest enhancement.[424] The commission could be considered the first attempt at forest conservation on Prince Edward Island. Perhaps the appointment of the forestry commission had been inspired by to Rev. Father Burke.

1

To date in Island history, the number of people with any sort of environmental awareness had been rare: Captain John MacDonald with his concern for coastal erosion, Francis Bain with his scientific love of nature, and though his public advocacy of wildlife protection still lay in the future, A.E. Morrison. To this list must be added Father A.E. Burke, the first outspoken advocate for forest conservation on Prince Edward Island.[425]

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[423] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1903.
[424] Prince Edward Island Department of Agriculture, *Annual Report*, Forestry 1904.
[425] Father Burke had a tremendous energy and range of interests such as being a leader in the "fixed link" debate, however was ardent self promoter. For more information on Father Burke see: D. A. MacKinnon and A. B. Warburton, *Past and Present of Prince Edward Island* (Charlottetown, P.E.I.: B. F. Bowen, 1906), 731.

Father Burke had an interesting background.[426] Besides his pastoral work, he threw himself into politics, was an amateur historian, led the local crusade for a fixed link, and headed an impressive list of local organizations. He was also headstrong, volatile, and intensely ambitious. In 1904 Burke had became vice president of the Canadian Forestry Association, which focused on a mandate of forest preservation due to the forest's influence on climate, fertility and water supply.[427] Upon joining the association, Burke commented that Islanders were becoming sympathetic to reforestation because they were beginning to understand the value of the forests.[428]

One of Burke's crowning, environment-related achievements occurred when he made a speech in front of the Federal House of Commons regarding the destruction of forests on Prince Edward Island. In his speech, he urged reforestation policies, and demanded support from the Federal Department of Forestry.[429] After this speech, Burke went on to write an article concerning the forests of Prince Edward Island, which was printed in the Canadian Forestry Association's 1902 publication. Burke described the externalities associated with forest clearance in great detail, such as windswept fields and dried-up springs. But he also described forest clearance as something that deprived Islanders of pleasure and "healthfulness," which reflects more of a preservationist attitude. Burke described a looming shortage of wood which, "...threatens us with

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[426] Art O'Shea, *A. E. Burke* (Charlottetown, P.E.I.: Clarke Printing, 1993), 25-27.
[427] Ibid., 29.
[428] Ibid., 30.
[429] Ibid., 29.

permanency if something be not done at once to repair the ravages we have thoughtlessly made on our forest."[430]

Burke's solution to the problem was protecting the remaining forest through provincial and private re-forestation projects. He believed the government should incorporate policies of planting one tree for every one cut down, as in Germany, along with educating the public.[431] Of course, Burke's complaint was that the government had allowed so little forest to remain.[432] He argued that forest clearance had negatively affected, "sanitary, climatic, and aesthetic conditions of life amongst us, and greatly reduced the agricultural capabilities...," adding, "the settlers' short-sightedness and the State's neglect have brought all this trouble upon us." The situation was even more difficult to regulate compared to other provinces because most of the land on the Island was privately owned, leaving the government with only 16,000 acres of Crown Land for potential forest reserves.[433]

In conclusion, Father Burke basically utilized three arguments in advocating forest preservation: preserving the forest for its economic value, preserving the forest for aesthetic value, and preserving the forest to be close to nature and God.[434] Burke was the first Islander to advocate forest preservation, and was another Islander representing an emergent environmental sensibility. It is difficult to measure how much Burke's message infiltrated the provincial government and affected public policy, or how many woodlot

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[430] Father Rev Burke, *Forestry in Prince Edward Island* (Government Printing Bureau: Canadian Forestry Association,[1902]).
[431] Ibid.
[432] It should be noted that Burke was a partisan Conservative, and the government in power was Liberal.
[433] Father Rev Burke, *Forestry in Prince Edward Island* (Government Printing Bureau: Canadian Forestry Association,[1902]).
[434] Ibid.

owners practiced what he preached; however, pioneering individuals such as Burke were uncommon in this period and his activism helped to shape Island forests towards what they are today. Undoubtedly, there are still stands of forest that were preserved by Burke's message of conservation. Dare one say that in many ways, Burke was a lone voice crying in the wilderness?

Even with Burke's forest conservation campaign, the dominant general attitude toward the forest was that it was an obstruction that had to be overcome and a source for utilitarian purposes. For example, the concept of preserving the old growth forest for its intrinsic value was not known at this time.[435] Lack of regard for old growth forest could be exemplified by the Land Commission of 1875, which described the last traces of the old growth forest in terms of their economic value and not because they were the last remaining original hardwood forests.[436]

Conservation and forest management evolved only gradually throughout the 1900s.[437] The speed with which the Island's forest had been clear-cut hinged on many factors; however, by 1880 clearance rates slowed down as the forest declined and the amount of cleared land reached its peak around 1911. It was not until the 1930s, for the first time since permanent European settlement, that forest re-growth occurred.[438]

To conclude, forestry legislation in the post-Confederation period had some gaps in the coverage. Aside from the "Black Knot" prevention act; and the fire prevention act

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[435] Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis*, 111.
[436] Ibid., 142.
[437] McAskill, *The People's Forest*, 27.
[438] Sobey, *Early Descriptions of the Forests of Prince Edward Island: II. the British and Post-Confederation Periods, 1758-c.1900; Part A: The Analysis*, 40.

from 1901, there was not another forestry related act until the 1934 and 1939 forest fire prevention acts.[439] It is striking to note such an absence of legislation for one particular industry, and it could be speculated that the thirty-year gap in forest legislation was because the forest industry was essentially dead. By the end of the shipbuilding era c.1900, and with the merchandisable stands largely exhausted, only farmers' woodlots remained. Then with the acceleration of farm abandonment, and province wide outmigration, the forests started to regenerate on the abandoned fields. The gap in legislation corresponds to the time that abandoned farmland takes to revert back to forests. Since the government only controlled a very small amount of Crown land, it was difficult for them to protect or regenerate the forest without infringing on private land owner's rights. In any case in the 1873-1930 period, developing a forest industry would have been seen only as a hindrance to developing the agriculture industry, especially since the Post-Confederation Island economy was not doing well and the government was trying to maximize agricultural productivity as much as possible by clearing land.

Conclusion

From joining Confederation with Canada to the end of the Second World War, there were many alterations in attitudes to the environment on Prince Edward Island. How exactly did the "land of super abundance" maintain its resources during this period? Conservation of game birds shifted toward recreational purposes instead of business exports. On the other hand, legislation encouraged the destruction of non-valuable species of fowl and game. In addition to re-stocking game bird populations, Island game

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[439] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1934,1939.

enthusiasts introduced non-natives species with very little evident awareness of potential side effects.

Of the three traditional resource-based industries, the fishery received the least attention in the post-Confederation era, as Confederation shifted jurisdiction over most fisheries to the federal level, leaving only a provincial concern over the oyster. Recreation-based fishing conservation revolved mostly around conservation of the speckled trout. Legislation pertaining to farming outnumbered the amount of fishing legislation after Confederation, and the changes in the farming industry itself had resounding environmental implications. Weeds became a problem, but they were greatly overshadowed by other threats. Over the decades there was an increasing reliance on spraying to control the Colorado potato beetle, Blight, and Bacterial Ring Rot. In addition, chemical fertilizers were introduced to increase soil fertility. The clearing of marsh land for agricultural use was a short lived but environmentally destructive practice throughout the period. Bee colonies were afflicted with a devastating disease, despite the Island's insularity. In contrast to the flurry of legislative activity with respect to farming, the Island forests did not receive any protection until Father Burke's advocacy prompted forest conservation polices in the early 1900s. As in the Colonial period, the legislative record in the post-Confederation era reflected a pragmatic and utilitarian relationship between Islanders and the environment. Nevertheless, the period was not without pioneering individuals with an awareness for environmental issues that was ahead of their time. Francis Bain, Father A.E. Burke, and A.E. Morrison might be ahead of their time, but their interest in nature for its own sake pointed the way towards a more preservationist ethic in decades to come.

Chapter Four: **The Post-War Era, 1945-1970**

The post-Second World War era, the period spanning the return of peace and the advent of the Comprehensive Development Plan in 1970, is often referred to by folklorists as "the break" on Prince Edward Island. Or in other words, a break from traditional rural society, reminiscent of the ancient European ancestry, to more modern 20th century developments. Advances in technology changed the way people lived and interacted in the society. Pavement increased the use of the motor car and eased transportation. Electricity illuminated homes and put devices into use such as radios, televisions, washing machines and refrigerators.[440] There is no other period in Island history in which so many changes occurred. As one Islander put it, "From 1945 everything changed. Nothing ever changed before that. It was the same lifestyle for two hundred years."[441] The same could be said for Islander's interaction with the environment and how technology increased human impact on it.

Even though human impacts on the environment increased after 1945, environment-related legislation from the Prince Edward Island government significantly decreased compared to the years after the Island joined Confederation. However, despite the decrease in legislation that protected aspects of the environment, environmental attitudes were evident throughout various government departments, such as the Department of Agriculture and the Department of Industry and Natural Resources. Farming issues continued to be the largest concern in the postwar era. The late 1940s and 1950s marked advancement in many key areas related to the industrialization of farming.

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[440] David Weale, *Them Times* (Charlottetown: Institute of Island Studies, 1992), 1-4.
[441] Ibid., 4.

Limestone began to be imported by the thousands of tons at a time, soil became something that was analyzed by special federal government departments, and importation of chemical fertilizers and campaigns for spraying drastically increased. Aside from the changes in the farming industry, Fish and Game regulations continued to expand, and the first organized attempts were made at forest conservation. These changes forever altered the face of Prince Edward Island's landscape, and marked the beginning of environmental implications that are still being dealt with on the Island.[442] By the end of the period, as Islanders began to grasp those implications, the province would witness the first stirrings of an environmental movement.

I Farming

After the Second World War, a war against insects gathered momentum around the world with a revolution in synthetic pesticides. Synthetic insecticides were manufactured in laboratories by manipulating molecules, substituting atoms to create unnatural configurations. The major difference from the pre-war insecticides was their power to alter vital bodily functions. For example, synthetic chemicals could destroy enzymes that protect the human body and create malignancy in cells. In the United States, 124,259,000 pounds of synthetic pesticides were manufactured in 1947. By 1960, that number had increased fivefold to 637,666,000 pounds.[443]

Arsenic was used as both a substance to kill weeds and an insecticide. It was a toxic, inorganic substance that contaminated environments, and killed farm livestock, wildlife, and bees. In fact, the bee industry in the southern United States was almost

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[442] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1945-1970; and *The Laws of Prince Edward Island.*
[443] Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962), 16-18.

destroyed due to dusting fields with arsenic. In 1951, arsenic was promoted as a means to kill potato plants in England. The public did not understand the Ministry of Agriculture's warning to stay out of the arsenic-sprayed fields. As a result, many cattle were poisoned, and it was not until a farmer's wife died from arsenic poisoning that one of the major chemical companies stopped production and the British Ministry of Agriculture banned the substance in 1959.[444] One again, the agriculture industry on Prince Edward Island was no exception to these worldwide trends.

The late 1940s and 1950s was a period of considerable change in the Island's agriculture industry. In 1945, the Second World War ended; however, the farmer on Prince Edward Island was still at "war" with many issues. Concern over soil fertility continued to be the predominant theme, along with major attempts to control the spread of weeds within the Island. In the potato industry, the problems with Bacterial Ring Rot continued. Potato Blight had been one of the major concerns in the potato industry after Confederation; however, it was rarely mentioned after the Second World War. These developments in the farming industry throughout the late 1940s to the 1960s spelled the demise of the small family farm.[445] Perhaps as important as the issues being addressed was the evolution in the very nature of Island farming, as developments in the farming industry accelerated. The growth of more specialized, more mechanized, more industrial agriculture would, in turn, affect both the relationship to the landscape and the methods used to bolster agricultural production.

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[444] Ibid., 35.
[445] Prince Edward Island Department of Agriculture, *Annual Report*, 1940-1960.

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In 1944, Dr. J.E. Lattimer published an economic survey of Prince Edward Island, which focused on agriculture.[446] He believed the Island was an excellent laboratory for studying agriculture in the Dominion of Canada because the ratio of field crops to population was the same as in continental Canada: "The limited extent of the Island province permits a more comprehensive study even in a limited time than would be possible in any of the other provinces of the Dominion."[447] Lattimer would not be the last federal economist to use Prince Edward Island as a convenient "laboratory" in which to apply economic strategies to the agriculture industry.

Aside from the "islandness" inspiration for the economic study, the report can be used to illustrate a number of environment-related themes. Lattimer concluded that the Island's economy was dependent on agriculture and needed to become more developed and specialized. These recommendations included water transportation to open up new export markets, rehabilitation acts, rural electrification, education, restoration of forests, processing farm crops as much as possible, as well as some other details that need not detain us here.[448]

A number of Lattimer's recommendations came to pass over the next twenty-five years on Prince Edward Island. Evidence of these types of developments can be found within the yearly summaries of the Department of Agriculture and the Department of

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[446] In 1926, J.E. Lattimer started the Department of Farm Economics at MacDonald College, McGill University. It was the Prince Edward Island Department of Reconstruction that commissioned Lattimer to conduct an economic survey of the Island. (MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 219.)

[447] J. E. Lattimer, *Economic Survey of Prince Edward Island; with Particular Emphasis on Agricultural Needs* (Charlottetown, P.E.I.: Department of Reconstruction, 1944), 5.

[448] Ibid., 45-47.

Industry and Natural Resources. Many consider the 1969 Comprehensive Development Plan[449] as the watershed for the introduction of modern developments; however, this research suggests the trend started at least a decade earlier. In summary, then, the postwar era was a time of rapid change on Prince Edward Island, and economic development often did not consider environmental conservation. At the same time, the provincial government's ability to encourage agricultural practices steadily increased as the fiscal resources of the provincial government steadily increased.

2

Promotion of soil fertility has been a dominant theme throughout the history of the Island. From the days of hauling mussel mud through the ice to the increased use of limestone, there was always a demand for improved soil-fertilization methods. By the end of the 1940s, the "soil analyst" became a permanent fixture within the Department of Agriculture. The cost of the program was divided between both the provincial and federal government. By early 1950s, the soil analysts had drafted a soil map reconnaissance, and in general, more farmers were starting to become aware of the importance of new fertilization methods.[450] The scientific study of the soil led to many unnatural changes to the Island's red soil, but could be considered a form of conservation.

By the mid-1950s, the soil lab was offering "soil advisory services" for fertilizer application. The laboratory analyzed the elements within the soil, and provided fertilizer recommendations to farmers free of charge. Although the Department sometimes

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[449] The c.1969 Comprehensive Development Plan was another economic development strategy and will be described later in the Chapter.
[450] Prince Edward Island Department of Agriculture, *Annual Report*, c.1950.

lamented that farmers did not utilize the service as much as it was perceived they should, by 1965, demand for soil analysis was up due to the success of the lab's fertilizer recommendations. By the end of the 1960s, over three thousand to five thousand soil samples were being processed yearly.[451] Clearly, the government's soil lab significantly changed traditional soil-fertilization practices on Island farms.

As in the previous period, the Department of Agriculture also promoted soil drainage and land clearance in order to create new farm land. The Department requested legislation for farm drainage due to the problems associated with clearing land around natural water courses; however, it was never implemented. But even without an official soil-draining law, the Department ploughed on in the quest to eliminate anything in the path of progress. The Division of Farm Improvement stated that, "stumping, raking, clearing of land, grading, and levelling continue to be in great demand with our farmers."[452] The rationale behind removing hedgerows was not so much to create new farm land as it was to enlarge existing fields to accommodate larger mechanized farm equipment, which was becoming more common. In turn, the trend towards larger fields reflected the move away from mixed farms, growing a little of many things, to monoculture. In 1953, the waiting list to have hedgerows separating small fields removed had over one hundred and fifty names at the end of the season. At one point in 1960 the Department stated it was, "impossible" to keep up with the demand for bulldozing and clearing services. While it raised no alarms at the time, clearing the Island to create

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[451] Prince Edward Island Department of Agriculture, *Annual Report*, 1955-1969.
[452] Ibid.; 1950-1960.

increasingly large and industrialized corporate farms began with the clearing of hedgerows through the Farm Improvement Division in the 1950s.[453]

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Soil analysis, improved drainage, and clearing new land are all methods that promote soil fertility and can increase farm output. Another method of increasing soil fertility on Prince Edward Island was through the application of limestone.[454] After the Second World War, the government's efforts to increase the importation and application of limestone escalated. By 1949, farmers were generally starting to become aware of the need for limestone. In 1952 and 1953 the Federal and Provincial governments created a cost-shared subsidy of two dollars per ton to assist in the distribution of limestone.[455]

From 1945 to 1969, the Department of Agriculture assisted in the importation and distribution of approximately 720,000 tons of limestone. The average amount of limestone imported per year was approximately 31,300 tons but the amount steadily increased over time. Between 1966 and 1969, the number of tons imported was almost double the amount from the late 1940s.[456] A quote from 1955 exemplified the official attitude toward limestone and the government subsidy:

> [There is] no indication of any downward trend. The present rate of liming is each acre needs a ton of lime once in 30 to 35 years. Fields that received a coat of mussel mud 25 or more years ago are showing signs of lime and magnesium deficiencies. With the subsidy farmers should

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[453] Ibid.; 1950-1960.
[454] As stated earlier, limestone is sedimentary rock composed of carbonates (CaCo3) which, when crushed and applied to the land, is effective in reducing the acidity of the soil.
[455] Prince Edward Island Department of Agriculture, *Annual Report*, 1953-1953.
[456] Ibid., 1966-1969.

> not find it a burden to lime all their fields once in a rotation.[457]

In 1962, the Department of Agriculture reported that most farmers had realized the benefits of using limestone, and by the end of the period, mechanical spreaders had increased the volume of limestone and fertilizers spread. The effects of using limestone are generally not considered negative, but obviously the heavy use of limestone affected the composition of the Island soil.[458]

4

By the mid-1950s, the government of Prince Edward Island began once again to promote chemical fertilizers in addition to limestone. In 1955 the Maritime Fertilizer Council assisted the Department of Agriculture to distribute three thousand pounds of 5-10-10[459] chemical fertilizer. Additionally, 6-12-12 was listed as a chemical fertilizer used during this period. By 1958, annual sales of fertilizers had increased by 2,640 tons, most notably in these 5-10-10 and 6-12-12 combinations. Seeking the right code of fertilizer in the quest for soil fertility became commonplace in farming practices from this period onward on Prince Edward Island, and tracing the kinds and amounts of substances added to the soil helps to create a picture of the environmental impacts from the past. From soil fertility analysis to the proliferation of chemical fertilizers, the 1950s and 1960s were a significant time of change for Island farms and their environments.[460]

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[457] Ibid., 1955.
[458] Ibid., 1962-1969.
[459] The term 5-10-10 denotes the percentages of the elements found within the commercial fertilizers. The numbers always follow the same pattern of (N-P-K) or Nitrogen-Phosporous-Potassium percentages. In this case, there would be 5% Nitrogen, 10% Phosporous, 10% Potassium. 6-12-12 would mean the fertilizer mixture contained 6% Nitrogen, 12% Phosporpus, 12% Potassium.
[460] Prince Edward Island Department of Agriculture, *Annual Report*,1950-1969.

Island farmers were not just putting chemicals in the soil. Increasingly, they were resorting to pesticides. From the mid-1940s to the mid-1960s, over two hundred basic chemicals were employed for killing weeds, insects, and anything else considered a pest in North America. Unfortunately, these chemicals killed both wanted and unwanted species.[461] Prince Edward Island was not an exception in the worldwide transition to chemical sprays, but given the centrality of agriculture to the Island economy, the rural nature of the society, and the density of the population, their use had particularly widespread implications for the island province.

Some historical oral accounts on Prince Edward Island suggest that many farmers regarded chemical sprays as "miracles," because spraying increased crop quality and saved labour costs. The farmers who did not introduce spraying were not considered "progressive."[462] Overall, there was little questioning of the side effects of introducing chemicals. As a consequence, interest in natural farming practices declined on Prince Edward Island after the Second World War. As one study later concluded, "The generation of farmers after 1950 seemed to lose the grasp that one natural phenomenon or one thing in nature might take care of another. They had to buy it in a package."[463] But the transition to farming with chemicals cannot be blamed entirely on the farmer. With increasing demands to produce large volumes of product and small profit margins, it became harder and harder for small family farms to survive. Farmers were left with little

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[461] Carson, *Silent Spring*, 7.
[462] MacKinnon and Vass, *The Best of the Past: Traditional Sustainable Agriculture in Prince Edward Island*, 18.
[463] Ibid.

choice but to change from traditional practices or go bankrupt. These pressures were evident in the Department of Agriculture's attempts at promoting the use of herbicides.

Weeds continued to be a bone of contention for Island farmers in the postwar era. The same fertilizers that helped to boost crop yields also caused a problematic increase in the growth of weeds. Thus, the concern over weed control that had arisen in the late nineteenth century continued within the provincial government. Starting in 1950, the word "herbicide"[464] became common language within Department of Agriculture reports, and some government subsidies were issued to encourage their use. Splendid results were reported after using herbicides to eradicate weeds in the mustard family.[465] As with other chemicals, Prince Edward Island was not alone when it came to introducing some of the most potent herbicides, but its reliance on agriculture as its primary industry made the practice particularly significant. Quickly, the new scientific compounds replaced the Paris Green and Bordeaux Mixture of earlier days.

6

The chemical compound 2, 4-D is short for dichlorophenoxy acetic acid. It is a herbicide that is less harmful to grasses than it is to broad-leafed vegetation that are considered weeds. Once absorbed into the weed, the chemical goes directly to the growing points of the roots and inhibits further growth. The substance was introduced to the world in 1942, but took approximately ten years to reach Prince Edward Island. The substance is classified as a moderately hazardous pesticide, and people in close proximity

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[464] Herbicides are chemical substances used to kill unwanted vegetation. After 1945, there was a so called revolution in the employment of highly toxic organic herbicides.
[465] Prince Edward Island Department of Agriculture, *Annual Report*, 1950.

to the substance can suffer symptoms ranging from serious eye irritation to neuro-toxic effects such as inflammation of nerve endings. Victims of overexposure can suffer permanent respiratory problems; in addition, the substance eventually became known cancer-causing carcinogen. The chemical 2, 4-D also has a high "leach-ability" rate into watersheds, and is often detected in ground water test samples across areas where is had been used. As a consequence, it is highly toxic to fish as well as bees.[466] Of course, none of this was known in the 1950s.

The year 1951 marked the arrival of 2, 4-D on Prince Edward Island. The chemical was distributed by the Department of Agriculture in an effort to control cutworms in grain crops, as well as in the destruction of weeds such as mustard and wild radish.[467] The government continued to promote 2, 4-D, and by 1952, one thousand acres of grain had been sprayed. Prolific weeds from around this period that were controlled with 2, 4-D included wild radish, couch grass, perennial sowthistle, stinking willie, and ox-eye daisy.[468] By the mid-1950s, the amount of 2, 4-D sprayed was steadily increasing as the message of its effectiveness spread. Two thousand acres of grain were sprayed with 2, 4-D in 1955, and the government continued to issue subsides to encourage its use. By 1955 the mechanization of spraying was also increasing, and several farmers had "purchased specially designed field sprayers."[469] The program for subsidizing 2, 4-D was considered a success, but as always, the Department of Agriculture wanted more farmers

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[466] Pesticide News No.37, "2,4-D Fact Sheet," http://www.pan-uk.org/pestnews/Actives/24d.htm (accessed 25 May 2009).
[467] Prince Edward Island Department of Agriculture, *Annual Report*, 1951.
[468] Ibid., 1950-55.
[469] Ibid., 1955.

to participate. By 1958, the acreage of grain sprayed with herbicides or 2, 4-D was up to five thousand acres.[470]

Although 2, 4-D was an effective herbicide there were some weeds that were immune to its effects. For example, 2, 4-D was utilized in attempts to eliminate ragweed, but it did not prove to be very effective in preventing growth. One reason the Island government promoted spraying to eradicate Ragweed was because of its toxicity to livestock. Perhaps unknown at the time, one of the side effects from spraying Ragweed with 2, 4-D was that it increased the sugar production in the plant, and made the plant taste sweeter to animals.[471] Therefore, the spraying of 2, 4-D to protect livestock probably had the opposite effect.[472]

Another reason the government promoted the destruction of ragweed was for tourism purposes. There was a perception that the appearance of ragweed was unsightly and hindered the image of the landscape. But Prince Edward Island was also promoted as a tourism destination that had one of the lowest pollen counts in Canada. Because ragweed pollen had the potential to irritate those that suffered from hay fever it was clearly unwanted. Indeed, pollen counts were monitored by the Department of Agriculture through a Ragweed Air Index.[473]

The substance 2, 4-D was used heavily in agriculture all over the world for fifty years, and there continues to be a long term concern about its health effects. [474]

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[470] Ibid., 1958.
[471] Richard H. Wagner, *Environment and Man*, Second ed. (New York: Norton, 1971), 491.
[472] In addition to its inability to destroy Ragweed, 2, 4-D also could not control weeds such as Spurrey and Hemp Nettle.
[473]Prince Edward Island Department of Agriculture, *Annual Report*, 1958.
[474] Pesticide News No.37, *2,4-D Fact Sheet*, 3.

Considering the government's efforts to increase the use of 2, 4-D in the 1950s and 1960s, it is apparent that Prince Edward Island most likely also has traces in its environment of the damage caused by 2, 4-D. To this day, herbicides containing 2, 4-D are still legal on Prince Edward Island golf courses.

7

In the late 1950s, the usage of another herbicide significantly increased. MCP or Phenoxylene Plus[475] was promoted to spray weeds in pasture fields. In addition to pasture spraying to control weeds, the Department of Agriculture also promoted pasture fertilization. Their slogan for 1965, was printed on bumper stickers: "Fertilize Grasslands This Year!"[476] Although some of the pasture fertilization was probably accomplished with organic methods, the amount of chemicals introduced to pasture fields significantly increased in the 1950s and 1960s.[477]

Prince Edward Island was clearly caught up in the global romance with chemical sprays. In the 1960s, large areas of the United States were sprayed to kill weeds. Fifty million acres were sprayed to kill brush lands alone. Usage of herbicides in agriculture doubled as well between 1949 and 1959 with 53 million acres sprayed.[478] For some reason, herbicides were even viewed by some conservation-minded individuals as less toxic than insecticides and questions were seldom asked about the relationship between weeds and soil.[479] On Prince Edward Island, by the beginning of the 1960s, most farmers

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[475] MCPA (2-Methyl-4-chlorophenoxyacetic acid) is used as a herbicide to control broadleaf weeds in agricultural. (Spectrum Chemical Fact Sheet).
[476] Prince Edward Island Department of Agriculture, *Annual Report*,1965.
[477] Ibid., 1950-1969.
[478] Carson, *Silent Spring*, 68.
[479] Ibid., 78.

had made the transition to spraying, and the number of acres of grain sprayed with MCP and 2, 4-D steadily increased. The Department printed a chemical weed control guide book, and distributed it to farmers, and subsidies for herbicides also continued throughout the 1960s.[480] The Department of Agriculture noted:

> It is apparent that more spraying is being done each year and according to the applications for subsidy, this work is being carried out in practically every area of the province.... Farmers must be on the lookout to control all weeds but particularly should make an effort to eradicate any new weeds that may appear before they have a chance to become economic factors in crop production.[481]

New weeds did emerge over the years as the fight against weeds progressed: white cockle, wild carrot, and woundwort, to name a few. However, increased doses of 2, 4-D was almost always promoted as the solution, as far as the Department of Agriculture was concerned. In addition, it was also common practice to spray roadsides and ditches to attack stands of weeds that were difficult to control and might spread into fields. Whatever the problem, chemicals were the answer.[482]

8

To say the least, the advancement of chemical weed control was a significant theme in the 1950s and 1960s on Prince Edward Island.[483] By 1964, the first safety related concern for spraying became evident in: "An Act to Control and Regulate the Distribution and Use of Pesticides and Poisonous Top Killing Sprays."[484] A pesticide was defined as a

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[480] Prince Edward Island Department of Agriculture, *Annual Report*, 1960.
[481] Ibid., 1961.
[482] Ibid., 1960-1969.
[483] Ibid., 1960-1969.
[484] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1964.

substance used to destroy or control insects, fungus, bacterial organism, virus, weed, rodent, and other plant and animal pests. A top-killing spray was anything used to kill potato plants that contained sodium arsenite.[485] The text of the act stipulated that no persons were allowed to sell any pesticides or poisons to anyone without a license. Inspectors were given the authority to examine or seize record books with pesticide or poisonous top-killing spray sales information. Inspectors were also allowed to scientifically test fields, livestock, carcasses or anything "subject to just cause" to determine if they had reached harmful levels of contamination. In cases that were considered "contaminated" with pesticides and poisons and posed a health risk, the livestock or field crops were to be destroyed.[486] Finally, the Lieutenant-Governor-in-Council was given the authority to control the use of all pesticides or top-killing sprays. Anyone who violated the act or did not abide by the inspector was subject to a fine between one hundred and one thousand dollars.[487] By 1960s standards the penalty was severe, because even the minimum fine would equate to $750.00 in 2010.[488]

Debate over the pesticide regulation act was reported in the Charlottetown *Guardian* newspaper on 23 March 1964. Both the Liberal and Conservative parties agreed that the legislation was necessary to prevent the misuse of "poisons." It would provide, "protection against the danger of poisonous sprays to wildlife, to livestock and even to human life, and that in the long run will give added prestige to the reputation our

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[485] 1964 An Act to Control and Regulate the Distribution and use of Pesticides and Poisonous Top Killing Sprays.
[486] *Laws of Prince Edward Island 1964*.
[487] Ibid.
[488] Bank of Canada, *Inflation Calculator*, 1.

potato industry has acquired at home and abroad."[489] The debate concluded by stating that the Department of Agriculture had to assist farmers in the transition to "acceptable substitutes" for the chemicals that were in the process of being banned.[490] The act definitely banned chemicals containing sodium arsenite, however it is unknown if other chemical substance were completely banned from use. The obvious intent, however, was to regulate chemical usage to ensure safety rather than to ban the sprays. The goal was to make sure the sprays were used correctly.

The 1964 legislation depicts the first concern over regulation of pesticides, and suggests that problems were occurring with contamination after spraying. Perhaps one of the government's solutions to solve the problem was to set spraying guide lines. In 1965, the Prince Edward Island government utilized Ontario's chemical spray guide for weeds. Examples such as this could perhaps be considered an example of implementing continental policies that may not have reflected the best interest of a small island, because it is doubtful that Ontario's guidelines were representative of the small environment on Prince Edward Island.

Despite all the advancements farmers were making in adapting to scientific agriculture, the Department of Agriculture continued to criticise "farming practices" on Prince Edward Island. The judgements seem harsh because many farmers deserved a science degree in agriculture after teaching themselves to apply these new methods. The director of the field crop division reflected the highly negative attitude in his 1956 report:

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[489] *Guardian* 23 March 1964.
[490] Ibid.

> However, in spite of weed control, weedy crops, headlands, fencerows, and waysides are far too much in evidence on nearly all farms....The farmer of fifty years ago with only a scythe realized the value of, and put into practice, weed control. Today with modern, inexpensive methods of chemical control, and hydraulic mounted tractor mowers, our farmers remain indifferent to luxurious stands of noxious weeds on headlands[491], etc., which produce millions of seeds to pollute succeeding crops.[492]

Such negative reports were not necessarily fair accusations because farmers' actions were directed by both available funding and successful methods acquired through experience. Were farmers really to blame, or was it the government's promotion of the chemical fertilizers which fed the weeds in the first place?

There were some individuals in government who were aware of the importance of practicing cultural farming methods, and seemed ahead of their time. Cultural farming methods were those passed on from generation to generation before the introduction to chemicals in agriculture. In 1958, the agronomy fieldsman reported that spraying was not the entire solution to the weed problem. He argued that individual farmers should have sprayers, "Cultural methods of weed control must be continually stressed, however, as chemicals are far from being a solution to the weed problem."[493] The agronomy fieldman illustrates an early awareness that science could not solve all problems, which was in opposition to the government's focus on promoting new scientific methods.

The only cultural type of weed control promoted by the government was the cleaning of seed grain. Basically, equipment was used to separate the grain seeds from

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[491] Headland refers to areas where there are no crops in the field, specifically where the rows end to allow machinery room to turn. Some farmers controlled weeds in the cultivated areas but not in the headlands, which allowed weeds to survive and spread.
[492] Prince Edward Island Department of Agriculture, *Annual Report*, 1956.
[493] Ibid., 1958.

the weed seeds before planting. The Department of Agriculture often complained about farmers failing to clean or improperly cleaning grain seed because un-cleaned grain seed was noted as one of the major contributors to the proliferation of weeds in the province. For that reason the Weed Control Act of 1964 stipulated seed grain cleaning.[494] In the yearly campaign against weeds, one senses a belief that the province's "islandness" made it possible to eradicate weeds if only farmers were sufficiently rigorous. Unlike the post-Confederation era, when spraying for insect and potato blight were top priorities, postwar government policy focused on the spraying of weeds. The only attempt at encouraging the spraying of insects was for the barley joint worm and wheat aphids in grain crops.[495]

9

If potato Blight and the Colorado potato beetle seemed to have been under control after the Second World War, the potato industry always seemed to be plagued by problems. Bacterial Ring Rot infections persisted throughout this period. Thus, legislation to prevent Bacterial Ring Rot in potatoes continued. The text of the 1945 Bacterial Ring Rot legislation stipulated that in the case of a Bacterial Ring Rot infection, potato containers had to be disinfected, along with any machinery that came in contact with potatoes. Where infection had occurred, potatoes could not be planted on the land for one year, and all seed had to be certified. The fine for an offence was steep for the time period at one hundred and fifty dollars.[496]

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[494]The Government of Prince Edward Island, *Laws of Prince Edward Island 1964.*
[495] The proliferation of noxious weeds could be attributed to development in the farming industry.
[496] *Laws of Prince Edward Island 1945.*

Programs to disinfect machinery against Bacterial Ring Rot emerged by the late 1940s, and government representatives made the rounds to ensure proper methods. That there were many amendments to the Bacterial Ring Rot Act during the 1940s, suggests it was a serious issue.[497] Even the Potato Production Act of 1951 cited the grower's responsibility to ensure proper "spraying, dusting, or harvesting of his potato crop to avoid any possible contamination with bacterial ring rot."[498] By 1956, planting machinery could not be moved from farm to farm without disinfection, and in 1959, inspections of cellars used to store seed potatoes were conducted. A statistical example from 1959 illustrated that 5,725 farms were tested, totalling 39,187 acres of stored potatoes. The result was six positive cases of Bacterial Ring Rot. Surprisingly, the only reference to potato blight in this entire period was in 1951. The official concern had clearly shifted from blight prevention to Bacterial Ring Rot prevention.[499]

10

Although bees were far from less important economically than potatoes, the history of the apiary industry on Prince Edward Island offers an interesting environmental perspective. Development of the honey bee industry continued in the postwar era with importation of bees in the 1940s due to profitable honey markets. By the 1950s, upwards of 550 packages of bees were imported each year and over 55,000 pounds of honey produced. However, in 1958 an outbreak of American Foulbrood disease[500] hit the Island, which

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[497] Amendments to Bacterial Ring Rot legislation occurred in 1946, 1947, 1949; along with the Plant Disease Eradication Act of 1956.
[498] *The Revised Statutes of Prince Edward Island 1951.*
[499] Prince Edward Island Department of Agriculture, *Annual Reports*, 1956-1970.
[500] American Foulbrood Disease (AFB) is the most fatal bee disease in North America. It is a bacterium called *Paenibacillus larvae*. Adult bees are unaffected by the disease and can carry the spores with them. It

was a major setback for the industry. Five of the largest beekeepers were hit with the outbreak, sparking efforts to control the disease through management and drug treatment.[501] By 1960, American Foulbrood disease appeared to be under control on the Island, and rigid inspection under the Apiary Inspection Act hoped to control further outbreaks of the disease.[502]

"Islandness" and insularity were promoted as key aspects in developing the apiary industry because the Island's "salt water boundary" could offer protection from American Foulbrood Disease. Nevertheless, bees continued to be imported at increasing intervals through to the end of the period.[503] The imports may have represented an attempt to increase the output of the honey bee industry; however, the introduction of sprays containing arsenic most likely also decreased the bee population within the Island's environment, making new supplies of honey bees necessary. And, of course, each new importation increased the risk of importing new disease outbreaks.

11

The 1960s continued with the trends that changed Island life in the 1950s: road paving, electricity, declining farms, and urbanization. In the early 1960s, reports from the Department of Agriculture's farm economist described the disturbing trend of vacant

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kills the bee larva that are younger than 48 hours old and can effectively kill an entire colony over time. (Kahalil Hamdan, "American Foulbrood Bee Disease," http://www.countryrubes.com/images/American_Foulbrood_AFB_pdf.pdf (accessed August 2010).

[501] Prince Edward Island Department of Agriculture, *Annual Report*, 1958.

[502] An earlier version of the Apiary Inspection Act in 1940 stated that inspectors were appointed to monitor and suppress the contagious disease. Any person that knowingly kept an infected colony or allowed the disease to spread was would be subject to a legal offense. (Glenn, "Prince Edward Island Wildlife Legislation 1780-1951," 73.)

[503] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1960-1970.

farms on Prince Edward Island.[504] The Agricultural Economist commented on the "development" situation:

> Without a doubt, the rapid advances made in the agricultural industry in the last few years have created problems for all segments of the industry. The trend of course has been to larger units, more mechanization, higher capital outlay, and the like. Those who could not keep pace with the changing tide have been left behind. The condition is common to all areas of agriculture in Canada.[505]

Between 1941 and 1960, over 4,900 farms disappeared on the Island, from 12,230 to only 7,335.[506] The number of working farms was rapidly decreasing and the properties were being purchased by non-Islanders for recreational summer usage. The growing pains in the farming industry were also evident in the increasing size of Island farms. Larger farms became necessary to maintain profitable operations and to avoid bankruptcy. The trends were nationwide. In fact, the trend dated from 1920 or so, but accelerated sharply after 1945. They were causing growing concern by the 1960s because farming all across Canada was suffering. In this climate of decline, the federal and provincial governments began working to change the social and economic disparities with the rest of Canada through "development plans."[507]

In an effort to promote agriculture in Canada, federal legislation was passed in 1962 respecting "Agricultural Rehabilitation and Development." ARDA was a federal initiative that allowed provinces to access funding, and was a precursor to the controversial 1969 Comprehensive Development Plan. The Agricultural Rehabilitation

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[504] Prince Edward Island Department of Agriculture, *Annual Report*, 1960.
[505] Ibid., 1960.
[506] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 259.
[507] Ibid., 265.

and Development Act was intended to promote development in the form of rural development projects, alternative uses of land, and soil and water conservation projects.[508] The provincial government began to focus on rural development in 1961, and commissioned outside planners to study economic development. Consultants from Toronto to Colorado Springs came to the Island, finding it to be a convenient island laboratory for social planning.[509]

The federal ARDA presence helped economic development in agriculture on Prince Edward Island. The capital for these development projects was advanced by the federal government, to be repaid by the provincial government. However, ARDA did not stop concerns over the financial crisis in the farming industry. "The problem was not that the farmer could not produce sufficient quantities of food, but the problem was that an insufficient 'share of the consumer's dollar' was reaching the farmer to make a profit."[510] It was at this point that talks about a Comprehensive Development Plan emerged in 1968.

To sum up, the farming industry faced many challenges after the Second World War that impacted the Island environment. The trends included scientific soil analysis, farm clearing services, soil fertility, chemical sprays and fertilizers, weed control, pesticide regulation, bacterial ring rot, and the rise of corporate farming. The environmental implications of each of these subjects could be a thesis subject in themselves. Only towards the close of the period did legislators begin to show any

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[508] *Laws of Prince Edward Island 1962.*
[509] MacDonald, *If You're Stronghearted: Prince Edward Island in the Twentieth Century*, 267.
[510] Report of the Department on Industry and Natural Resources, Resolutions, 1968.

awareness of the harmful consequences of some of the high farming practices it had so aggressively promoted.

II Recreational Fishing and Hunting

In the postwar era, recreational hunting and fishing fell under the jurisdiction of the Department of Industry and Natural Resources, which formed in 1951. A number of themes emerged regarding recreational fish and game hunting during this period. Many amendments were made to the 1937 *Fish and Game Act*,[511] until it was eventually repealed in favour of *The Prince Edward Island Fish and Game Protection Act* in 1951. Fish and game licensing was another major concern, due to the need for conservation of species and for revenue to maintain these recreational industries for tourists. Re-stocking game birds and fish became another priority, along with the idea of "restoration" and "improvement" of fish and game habitat. The rise and fall of the bounty system also illustrated environmental attitudes from the time. By the end of the 1950s and into the 1960s, warnings over conservation and efforts to promote fishing and hunting as tourist attractions increased, even as non-resident interest decreased. The end of the period was marked by the beginning of ARDA-backed watershed conservation projects.[512] As in so much else, the Prince Edward Island government had jurisdiction over such matters, but the federal government had the funds.

The end of the Second World War also marked the year that A.E. Morrison, Prince Edward Island's first environmentalist, gave his last authoritative report as a

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[511] The 1937 Fish and Game Act was amended in: 1945, 1947, 1948, and 1949.
[512] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1960-1970.

Provincial Fish and Game Inspector. Perhaps the Island public found it difficult to sympathize with Morrison's message due to the tragic loss of human lives during the Second World War; however, he continued to advocate wildlife protection despite the dire circumstances the world was facing. Morrison warned that fishing streams were becoming shallow due to erosion, and that it was of vital importance for the restoration and protection of game and fish to continue. He believed that an understanding of fish and game extinction could be achieved through an understanding of history:

> To understand the question of extinction, or preservation of our wild life, it is necessary to recall the past....The game birds and trout as a whole have been sacrificed on the altar of luxury.... It is now desirable that we should pause in our career of destruction long enough to look back upon what we have accomplished in the total extinction of species. [513]

Morrison's last Fish and Game inspector report firmly illustrated his outlook toward nature and further endeared Morrison as one of the first Islanders with ideals about environmental preservation. It remained to be seen whether the government and Island community would adopt his approach.

1

The 1951 Game Act re-defined the closed seasons under the new Department of Industry and Natural Resources. Fur-bearing animals receiving protection included otter, mink, muskrat, beaver, raccoon, fox, or squirrel. Protected game birds included Hungarian Partridge, ruffed grouse, pheasants, and hares and rabbits. However, hunting licenses were not necessary for the less desirable species, such as, crows, blackbirds, hawks, English sparrows, grackles, starlings, great horned and snowy owls. Game

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[513] Report of the Fish and Game Inspector, 1945.

inspectors, wardens, and RCMP continued to be responsible for enforcing the act. Basically, the stipulations were re-established for the transition to the new government department, and the attitude and regulations remained very much the same when compared to the 1937 Game Act.[514]

After Confederation, recreational fishing received less regulation compared to the game hunting industry. However, by 1945 attention had shifted away from game hunting to focus on recreational fishing conservation. One possible explanation could have been the fact that recreational fishing had become a more popular leisure-time activity across North America.[515] To cite one example in the early 1950s, the provincial government wanted to produce more speckled trout to attract sport fishers to the province. Consequently, the Federal Fisheries Research Board conducted a comprehensive biological investigation, assisted by the provincial government, in the management of "fish culture development."[516] These development strategies included the construction of dams, and 1949 was the first year for one of these projects. Many of the older millponds, sawmills and gristmills were no longer in use, and had been in decline for over fifty years.[517] With many of the older dams in various states of disrepair across the Island, some important fishing ponds had disappeared. The reconstruction of dams for recreational fishing in the 1950s and 1960s altered the course of many watersheds for the

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[514] Glen, *Prince Edward Island Wildlife Legislation: 1780-1951*, 109-135.
[515] In 1953, Salmon within New Brunswick's Miramichi River were killed after millions of acres of forest were sprayed with DDT to combat spruce budworm. (Rachel Carson, 131). P.E.I.'s own attempts at spraying DDT probably also had similar, less publicized effects on the sport fishing industry.
[516] Prince Edward Island Department of Industry and Natural Resources, *Annual Report* (Charlottetown: Queens Printer, 1951.
[517] Ibid.

second time.[518] Even as early as 1949, the Department of Agriculture's Fish and Game report stated, "Stream improvement requires construction of dams, bulldozers and other machinery to carry out the work of improvement and rehabilitation."[519] The idea of "improvement" from this era meant creating artificial changes that re-structured watersheds. As late as 1965, ARDA continued to assist the provincial government in water conservation project sites, which included the construction of by-pass dams. The effects from damming waterways would be a contentious issue by contemporary standards, but there was little thought given to such matters in the 1960s. The ruling passion was to create trout habitat.

Fishing was probably more promoted in the tourism marketing of the early 1900s, but in the mid-1950s, sport fishing was still advertised as one of the most popular tourist attractions in the Province. Poaching or illegal fishing continued to be a major problem, and enforcement of the Fish and Game law was difficult. As in the past, government officials tried to enlist the public's active support in enforcing the regulations:

> One man, two men, or ten men will not check the current wave of illegal acts against our wildlife unless the army of hunters and anglers, who annually take to the fields of streams in search of recreation and healthful sport, will put their shoulder to the wheel.... Complaints alone will not suffice to protect our fish and game potential. To those interested and who stand to benefit by conservation and protection of our wildlife, we issue this warning. A continuation of the unforeseen and regrettable lack of cooperation, with enforcement officers, will lead to depletion of our resources.[520]

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[518] In the 1960s, the department also experimented with a program that dug holes in streams with silting problems. The method would probably be considered environmentally destructive by today's standards.
[519] Prince Edward Island Department of Agriculture, *Annual Report*, Fish and Game, 1949.
[520] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1954.

Despite attempts at creating artificial dams and restocking waterways with fish, non-resident fishing licences continued to decrease. The late 1950s marked the demise of Prince Edward Island as a putative fishing paradise. By 1965, the Fish and Wildlife Division of the Department of Industry and Natural Resources was reporting that the revenues from licensing were not enough to sustain sport fishing and hunting programmes, and trout streams continued to suffer from misuse and pollution.[521] The Department undertook a management programme to reverse these trends, but even with the help of management programmes, ARDA, and RCMP enforcement, the popularity of sport fishing declined through to 1970.[522] The decline in recreational fishing tourism might have been attributed to low fish numbers and unsuccessful watershed rehabilitation attempts on the Island. It also had something to do with the nature of postwar tourism. Baby Boomer families were far more likely to go to the beach than mount a family trout fishing expedition. Nor did the Island compete well with other tourist fishing destinations such as New Brunswick, which boasted plentiful stocks of the most prized game fish, Atlantic Salmon.

2

Recreational hunting was also managed by the department of Industry and Natural Resources. One of its major hunting related activities revolved around issuing bounties, which is entirely the opposite of conserving a species. Bounties were issued in an attempt to exterminate species perceived as "nuisances." Accounting records from *The Journal of the Legislative Assembly* illustrate the amounts paid out; for example, the skunk and owl

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[521] 1966 was the first year that "pollution" was printed in a provincial government report.
[522]Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1951-1970.

were perceived as nuisances and a bounty was issued to encourage their destruction. From 1942 to 1949 bounty expenditures, on a per animal basis, amounted to over $38,000.00.[523] Skunk bounties had been issued since 1932 because it was not an indigenous animal, had no natural predators, and was thought to prey on barnyard fowl and game bird eggs.[524] These threats were probably true to an extent, but were most likely exaggerated as a justification for the bounty because anyone who has ever encountered skunk spray would agree with the nuisance factor. Between 1932 and1963, the last year that the bounty was issued, over $126,369 bounties were distributed.[525] But the expenditure had made little impact on skunk numbers and the bounty was abandoned. However, the prejudice against the Island's skunk population remained.

Another species targeted in the postwar era was the crow. In 1951, bounties were extended to include the crow, at ten cents per pair of claws. The Department argued that crows were a threat to game bird eggs, however it openly stated that the stomach contents of crows were never studied to be entirely certain. Once again, the threat was probably exaggerated because anyone who has ever been awoken by crows would agree that they can be quite a nuisance. During the 1950s, 15,000 crow or raven feet were collected by the government, which paid out $2,100.00 in bounties.[526] The Prince Edward Island Fish and Game Protection Association even went as far as organizing a sponsored "crow shoot" with prizes donated by local businesses.[527] The protection associations from this

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[523] Prince Edward Island House of the Assembly, *The Acts of the Legislative Assembly of Prince Edward Island*, 1942-1949.
[524] Curley, "Introducing the Striped Skunk," 20-23.
[525] Ibid., 23.
[526] Ian MacQuarrie and Kate MacQuarrie, "Jet Set," *Island Magazine, no.40,* (Fall/Winter 1996), 14.
[527] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1952.

era actively encouraged the destruction of "nuisance" species, and it seems as though the justification for bounties for extermination were stretched by exaggerating the threat to game bird populations.[528]

The fox had been heavily protected during the heyday of the silver fox industry, but by 1950, the once lucrative fox farming sector had faded to insignificance. In 1952, bounties were extended to foxes, and by 1954, the bounty system also expanded to counter the rising population of another animal that had once been farmed, the raccoon. Bounties against these other nuisance species were promoted because the department believed the skunk bounties had been a successful predator control method.[529] However, it did not take long for the bounty system to come under question. In 1958 the department decided to halt bounty payments until another programme to exterminate these problem species could be established.[530]

In 1963, the federal government investigated the actual cause of the game bird decline versus the provincial method of trial and error through bounties on predatory animals.[531] Perhaps due to the federal government's investigation, the bounty system on the Island was re-appraised in 1965. The Department's records illustrated that the number of "predatory" animals had, in fact, not decreased under the bounty system. The skunk population, for example, had stayed the same between 1932 and 1955, at the expense of over $80,000.00 in bounties issued. As well, the senseless destruction of the Great

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[528] Prince Edward Island Department of Industry and Natural Resources, *Annual Reports*, 1950-1970.
[529] The Department of Industry and Natural Resources believed the bounty system was successful because the number of skunk bounties paid out each year declined, but perhaps people were finding an easier, better smelling, way to make extra money. Moreover, the Department used the term "predator" when describing these often non-ferocious animals, because they were thought to destroy valuable species.
[530] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1958.
[531] Ibid., 1963.

Horned Owl [532] came under question. From 1932 to 1944, over 1,124 Great Horned Owls had been killed. An official within the department questioned, "One might ask what effect did this have on game bird population? One can conclude in the face of decreasing game population that it [the hunting of owls] had no effect." The Department concluded that the bounty system and predator control methods were "seldom effective."[533]

Bounties marked the distinction between species perceived as valuable and non-valuable in the Island's environment. Their discontinuance in the mid-1960s was a break with historic approaches to species control. But whether the move away from bounties represented a change of attitude or merely lack of success is less obvious.

3

The provincial government was trying to eliminate unwanted species at the same time it was trying to promote others for recreational hunting. As with fishing, the encouragement of game birds was directly linked to the postwar boom in tourism. From 1945 to 1960, tourism marketers still tried to promote Prince Edward Island as a hunting destination. Conservation of valuable game birds continued with birds such as ducks, geese, Hungarian Partridge, Ruffled Grouse, and Ring Necked Pheasants.[534] In 1951, the department judged the introduction of the non-native Hungarian Partridge as a great success since the introduction of ten breeding pairs from Northern Bohemia, Czech Republic in 1927. An additional, twenty-eight breeding pairs had been brought in from

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[532] The Great Horned Owl was first discovered in the American Virginia colonies sometime in the 1700s. Adult sizes range from: length 46-63.5 cm, wing span 91-152 cm, weight 900-1200 grams. Great Horned Owls usually prey on rabbits, hares, and rodents, but have the potential to kill anything two to three times heavier than their body weight. So owls did have the potential to kill valuable game birds on Prince Edward Island, but probably not to the extent that required a bounty.

[533] Prince Edward Island Department of Agriculture, *Annual Report*, 1932-1944.

[534] These game bird species were described at length in Chapter Two.

Western Canada in 1931. Aside from the Hungarian Partridge, other introduced species of game birds included the grouse, chukker, and quail.

At the same time as it tried to regulate the supply of game, the Department also tried to control the demand. Limits to daily hunting were enforced throughout this period, along with the sale of resident and non-resident licences. By 1952, the word "sustainable" had crept into the official hunting dialogue, when for the first time, hunters had to report their take at the close of the season for "management on a sustainable yield basis."[535]

Re-stocking efforts seemed more akin to the restocking of grocery shelves than restoring the environment. The winter of 1956 was devastating on the introduced game birds, and more had to be introduced in an effort to sustain the populations. At the same time, two more game officers were hired for enforcement of the Game Act. Nevertheless, by the end of the 1950s concerns had emerged in regards to the decline of non-resident hunting licences, in conjunction with the decline of the partridge and pheasant. In 1958 approximately 3,400 birds were released from a local Island hatchery in an attempt to increase game bird numbers. The Fish and Game Association's bird restocking program continued throughout the 1960s, however non-resident hunting licences continued to decline, suggesting that there were not enough game birds surviving to entice hunters. In any case, Prince Edward Island could not compete with neighbouring provinces as a hunting destination. Tourists may have hunted once they arrived on the Island, but they seldom came here specifically for hunting and tourist numbers were not incredibly large.

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[535] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1952.

By 1965, despite enforcement from three extra RCMP officers, game bird populations were at an all-time low.[536]

The Department finally realized that the winter weather was too severe for the introduced game birds.[537] The 1964-1965 minutes of the Prince Edward Island Fish and Game Association stated:

> On Prince Edward Island we have not kept in step with the various new and approved methods of fish and game restoration....The hunting in this province has come to a very low ebb, especially the upland hunting. Hungarian partridge are very scarce at present and if something is not done immediately will become extinct." [538]

The Association believed predators like foxes, skunks, crows, continued to decimate game bird numbers, along with excessive non-resident hunting. The main grievance from the Association was that the government should step up artificial restocking processes and enforcement in order to maintain sport hunting.[539] There generally were not many references to destruction of natural habitat as the major cause of the decline.

By the end of the 1960s, even television was even being used as a medium to "stimulate wildlife awareness in the province" by broadcasting a program called *Our Wildlife Resources*. ARDA as well as the provincial department of Industry and Natural Resources continued with game bird restoration attempts, and ninety-two acres was even purchased for use as a public shooting preserve. It appears that attempts to re-stock game bird populations for recreational hunting occurred through to the 1970s.[540] However,

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[536] Ibid., c.1965.
[537] Ibid., 1964-1965.
[538] Fish and Game Association Minutes ACC 2594/53.
[539] Prince Edward Island Department of Industry and Natural Resources, *Annual Reports*, 1965-1970.
[540] Ibid., 1965-1970.

there were no programs for examining the effects of introducing these non-native species.[541]

Of course, birds were not the only introduced species during the postwar period. In the early 1950s, the government was introducing whatever animals it could, in the hope of creating a successful hunting industry. In 1952, an unknown number of deer were received as a gift from the Department of Lands and Forest of Ontario. Again, scientific research regarding the possible negative side effects of such introductions was not considered.[542] Evidence now suggests that the white tailed deer was not a native species to Prince Edward Island.[543] Nevertheless, the government was amenable to adding them to the province's species pool. The official records did not reveal the fate of the introduced deer, but anecdotally at least, the deer were said to have been semi-tame, and were quickly hunted out before having a chance to reproduce in numbers.

In summary, sport hunting in the postwar era had two predominant themes. Hunting legislation tended to regulate popular species that hunters liked to hunt recreationally in order to ensure adequate stock. On the other hand, the government also rewarded hunters for eliminating species that were either a nuisance or an economic threat. The environmental ripple effect of such manipulations of the natural world were neither understood nor considered.

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[541] Ibid.
[542] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1952.
[543] Sobey, *An Analysis of the Historical Records for the Native Mammalian Fauna of Prince Edward Island*, 391.

III Forestry

> We all depend on the forest, what ever we are, for the natural guarantee of our combined existence as producers and consumers of the fruits of the earth. In the long run if we don't conserve our forests we shall lose more than our forest industries, so called. We shall lose our livings as farmers and food producers as well. In the long run, if we don't attend to conservation of our firs and pines and poplars, we shall make a desert where we can't get a living, that has happened before in the history of man and civilization.[544]

So wrote an un-named correspondent in the "Notes by the Way" section in Charlottetown's *Guardian* newspaper from 1945. This revealing comment from the outset of the postwar era helps to illustrate that public awareness of the need for forest conservation had began to expand. Until this time forest conservation legislation had been limited. From 1945 to 1970 some new attempts at developing the forestry industry occurred as there were maturing stands of forests on Prince Edward Island. Forestry programmes emerged to enhance the industry, along with some environmentally hazardous spraying attempts against the spruce bud worm. Only with the Comprehensive Development Plan, however, would the forest industry receive aggressive attention from government planners.

Fear of forest destruction was evident in a 1949 Department of Agriculture Report. The report stated that forest re-growth was uncontrolled, and serious destruction from various causes necessitated a forestry program within government. A few years later, the first forestry-related legislation was passed, *The Forestry Act* of 1951. The act

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[544] *Guardian,* 10 April 1945.

required licences for any clear-cutting projects over two acres, as well as fire protection, and re-forestation regulations. The Department stated that they hoped the act would discourage clear cutting, which had been prevalent in the past.[545]

In 1951, delegates from the provincial government attended a European conference in Sweden, and were quite impressed with the forest conservation methods promoted there. After returning, the Island delegates stated that similar policies and controls could be used as an example to improve the forestry program in the province. The year 1951 could thus be considered the first time representatives from the provincial government attended an international conference related to environmental issues. It was also the year that the Department opened a Forest Nursery Division, in an effort to produce seedlings to develop the forestry industry.[546]

In 1952, the Department of Industry and Natural Resources was speculating on the development of the pulpwood industry on the Island, and issued warnings that, "Our people should take great care in how they cut this pulpwood and not ruin their timber acreage."[547] Since it controlled almost no woodland, government was forced to emphasize good stewardship by private woodlot owners. The Forestry Division created a map of valuable woodland in hopes of creating a forest restoration programme, and, also in hopes of distributed advice to private woodlot owners on how to manage their woodlots. In 1953, an extensive reforestation program was being planned as part of the 1951 Forest Act. In fact, conservation of woodlots through management practices became

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[545] The Government of Prince Edward Island, *The Revised Statutes of Prince Edward Island 1951.*
[546] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1951.
[547] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1952.

a continuing theme of the 1950s.[548] For example, studies of the effects of fertilization on native white spruce were conducted, and wood lot conservation became a topic that was included in Fish and Game Association and Agriculture meetings.[549]

The Forestry Division's plan to conserve forests also included the spraying of insecticides. The Prince Edward Island Division observed spruce budworm spraying attempts in neighbouring New Brunswick, the largest aerial spraying attempt ever undertaken at the time. The Prince Edward Island Forest Division believed that New Brunswick's spraying campaign paid for itself one hundred times over by saving thousands of cords of wood that would have otherwise been destroyed by the beetle. Leading by New Brunswick's example, the Division also began spraying on Prince Edward Island.[550] The chemical of choice was DDT, Dichloro-diphenyl-trichloroethane.

By the 1960s, problems with the spruce bud worm had started to become serious within the Island forests. In particular, a six-acre woodlot was severely damaged by the worms, and a DDT spraying campaign ensued.[551] The results proved to be extremely promising, as the mortality rate was 90%. Other forestry-related insects sprayed in the 1960s included the pine moth, satin moth, forest tent caterpillar, blue spruce sawfly, willow aphid, birch leaf miner, and Iris plantations. The Forestry Division did not record the number of acres sprayed, but DDT spraying programs continued at least until 1969.[552]

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[548] Ibid., 1951-1959.
[549] Ibid.
[550] Ibid., 1954.
[551] D.D.T. is considered a biocide because it had the potential to kill everything where it was applied. The chemical was not the first to be used against insects. That distinction is held by the use of Paris Green against potato beetles in 1867. However, D.D.T was the first totally synthetic material introduced on a large scale to the environment. (Environment and Man).
[552] Prince Edward Island Department of Industry and Natural Resources, 1960-1969.

In North America generally there was an awareness that DDT caused harm to the ecosystem by the late 1950s and early 1960s, but it did not appear to be a consideration at the provincial levels in Canada. With the availability of surplus war planes, New Brunswick began spraying the spruce bud worm in forests via the air in the 1950s. Initially, the federal National Parks Service of Canada did not support New Brunswick's spraying attempts with DDT because there was an awareness of the risk it posed to non-targeted species.[553] However, in 1957 even the National Parks Branch was pushed by the public to treat trees in the Cape Breton Highlands, National Park with non-aerial spraying programs. The use of chemicals for insect control soon became normal for everyday insect nuisances, and was no longer limited to epidemic infestations.[554] At the same time as biologists were becoming aware of the effect that spraying DDT had on the food chain, it was being increasingly used by the provincial government. The chemical could kill insects in the forest, but also birds, small mammals and fish.[555]

Gradually, the opposition to DDT on environmental grounds intensified. In 1969, the Federal government adopted a policy that banned the use of DDT, which effectively discontinued the spraying program on Prince Edward Island. DDT was replaced by a chemical spray called "emulsafiable liquid malathion" spray.[556] The forestry division believed the "residual effect of the insecticide will be negligible." The Division did not list any of the negatives associated with spraying DDT. Indeed, it acted as if it was an inconvenience that the federal government had discontinued the miracle pesticide and

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[553] Alan MacEachern, *Natural Selections: National Parks in Atlantic Canada, 1935-1970* (Montreal: McGill-Queen's University Press, 2001), 214-215.
[554] Ibid., 217.
[555] Ibid., 219.
[556] Malathion is a toxic insecticide.

that they had to find a replacement. Clearly, it was federal and not provincial actions that discontinued the use of DDT on Prince Edward Island.[557]

Spraying also became common practice in the horticulture industry, where disease and insects were a problem. The apple maggot, scab, and the coddling moth were a problem with apple trees, as well as Black Knot in cherry trees. As one annual report contended, "It is very evident that the success of even small orchards depends upon spraying practices." Other chemicals employed in the horticulture industry from the late 1950s were Parathion sprays.[558]

At this time, the forestry division also experimented with spraying to destroy "alders." Alders are deciduous trees and shrubs comprising the flowering plant genus *Alnus* of the birch family. Ecologically, alders are important for fixing atmospheric nitrogen into a usable form for plants, as an early source of pollen for bees, and for erosion control on river banks.[559] However, the benefits from alders were not taken into consideration in this period, because it was not a commercially viable species or, ostensibly, at least, a useful one. Alders were more of a nuisance factor because they clogged up ditches and roadsides and also could overtake vacant farmland. The chemical utilized in the experiment to destroy alders was 2-4-5-T.[560] It proved to be an un-successful method, so a stronger mix promised to be a cheap solution to ridding

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[557] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1969.
[558] Ibid., 1955-1959. "Parathion ($C_{10}H_{14}NO_5PS$) is an organophosphorus insecticide and acaricide used to control soil-dwelling pests and a wide range of insects and mites on a variety of agricultural crops. Between 10 000 and 50 000 kg are used annually in Canada." Quoted in Health Canada, "Parathion," http://www.hc-sc.gc.ca.rlproxy.upei.ca/ewh-semt/pubs/water-eau/parathion/index-eng.php2010).
[559] Zhiduan Chen and Jianhua Li, "Phylogenetics and Biogeography of Alnus (Betulaceae) Inferred from Sequences of Nuclear Ribosomal DNA ITS Region," , no. 165 (2004), 325-335, http://www.reference.com/browse/alder.
[560] As of 1971, 2-4-5-T was not recommended for use in areas near human habitation in the U.S.A., because it contained a dioxin that can cause birth defects. (Wagner, *Environment and Man*, 491.).

unwanted alders from farmland. But that was not the case either. In order to entirely kill the alder, the leaves had to be completely saturated with the chemical, and that was too expensive to justify further use.[561] At this point, the alder was spared further attacks, and luckily so, since killing unwanted brush with sprays would have been devastating to natural habitat for fowl species.

The forestry industry was one of the first primary industries to consciously promote the idea of "conservation" on Prince Edward Island. Indeed, 1956 was reported to be the "year of conservation," but conservation continued to be narrowly defined in economic terms, to promote and preserve valuable species in a sustainable industry. Ironically, this resulted in the damaging use of DDT.[562]

Given the limited size and quality of Island woodlots in the postwar era, it is no surprise to find that the Forestry Division continued to encourage the pulpwood industry throughout the 1960s. It was also the first government department to experiment with composting in the 1960s.[563] ARDA emerged in 1965, and assisted with planting twenty thousand pine and spruce trees at East Point, but more conscious attempts to restore the forest only began through government departments at the end of the 1960s.[564] In fact, forest management would be a significant plank of the ambitious Comprehensive Economic Development Plan, signed in 1969.

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[561] Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, c.1959.
[562] Ibid., 1956-1970.
[563] Demand for trees from the tree nursery also continuously increased throughout the 1960s for ornamental and utilitarian purposes.
[564]Prince Edward Island Department of Industry and Natural Resources, *Annual Report*, 1960-1969.

The Comprehensive Development Plan

The Comprehensive Development Plan (CDP) was one of the largest watersheds in Prince Edward Island history due to its scope and consequences, and was signed on 7 March 1969, between the federal and provincial governments. The purpose of the fifteen year plan was to create economic development and increase income and employment on the Island. The strategy was to maximize the economic potential of agriculture, forestry, fishing, and tourism, as well as to extend education and develop manufacturing and processing industries. Basically, the programs were expected to create private capital in the resource sectors of the economy.[565] The plan appears to be yet another example of using the Island as a "laboratory" to test out federal theories, reminiscent of 1944.

The CDP rearranged the environment and the landscape of Prince Edward Island by reallocating land "to its most profitable use." For example, 270,000 acres of unused land was to be pressed into agricultural production.[566] Small farm landholdings were not seen as practical to develop agriculture, and so, a survey of landholdings was conducted to determine the best use for the land. Strikingly, the planners were aware of the problems that were occurring within the Island environment, such as erosion and sediment in streams and bays; salt water intrusion; changes in soil moisture due to land clearing; and degradation of water quality and agricultural pollutants. As the text of the act observed, "Much of the needed research in this area has been done but work is

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[565] Dept. of Regional Economic Expansion, *A Development Plan for Prince Edward Island; A 15-Year Federal-Provincial Program for Social and Economic Advancement* (Ottawa: Queen's Printer, 1969), 5-24.
[566] Ibid., 24-25. Development also included building roads, electrification programs, and centralizing housing.

required to adapt it to the specific problems on the Island."[567] The question is; was research ever conducted and adapted to Prince Edward Island under the plan? Unfortunately, as well intentioned as the plan was, economic planners did not take environmental planning into consideration and this seemed to be the standard protocol of the era.

From an environmental perspective, the Comprehensive Development Plan's effects in promoting large scale primary industries and manufacturing created the largest human impacts to the landscape since permanent European settlement. A detailed analysis of the effects of the Comprehensive Development Plan could make for a very large thesis in itself. That, however, is another subject for another time. The CDP was adopted just around the time a recognisable environmental movement emerged on the Island. With this, the pre-history of environmentalism could be considered over.

Conclusion

The postwar era could be considered the most significant time of environmental change for Prince Edward Island in recent history. The end of the War brought about the introduction of synthetic chemicals, and marked the beginning of major environmental changes on Prince Edward Island. The farming industry greatly increased the amounts of chemical fertilizers, sprays, and scientific analysis. Traditional cultural methods in farming declined in favour of larger specialized farms, and many small family farms were unable to keep up with the pace of change. The destruction of hedgerows and clearing of new farm land began a full ten years previous to the 1969 Comprehensive Development

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[567] Dept. of Regional Economic Expansion, *A Development Plan for Prince Edward Island*, 31.

Plan, which is often blamed or credited with this trend. Recreational hunting and fishing increased attempts at conservation through the late 1940s to 1960s for the "restoration" and "regulation" of nature. Yet, recreational hunting drastically decreased during this period. The environment continued to be altered with the re-construction of dams for fishing, though such alterations were of little success in reviving the sport fishing industry. Similarly, the program of government-issued bounties failed in this period. Finally, the forestry industry received considerably more attention than ever before, and conscious re-forestation and management occurred. Unfortunately, these forest management practices included major spraying operations.

Greater government intervention in the Island landscape was something of a mixed blessing, given the unexpected outcomes and narrow frame of reference for policies adopted. Nevertheless, by the end of the 1960s, the province was on the brink of a new era in terms of both government management of the Island's landscape and environmental awareness.

Chapter Five: **Conclusion**

In the practice of writing a thesis, it is often said it is important to allow yourself to get "lost" which allows you to emerge with new ideas and perspectives in the quest or contribution to knowledge. In researching this thesis, the writer has allowed for the feeling of being "lost" because many of the acts or potential themes recorded in the charting of the research did not prove to be prominent themes in the narrative of the thesis.

So how did attitudes evolve toward the environment on Prince Edward Island over two hundred years? During the Colonial period 1769-1873, the Island government, under direction of the British Crown, regarded the Island as a new settlement with a new bank of resources to be exploited. Walrus were hunted to extinction due to their value in the mother country. Wild fowl were also over hunted due to their export value, and fish were unfairly caught in the confines of interior waterways. All of this was going on while the forest was being destroyed at an alarming rate. The early British era settlers were hunting, fishing, and clearing the land for all they were worth without conserving or planning for the future. However, this was how new settlements typically developed, and they were not doing anything out of the ordinary given the harsh circumstances of their existence. Government's role, limited by resources as well as laissez-faire attitudes, was to manage those resources: facilitating the exploitation of some resources, encouraging some plants and species while discouraging others, and occasionally to ensure sustainability.

During the post-Confederation period, it wasn't long, by 1900, before almost all of the land area was clear. Development brought environmentally aware people such as Bain, Morrison, Burke, as well as natural history orientated groups. Their awareness was a step toward environmentalism and preservationism, but not quite. They voiced their concerns for conserving parts of nature that they were passionate about, but did not theorize any comprehensive approaches to preserving the environment for the sake of nature, one of the hallmarks of the environmentalism of a later era. Nevertheless, human impact on the environment on Prince Edward Island increased during the post-Confederation period. Many attempts at controlling valuable and non-valuable species surely had effects to the ecosystem, even if, at this distance, they are hard to gauge.

With most of the landscape cleared for farming, weeds invaded before modern herbicides were available to impede their growth. Larger acreages of potato crops left them vulnerable to invasive potato bugs and bacterial diseases. Farming had the largest impact on the soil with attempts at fertilization, and early experiments with chemical fertilizers were apparent even before the Second World War. In summary, the period saw growing environmental awareness, but conservation of the natural resources was not prioritized as development proceeded. Luckily for the forests, after years of it being seen as the enemy, a forest commission sought to save the last remaining scraps of commercial forests on the Island. It was becoming apparent that natural resources come in limited quantities on islands.

After the Second World War, awareness of environmental issues might have even decreased compared to the postwar era as far as preservation for the future was concerned. Development was the buzz word in government, and development occurred

without environmental planning. The landscape was further altered into an unbounded, sprawling corporate monoculture. All of the synthetic pesticides and chemicals that became available after the Second World War were put into use without any regulations until the 1960s. The postwar attitude seemed to suggest that technology had all the answers to the problems within the environment but little consideration was given to how technology might harm that same environment. And, there was still little sentiment to preserve the environment for the future; even the amount of conservation based legislation decreased compared to the period before. Legislation occurred when advanced signs of environmental damage became noticeable; however, it did not appear to stem from Edenic or Garden Myth reasoning. As in the past Prince Edward Island legislation seemed to have primarily an economic focus when it came to environmental conservation.

The landscape on Prince Edward Island has historically been viewed through the lens of the garden myth, which could affect the attitude toward the environment because there is the possibility that a place with a garden mythology could be treated differently. It has to be taken into consideration when dealing with an environmental history of Prince Edward Island because other islands have received environmental legislation to protect landscapes that were seen as representations of Eden.[568] However, legislation did not appear to protect the Island's pastoral landscape from 1769-1970.

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[568] Eden is a term from the bible as a "garden" that God created for Adam and Eve. Chapter 2 of Genesis described beautiful fruit trees, including the tree of life and knowledge. A serpent tempted Adam and Eve to eat the forbidden fruit and they were cast out of the garden into the harsh world. *The World Book* Encyclopedia, Vol.3, s.v. "Eden." Ever since, Christians have searched for representations of Eden.

Does the environmental movement today represent a departure from the past or an extension of past concerns? Tracing "environmental" forerunners illustrates how attitudes and perspectives toward the environment have changed, and why Islanders were concerned. The aim of this thesis has been to understand the evolution of environmental attitudes within provincial government legislation. Based on the research material, it can be stated that environmentalism, as defined by current standards, was not evident in the general attitudes. The legislation illustrated more of a conservationist than preservationist sentiment. Conservation of natural resources has a long history, much longer than expected, dating to 1770. However, within the confines of this conservation-based legislation, the motives were purely economic. Resources were being conserved for future economic exploitation, not preserved for any intrinsic or aesthetic value. With the exception of a few outstanding individuals, the governmental legislators from 1769 to 1970 expressed environmental concerns based solely on the economic health of the primary industries. Environmental preservation emerged in the late 1950s and '60s; however, it still tended to use economic reasoning as justification.

Finally, the environmental history of Prince Edward Island was, in fact, affected by its "islandness." The limited geographical area and amount of natural resources most likely required protective legislation before the detrimental changes would have become noticeable in large continental areas. Residents would have been able to see their impact and feedback effects on the ecosystem sooner than if they were not living on a small island. As well, the bounded area of the Island probably gave the impression that the environmental problems could be fixed more easily, and that is perhaps why federal economic planners gravitated toward the Island to experiment with development plans.

How can future government policies and environmental histories benefit from this research? As with A.H. Clark it is, "to understand that we are a little better through a clearer view of what we have been."[569] With the realization of the environmental sensitivities within the Island's borders, future environmental planning and public policy should be ever more careful.

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[569] Clark, *Three Centuries and the Island: Historical Geography of Settlement and Agriculture in Prince Edward Island, Canada*, 223.

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