INVESTIGATING THE VALUES OF COASTAL LANDSCAPES ON THE BURIN PENINSULA OF NEWFOUNDLAND

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INVESTIGATING THE VALUES OF COASTAL LANDSCAPES ON THE BURIN PENINSULA OF NEWFOUNDLAND

by

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ABSTRACT

Coastal landscapes have potential values for tourism development and community sustainability. Values may be perceived differently by multiple stakeholders, causing conflicting development priorities. Understanding values is fundamental to effective resource governance. This study investigated coastal landscape values on the Burin Peninsula of Newfoundland using a systematic landscape inventory and a photograph-based survey. Landscape preferences and values were surveyed for residents, visitors, and people who never visited the region. Results show consensus on preferences, with the most preferred landscapes being a scenic coastal islands landscape and a coastal community with traditional fishing infrastructure. Multiple values were assigned to local coastal landscapes with some differences observed between respondent groups, which may have been influenced by familiarity with the region. Information on non-resident landscape perceptions is applicable for sustainable tourism development, and resident landscape values suggest landscape should be recognized as a coastal resource that requires a focused resource governance approach.

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LIST OF ABBREVIATIONS

ATV – All Terrain Vehicle

CILM – Canadian Integrated Landscape Management Coalition

HNL – Hospitality Newfoundland and Labrador

HRLE – Newfoundland and Labrador Department of Human Resources, Labour and Employment

HRTA – Heritage Run Tourism Association

ICEHR – Memorial University Interdisciplinary Committee on Ethics in Human Research

ICM – Integrated Coastal Management

ICSP – Integrated Community Sustainability Plan

ILM – Integrated Landscape Management

IUCN - International Union for Conservation of Nature

MPA – Marine Protected Area

NL – Newfoundland and Labrador

PEI – Prince Edward Island

SBE – Scenic Beauty Estimation

SRDC – Schooner Regional Economic Development Board

TCH – Trans-Canada Highway

TCR – Newfoundland and Labrador Department of Tourism, Culture, and Recreation

UNESCO - The United Nations Educational, Scientific and Cultural Organization

WCED - World Commission on Environment and Development

WTA – Willingness to Accept

WTP – Willingness to Pay

CHAPTER 1

INTRODUCTION

Coastal landscapes are resources with a range of potential values that can be explored to promote community sustainability. The importance of this resource is magnified in areas where other resources are either limited or have become depleted. For many rural communities, coastal landscapes have become important economic resources for tourism, while also holding other values such as those related to culture, heritage, recreation, and aesthetics. Landscape values are also related to a person's attachment to particular places, and local landscapes contribute meaning to places for both residents and visitors. However, different views on landscape values can lead to potential for conflicting priorities as coastal areas are developed in pursuit of economic and social benefits. Different perceptions of coastal landscape values may lead to coastal development that does not always meet the expectations of all involved parties. For these reasons, understanding these values is fundamental to appropriate coastal planning and development. Knowledge about landscape values, including how different or similar they are between stakeholder groups, will contribute to achieving resource sustainability and improving coastal resource governance.

Like many other coastal rural communities facing sustainability challenges, the people of the Burin Peninsula region in Newfoundland and Labrador (NL) are currently pursuing regional economic diversification through the development of several coastal industries, including tourism. The interes in tourism calls attention to the potential value of coastal landscapes as tourism resources, since the natural coastal scenery of NL is

often positioned by tourism promotion as one of the province's key attractions. In order to understand how residents of the Burin Peninsula value coastal landscapes, and whether these values differ from those of non-residents and tourists, a systematic landscape inventory and a survey on public landscape preferences and values are conducted in this thesis research. The thesis will also discuss how such understanding can contribute to sustainable tourism development and inform coastal governance processes.

This chapter will present the purpose, context and aims of the study. To establish context, the concepts of sustainable development and community sustainability are introduced. Coastal landscapes are discussed as a potential resource for rural coastal communities, such as those in the Burin Peninsula region. The importance of understanding values is introduced as a resource governance issue. The specific research questions for this study are presented, followed by a brief description of methods. The chapter will conclude with an outline of the thesis and an overview of each remaining chapter.

1.1 Research Context

The term "landscape" may refer broadly to "the appearance of an area, the assemblage of objects used to produce that appearance, and the area itself" (Duncan 2000, 429). This simple definition contains the contradiction that has been a source of contention over the meaning of the term, as it refers to both the physical appearance of land at a particular location, as well as the perception of the land. As Olwig (2003) notes, the geographical study of landscape evolved in the 20th century with considerable debate over what the term means, with these two opposing points of view at the centre of debate.

There have also been disagreements about what constitutes the landscape and about the importance of factors beyond vision, such as other senses and sociocultural factors, in the experience and interpretation of landscape (Duncan 1995; Duncan 2000).

Acknowledging the contested positions of landscape studies within geography, this study refers to a coastal landscape as the physical constituents of the coastal zone and the human experience of those features. As Rowntree (1996, 129) notes, it has become more common for researchers to use definitions of landscape that encompass both the land and the perception of land, rather than mutually exclusive "region-or-scenery" definitions. The reference to coastal landscape given above is concurrent with the type of landscape definitions often used by researchers in landscape perception studies (see Hull and Revel 1989; Daniel 2001). It is also important to note that the elements of landscape include both biophysical and sociocultural aspects. Interestingly, Widgren (2011) notes that these aspects are no longer divisible, as the history of human interaction with the surrounding environment has blurred the lines between what is "natural" and what is "cultural". The author uses the term *domesticated landscapes* to emphasize this history of human-environment interactions, which is expressed in the appearance and ecology of landscapes.

Coastal landscapes form the setting for interaction between people and the coastal zone, which is a global area bridging terrestrial and marine environments (Clark 1996; Hinrichsen 1998). The spatial definition used in this thesis for the area comprising the coastal zone includes the waters of the continental shelf (seaward to a depth of 200 m), the intertidal zone, and terrain extending 100 km inland (Burke *et al.* 2001; Martinez *et*

al. 2007). The coast is a valuable area for human endeavour, and globally the coastal zone is one of the most important spaces for settlement and resources (Martinez *et al.* 2007).

The landscapes of the coastal zone express the biophysical and sociocultural character of coastal communities. There are potential impacts for these landscapes as pressure for coastal development increases. Development is pursued to satisfy the socioeconomic needs of coastal communities, with the potential benefits of development including access to coastal waterways, ports, and terrestrial and marine resources, as well as potential for employment and other economic benefits related to business development. The multiple user demands on the coast presents a need for development choices, and these choices are influenced by values. For example, while coastal areas are attractive locations for residential real estate developments, they are also the ideal locations for many possible tourism and recreation ventures. The question of whether to develop or not involves weighing value-related factors, such as concerns about the degradation of coastal ecosystems and the potential for employment or other socioeconomic benefits. Impacts to the coastal landscape may also cause concern, as valued landscapes are essential elements of important places for residents and visitors. This suggests that human interaction with the coastal zone requires a balance of development and conservation, echoing the focus of research and discourse within the *sustainable development* framework (WCED 1987).

The emergence of the sustainable development paradigm can be seen as a reaction to several changes in human–environment relationships that culminated the late 20th century. Such changes included increased economic growth and development, climate change, environmental degradation, and resource depletion (WCED 1987; Pezzoli 1997; Robinson 2004). These changes have had a significant impact on rural communities in

Canada and have threatened the sustainability of communities on the coast, in particular (Ommer 2007). According to Ommer, rural coastal communities in Canada are facing a crisis due to the decline of traditional resource-based economies, most notably fishing. This crisis has been manifested through challenges such as unemployment, decreasing and aging populations, and a loss of the culture or "way of life" that has historically existed for people living in fishing communities.

Because of these challenges, rural communities are seeking new and diverse ways to bring about economic prosperity and community sustainability. In NL, the pursuit of economic diversification has led many rural communities to explore tourism and its perceived benefits. Tourism development has been promoted as a beneficial economic alternative for rural communities (TCR 2009). The province's tourism marketing strategy is focused on promoting the unique landscape of coastal areas and the cultural heritage of NL communities (TCR 2009). The potential economic benefit of landscape-related tourism in rural NL brings attention to the value of this resource. Through tourism development, coastal landscapes have potential economic value for rural NL, but there may also be other values aside from the economic value related to tourism expenditures and employment. For visitors, these values may be related to experiencing spectacular scenery and views, as well as values associated with getting away from the city and experiencing nature. It is also possible that landscapes are valued by residents for their historic, cultural or recreational value, and they may have an intrinsic value for their ecological and environmental importance. Finally, coastal landscapes may hold significant value because people may perceive them as elements of important places on

the Burin Peninsula. Understanding how and why landscape is valued by stakeholders is a first step towards the effective governance of this resource for the region.

Planning for the use of natural resources has increasingly shifted from the concept of *management* to a broader concept of *governance*. While resource management is normally seen mainly as the responsibility of governments, resource governance is related to the way public and private actors, such as communities, tourism-related industries and governments, interact to address societal challenges through actions like building institutions and setting principles that guide human interactions with the environment (Kooiman *et al* . 2005). Several formalized governance approaches could promote sustainable development for coastal landscapes. These include sustainable tourism planning, integrated coastal management, and community sustainability planning. Governance approaches, whether formal or informal, are guided by values, norms, and principles of the people involved (Kooiman and Jentoft 2009). These elements influence ideas about resources, how best to use them, and about how they should be governed. However, the similarities and differences in the way that people value resources are poorly understood, as they often remain unexplored, implicit or assumed. Successful planning for the sustainability of a coastal area may be difficult when there is a poor understanding of how, and why, coastal resources like landscapes are valued by stakeholders. Investigating the underlying values that influence behaviour and exploring consensus and conflict about values among stakeholders can lead to more informed resource governance (Kooiman 2003). In the context of coastal landscapes, such understanding may facilitate the inclusion of their values in broader coastal development considerations and in planning for sustainable development.

1.2 Research Purpose, Questions and Methods

This thesis investigates the values of coastal landscapes in the Burin Peninsula region of NL. These landscapes are also discussed in terms of their potential as resources for tourism development and community sustainability. As a region formerly dependent on the fishery, the Burin Peninsula is now seeking to expand and diversify its economy through the development of several industries, including those related to tourism. However, other opportunities for coastal development, including port construction, mining, and industrial enterprises, may bring both socioeconomic benefits and significant changes to the coastal landscape, possibly affecting its tourism value. As the region continues to develop its economy, choices may be required regarding coastal development and preservation of coastal landscapes.

Choices in natural resource use are governed in part by values (Kooiman and Jentoft 2009), and differences in stakeholder perceptions of value can lead to natural resource use scenarios which do not meet the expectations of all involved parties. Stakeholder values are not always communicated explicitly, and there is potential for the implicitly held values of one stakeholder to be in conflict with those of another, without either party being aware of the problem. In the case of coastal landscapes, which have not been traditionally considered as natural resources, it is possible that a range of implicit perceived values exists, influencing ideas about how they should be managed for the future.

Recognizing that coastal landscapes are a potential resource for the Burin Peninsula region, the purpose of this research is:

- to understand how people value the coastal landscapes of the Burin Peninsula; and
- to consider how this information can help inform tourism planning, community sustainability planning, and other measures influencing the governance of this resource.

Specifically, the thesis aims to answer the following questions:

- What are the perceived values of coastal landscapes for the Burin Peninsula?
- What are the similarities and differences in the way that the coastal landscapes of the Burin Peninsula are valued by residents, visitors, and people who have never visited the region?
- What do these results suggest in terms of policy implications for sustainable tourism development and community sustainability in the Burin Peninsula region?

The process of investigating stakeholder values for coastal landscapes from a governance perspective is related to the established field of landscape assessment, or

evaluation. Generally speaking, the practice of landscape assessment has evolved as a three-step process, which often includes a landscape inventory, a study of perceived landscape values, and an assessment of landscape quality based on the information gathered (Unwin 1975; Daniel 2001). While it is not the aim of this study to produce an assessment of landscape quality, both a landscape inventory and a landscape values study were conducted to answer the specific research questions indicated above. A landscape inventory method was employed to provide a systematic overview of the existing landscapes on the Burin Peninsula. This information provided the basis for the design of the values study, which elicited information on how and why these landscapes are valued by different groups of people.

The results of this research are used to discuss the values of coastal landscapes, the potential contributions of landscape to the local economy through tourism, and the potential role of landscape in the sustainability of rural communities. Also considered is the utility of this knowledge for informing governance decisions that promote the sustainability of the coastal landscape as a natural resource.

1.3 Thesis Overview

The thesis is presented in seven chapters. Chapter 1 has outlined the study and its aims, while also introducing coastal landscapes as a natural resource and explaining the importance of understanding similarities and differences in perceptions about their values. Chapter 2 presents the Burin Peninsula region as the case study and continues the discussion on tourism development and coastal resource governance for this area. The literature review in Chapter 3 provides an overview of important contextual and

theoretical information for this study, with discussion of relevant previous work. Chapter 4 describes the methods used in this study for both the landscape inventory and the quantitative survey on landscape values. Survey data analysis and results are presented in Chapter 5. This chapter will include information on respondent demographics, ranking and valuation of landscape photos by respondents, and a comparison of results between different respondent groups. Chapter 6 provides a discussion of these results, and their implications for tourism and coastal governance on the Burin Peninsula. Methodological considerations will also be presented in this chapter. Finally, Chapter 7 concludes the thesis with a summary of key findings in light of the research objectives. This concluding chapter will also discuss the policy contributions and methodological contributions of this study, and identify potentially important areas for future research.

CHAPTER 2

STUDY AREA

This chapter will provide an overview of the Burin Peninsula Region, beginning with an introduction to its location and the communities it comprises. Then, the population, economy, and employment of the region are discussed. The current state of regional tourism is described, followed by a discussion of coastal resource governance in the region.

2.1 Introduction to the Burin Peninsula Region

The Burin Peninsula is located on the south coast of the island of Newfoundland, adjacent to Placentia Bay in the east and Fortune Bay in the west. The peninsula extends from the island approximately 160km to the southwest. According to the definition of the coastal zone provided by Burke *et al.* (2001) and Martinez *et al.*(2007), the entire region can be considered coastal, since the greatest distance from the peninsula's north to south coast is approximately 40km (see Figure 2.1).

The Burin Peninsula Region is one of nine Rural Secretariat Regions, which are rural governance areas defined by the NL Department of Innovation, Trade, and Rural Development. The regional information contained in this chapter will refer to the area defined by the Rural Secretariat region, shown in Figure 2.1. There are forty communities in the region, with all but Winterland located on the coast. Most of these coastal communities were originally settled for access to fishing grounds, and the fishery has historically played and important role in the development of the region.

Figure 2.1 The Burin Peninsula region (Community Accounts 2011).

The extensive coastline of the region also provides the scenic coastal landscapes that are a main selling point for the local tourism industry. Tourism promotional materials emphasize the "scenic, wild and rocky coastline" of the region (HRTA 2007). The

landscapes of the peninsula are influenced by the region's terrestrial ecology, which is predominantly the southeastern maritime barrens eco-region (Natural Resources NL 2010a). This type of area is characterized by extensive barrens, with some Balsam fir forest. The extreme southern tip of the peninsula is classified as the eastern hyper-oceanic barrens eco-region, an area in which the oceanic climate prevents the growth of forests aside from stunted krummholz Balsam Fir, locally known as tuckamore (Natural Resources NL 2010b).

2.2 Population

As of 2006, the population of the region was 21,600 (Community Accounts 2007). This population represents 4% of the total population of NL. Marystown is the largest town and the main service centre for the region, with a population of over 5,000. Other towns having populations greater than 1,000 include Burin, Fortune, Grand Bank, and St. Lawrence (Statistics Canada 2006). However, small coastal communities mainly characterize the area. Of the forty communities in the region, thirty have populations of 500 or less.

There has been significant population loss in the region since 1991 due to both natural population change and out-migration (Rural Secretariat 2007). Natural population loss has occurred with declining birth rates and generally stable death rates since 1991, while out-migration has continued with people moving away for employment and other incentives (Rural Secretariat 2007). The rate of population loss has been significantly higher here than in the province as a whole: from 2001-2006, the regional population decreased by 8.9%, while the total provincial population declined by just 1.5%. This trend

of out-migration from rural Newfoundland is one of several major socioeconomic changes resulting from the decline of Northern cod stocks and the subsequent fishing moratorium of 1992 (Hamilton and Butler 2001). In general, the trend towards population decrease seen throughout the Burin Peninsula has occurred faster in the smaller communities than in the larger towns of the region (Rural Secretariat 2007).

2.3 Economy and Employment

There are indications that the regional economic conditions are more vulnerable than those of the provincial economy. For example, the gross personal income per capita for the region was $22,700 in 2007, which was slightly below the provincial average of $24,900. Another economic indicator is the self-reliance ratio, which measures financial dependence on government transfers. In 2007, this ratio was 71.9% for the Burin Peninsula region, indicating that 28.1% of income in the region depended on government sources such as Canada Pension, Old Age Security, Employment Insurance, Income Support Assistance, and others. In comparison, the province as a whole had a lower dependency on government transfers with a self-reliance ratio of 79.4%. However, home ownership in the region was higher than the provincial rate (78.7%), with 83.9% of homes in the Burin region being owned versus rented (Community Accounts 2007).

The regional employment rate was also below the provincial rate, with 74% employment in the Burin Peninsula region compared to 76.7%, provincially (Community Accounts 2007). The regional workforce is also aging, as more people retire and fewer young people enter the workforce. Employment in the region is provided through a number of diverse industries; significant among them are sales and service, including jobs

related to tourism, as well as construction, and primary industries such as fishing and fish processing (SRDC 2008). The regional employment percentages by industrial sector are shown in Figure 2.2

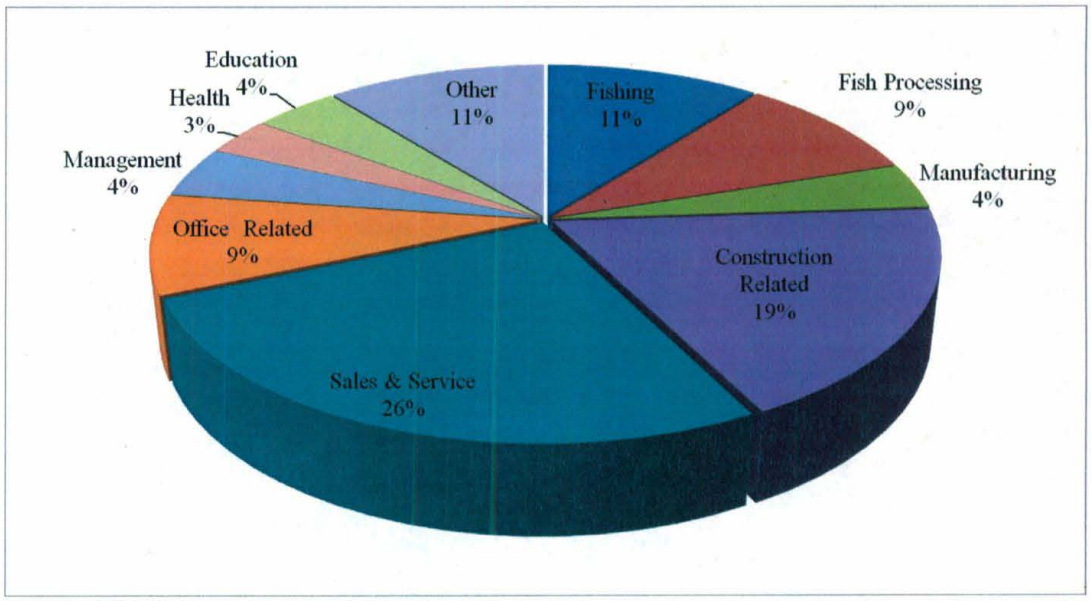


Figure 2.2 Burin Peninsula regional employment by sector

2.4 Tourism

Tourism development has become an important economic strategy for rural areas throughout the province (TCR 2009). The provincial government reports that in 2007 tourism contributed almost $790 million to the provincial economy, supporting 12,730 jobs and generating other economic benefits (TCR 2009). The Schooner Regional Development Corporation (SRDC), the economic development board for the region, has identified tourism development as an engine of growth for the Burin Peninsula. Along with pursuing several other key industries such as manufacturing, fisheries, and mining,

encouraging the recent tourism increases is advocated in the region's strategic economic plan (SRDC 2008).

Tourism in the Burin region is promoted and coordinated by the Heritage Run Tourism Association (HRTA). The association's membership includes a broad range of stakeholders including tourism operators, municipal governments, community groups, restaurants, and other local businesses. The HRTA is managed by a volunteer board of various representatives from these stakeholder groups. There are three visitor information centres operated by the HRTA, which are located at Goobies, Marystown, and Fortune. The association has also developed and maintains a series of view-parks, which are pull-off areas along Route 210, the provincial highway leading to the peninsula, These areas feature interpretive panels on the cultural and natural history of the region (HRTA 2007).

Route 210 branches off the Trans-Canada Highway (TCH) at the town of Goobies. Travel by highway is essentially the only way for visitors to get to the peninsula from the rest of the island of Newfoundland. There is a ferry passenger service between the town of Fortune and the French islands of Saint-Pierre et Miquelon, which are approximately 25km west of the Burin Peninsula. The ferry is the main point of access for visitors from the French islands to NL, and access to Saint-Pierre et Miquelon is one attraction for visitors to make the drive to the Burin region. Driving from St. John's, the capital city and location of the nearest major airport, to the Route 210 exit in Goobies takes approximately two hours, with a further three hours required to drive the length of the peninsula. Due to the peripheral location of the Burin Peninsula, the HRTA promotes the opportunity to experience the unique heritage and landscape of the region as a separate experience from visiting the rest of the province.

Along with cultural heritage, the natural environment and rugged landscape of NL are considered the main attractions for marketing tourism in the province (TCR 2009). As is the case for the province in general, the coastal landscapes of the Burin Peninsula are promoted for tourism. For example, the town of Burin heritage walk is marketed as an opportunity to experience a historic fishing settlement and for its natural coastal scenery (HRTA 2007). In this way, the coastal landscape is frequently presented as a beautiful and spectacular setting in which a visitor can participate in activities and interact with local communities.

While there is no official record of total visitors to the Burin Peninsula, several indicators suggest that the number of visitors has been increasing in recent years. For instance, the HRTA keeps records of the total number of people visiting at each of the three visitor information centres over the peak tourism season. The total visitors counted at these centres over the 10-week peak season increased from 15,718 in 2004 to 17,283 in 2009, the highest year on record (HRTA 2010). Increases were also seen in occupancy rates for accommodations in the Burin Peninsula economic zone, with 2010 being the highest year on record for yearlong and peak-season occupancy rates (TCR 2010). Another possible indicator of visitor numbers to the Burin region is the data for visitors who travel to the French islands of Saint-Pierre et Miquelon via the ferry from Fortune. In 2008, the SRDC reported an estimate of 7,500 visitors travelling from Fortune to the French islands between June and September (SRDC 2008).

A similar increasing trend in the number of visitors is observed provincially. As shown in Table 2.1, in 2010 the province received 518 500 visitors, resulting in $410.6 million in related expenditures. This represents a record year for tourism in NL, which the

provincial government attributes to increased spending on tourism marketing, as well as attention gained through large-scale events such as the 2010 Juno Awards in St. John's and the Cupids 400 Celebrations, and features in magazines such as National Geographic Traveler (TCR 2010). Increasing the number of annual visitors, and related tourism expenditures, remains a goal for the provincial government (TCR 2009), as well as for the Burin region (SRDC 2008).

Table 2.1 Visitors and tourism expenditures for NL from 2003-2010

Year	Non-Resident Visitors	Expenditures ($M)
2003	424 400	299.9
2004	449 300	320.6
2005	469 600	336.4
2006	496 400	265.4
2007	490 100	369.3
2008	480 100	357.4
2009	483 200	374.6
2010	518 500	410.6

Source: Tourism, Culture and Recreation, 2011

2.5 Coastal Resource Governance

Coastal resources remain vital for the socioeconomic sustainability of the region. In addition to fisheries, which continue to employ 20% of working residents through both harvesting and processing (see Figure 2.2), access to the coast is also important for other industrial developments such as manufacturing, mining, and marine transport.

As the region continues to develop these industries and place multiple demands on the coast, there is a potential for conflict over coastal access, as well as conflicting

perceptions about conservation or development of coastal resources. Large-scale industrial developments will likely change the appearance of some coastal landscapes. Already, metal fabrication and manufacturing has emerged as a significant industry in the Marystown area, providing employment for residents of Marystown, and many other communities in the region (HRLE 2007). A recent announcement has indicated that fluorspar mining will soon reopen in St. Lawrence, bringing hundreds of jobs to the region during construction and remaining a major employer once the mine is operational (CBC News 2011). While these industries offer opportunities to the region through employment and other socioeconomic benefits, they may pose a potential concern to some residents for their impact on the environment and aesthetics of the coast. In one recent example of such conflict, a tourism operator in the town of Spanish Room expressed concerns that a proposed expansion of the nearby Marystown shipyard would negatively affect his business (CBC News 2010).

As introduced in Chapter 1, governance refers to the ways in which public and private actors interact to create opportunities and solve problems (Kooiman *et al.* 2005). In the case of the Burin Peninsula, there are a range of individuals and institutions that influence the governance of coastal resources. Formal institutions include municipal councils, the SRDC, the Rural Secretariat Regional Council, and the HRTA. Community groups and volunteer organizations such as the Burin Peninsula Environmental Committee also play a role. There is collaboration between these various stakeholder groups to produce plans and strategies for regional development. While coastal resources are an important topic of such plans, there is little attention or specific planning for coastal landscapes. This is the case for the province generally, where coastal landscapes

are acknowledged as valuable for a variety of reasons, yet there are no formalized plans for sustainable use of these resources. This study will contribute information on landscape preferences and values, which may be useful for informing governance choices affecting the sustainability of coastal landscapes.

CHAPTER 3

LITERATURE REVIEW

This chapter reviews key literature and previous studies on values in natural resource governance, tourism planning, and landscape studies. To set context for the development issues faced by rural regions such as the Burin Peninsula, the chapter begins with an overview of the concepts of sustainable development, community sustainability, and rural restructuring. This is followed by a description of natural resource values and key methods used for measuring and capturing values. Sustainable tourism development is reviewed, followed by a discussion of the relationship between landscape and tourism. Acknowledging the important role that perception plays in landscape value, the chapter next reviews previous landscape studies that have researched public perceptions, preferences, and values. Finally, the chapter discusses several approaches to coastal landscape governance.

3.1 Sustainability in Rural NL

3.1.1 Sustainable Development

Sustainable development has emerged as the dominant paradigm through which governments and the public address social and environmental problems (Roseland 2000). International attention to this concept began through the United Nations in the 1970s and 1980s, culminating with the World Commission on Environment and Development's (WCED) 1987 report *Our Common Future.* This report defined sustainable development as "development that meets the needs of the present without compromising the ability of

future generations to meet their own needs" (WCED 1987, 8), and put particular emphasis on reducing economic poverty through environmentally sustainable economic development.

Although the WCED definition has become a standard, discussion on what sustainable development is and how it can be achieved continues. Sustainability is usually represented as an intersection of three dimensions – economic, social, and environmental (Robinson and Tinker 1997; Roseland 2000; Cocklin *et al.* 2002, 5). Each dimension has its own imperative for sustainable development, and the way that sustainable development is interpreted often depends on which of these dimensions is considered the most important (Robinson and Tinker 1997). This implies that local factors can influence how sustainable development is conceptualized and implemented. For example, a rural community which struggles to overcome economic poverty and unemployment may consider the economic imperative to be the most important. In the case of fisheries, some may view the environmental imperative as a priority, leading to a fisheries closure or the establishment of a marine protected area (MPA).

Differences in how the imperatives are prioritized result in debate over the theory and practice of sustainable development. However, Cocklin *et al.* (2002) point out that as a socially constructed concept, sustainable development is open to mediation and debate, especially among people who prioritize economic, social and environmental values differently. At the root of the debate are two opposing views of sustainability – one which focuses on social systems, such as culture and economy, and another which focuses on natural systems, such as biodiversity or habitat. Maintaining an open dialogue on how the

potentially conflicting imperatives can be reconciled is advantageous in the discussion of how sustainable development can be achieved.

Rather than viewing sustainability from either a social or a natural perspective, Philips and Clarke (2004) proposed that a unifying concept linking these two perspectives is needed. They argue for the use of landscape as a conceptual bridge, or a medium through which sustainable development challenges are addressed. In their view, the concept of landscape embraces the social and natural dimensions in the manner required for sustainable development. They also argue that landscape introduces the appropriate temporal and spatial scales for understanding the environment. Finally, the authors note that as a widely used term, "landscape" may engage more people in sustainable development processes than a word such as "biodiversity", which is less accessible and does not convey the same relationship between people and place.

3.1.2 Community Sustainability Planning

The concept of sustainable development has had an impact on the theory of community development and community planning (Roseland 2000). The application of sustainable development principles to communities has resulted in the concept of *sustainable community development,* which is a suitable term for the development goals that many rural coastal communities in Canada are attempting to achieve. Strategies to develop sustainable communities are varied and wide-ranging, and successes or failures in sustainable community development are very much dependent on place-related context. Efforts toward this goal are carried out formally and informally by many

different agencies such as municipalities, provincial and federal governments, and community volunteer groups.

In Canada, the federal government has implemented community sustainability planning through the Gas Tax Funding Program. The federal government has gas tax agreements with all provinces and territories. Under these agreements, federal gas tax funds are invested in environmentally sustainable municipal infrastructure (Municipal Affairs 2009). In order to receive infrastructure funding through the program, municipalities are required to complete an Integrated Community Sustainability Plan (ICSP). An ICSP is a plan developed in consultation with communities, which aims to direct community development towards long term sustainability (Municipal Affairs 2009). In the ICSP framework, community sustainability is understood to be supported by five related pillars of sustainability, including environmental, ecological, social, cultural, and governance pillars (Municipal Affairs 2009). ICSPs are required to be completed through collaboration with community members in order to define a community vision and establish sustainability goals for each pillar (Municipal Affairs 2009). This process is meant to foster interaction between a wide range of actors, including municipal governments, community organizations, industry, labor, and residents.

Ling *et al.* (2009) provide a template for ICSP, created in consultation with over six-hundred individuals. The authors note that there will be considerable challenges for moving the ICSP process beyond rhetoric to create a plan that actually contributes to long-term community sustainability. Through case study reviews, the article identifies common challenges for this process, including poor frameworks for integration, inadequate scales of attention, the need for new governance approaches, and the challenge

of inclusion. Overcoming these challenges will require a high level of integration and cooperation, including interdisciplinary research. The authors also emphasize the importance of participatory community planning. As will be shown in this thesis, elicitation of public landscape values is one of the tools that can be used to encourage public participation and engagement in the discussion about community sustainability and planning.

3.1.3 Restructuring and Regional Development in Rural NL

As discussed in Chapter 1, many rural coastal communities in Canada have undergone major socioeconomic changes in recent decades (Ommer 2007). Significant ecological changes have also occurred, often impacting the natural resource base that has traditionally been the socioeconomic foundation for rural communities. The linkage between ecological and socioeconomic changes is a major challenge for rural communities, and the processes through which they react to these changes have been referred to as restructuring (Bowler *et al.* 2002; Ommer 2007).

Ommer (2007) views restructuring as number of interactive and dynamic processes, occurring with the interplay between environmental and social systems. In addition to being interactive, these processes may also be co-dependent, as was the case after the decline of NL cod fisheries in the 1990s. While Ommer gives evidence of communities in crisis as a result of such changes, restructuring can have both positive and negative effects on a community. Bower *et al.* (2002) note, for instance, that some rural communities have been able to take advantage of the changes that come with restructuring, while others are disadvantaged. This disparity exists at the individual level

as well, with some individuals in a community benefitting from restructuring while others do not.

One policy direction taken to face the challenges of rural restructuring in NL is the regional economic development approach. Focusing on rural economic development policy in NL, House (2001) examines the suitability of the regional development approach that has been taken by the provincial government. In reviewing the history of rural development strategies for the province, House asserts that it is difficult to conclude whether or not regional development is actually a viable option for NL, because it has yet to be applied with the level of integration and co-ordination that is required. The author argues that if the regional development approach is to be applied with success, the provincial government must provide support and resources to overcome a lack of local capacity.

Like many rural coastal communities in Canada, rural NL is involved in a process of restructuring through a number of socioeconomic and ecological changes. It is important to note the recent policy emphasis on regional economic development, and House's (2003) conclusion that, despite the fact that this approach has been advocated by the provincial government, there has been a lack of capacity and support for furthering economic development at the local and regional levels. Another key consideration, noted by Ommer (2007), is that restructuring can result in institutions and policies that do not adequately address the realities of the social and natural systems, which in turn creates risk for socio-ecological health. This suggests that it is important to examine the suitability of institutions and policies for the social and natural systems they correspond

to. It is in this context that rural NL communities are currently considering sustainable development and community sustainability issues.

3.2 Environmental Values

3.2.1 Environmental Values and Natural Resources

Satterfield and Kalof (2005) note that the study of environmental values is characterized by multifaceted approaches and considerable dispute. Environmental values have been studied through a variety of academic disciplines, and there are different meanings for the word value, which can make sorting through the literature on the subject difficult. Two different, but related, meanings of the term environmental values are used to express held values and assigned values. Held values include the principles and concepts that are important to people, and they include notions such as responsibility and justice (Brown, 1984). In relation to the environment, held values influence a person's environmental behaviour and attitudes, and inform their opinions on how natural resources should be managed. On the other hand, assigned values refer to the values that people have for a particular environmental asset, or natural resource. In general, assigned values express a person's preference for an object, and his or her judgment of the object's worth (Brown, 1984). In an environmental context, assigned value refers to the worth that individuals ascribe to natural resources, such as a particular species of wildlife. Assigned values for natural resources are influenced by the held values that form a person's attitudes and behaviour towards the environment.

There are several different types of value that may be assigned to a particular natural resource, or environmental good. Environmental assets have economic value, in

that they are used by people to satisfy material and immaterial needs (de Groot 1992). Pearce (1993) notes that economic valuation processes measure anthropomorphic value, which reflects the worth of something as a commodity for people. However, many people also believe that environmental assets have intrinsic value, independent of their utility to humans. Both types of value are important to consider for decision-making regarding environmental resource use (Pearce 1993).

The economic value of an environmental resource is related to the goods and services produced through functions such as providing habitat for wildlife or being the location for recreational activities (de Groot 1992). Four types of economic value have been described for environmental resources: direct-use value, indirect-use value, option value, and non-use value. De Groot and Hein (2007) adapt previous work on the value of ecosystem services (de Groot, 1992; Pearce and Turner 1990; Millennium Ecosystem Assessment 2003) to discuss these types of economic value as they relate to landscape functions.

Direct-use value arises when an environmental asset such as landscape is utilized in direct ways, as in the production of food from an agricultural landscape, or the recreational use of a hillside for hiking. Indirect-use value arises when benefits are received indirectly, such as through the water-purifying functions of wetlands. Option value is related to the conservation or protection of a resource to meet future demand, where people are willing to pay for the option of using a resource in the future. Finally, non-use value refers to the intrinsic value that people may believe is inherent in an environmental asset. These four types of economic value may be recognized by the market in the form of monetized value, or they may exist as a non-market value that is

implicit in the price of a related good, which is often the relationship between landscape and real estate (de Groot and Hein 2007).

Natural resources such as landscape are not only assigned economic values. There is a range of value types that may be assigned to landscapes, which vary according to the meaning and importance that landscapes have for people. As an interface between people and their surrounding environment, the landscape can hold meaning related to a person's identity and sense of place (Relph 1976; Jackson 1984). Landscape is also an aesthetic object, which, in addition to being appreciated visually by residents and visitors, has also played an important role in the development of art and literature (Kennedy *et al.* 1988; Bourassa 1991). The role of perception in understanding landscape is emphasized by Meinig's (1979) essay, "The Beholding Eye: Ten Versions of the Same Scene", in which the author depicts landscape as nature, habitat, artefact, system, problem, wealth, ideology, history, place, and aesthetic object. How one defines the landscape is a product of one's relationship to that landscape, which suggests that perceptions influence how landscapes are defined, and, by extension, how they are valued.

3.2.2 Measuring and Capturing Values

Satterfield and Kalof (2005) note an increasing interest in research designed to measure and capture the values of natural and environmental resources. The authors make a distinction between axiomatic and relativistic approaches to this type of research. Axiomatic values research is distinguished by expert-based assessments, in which the values of natural systems are estimated or argued for through the principles of ecological economics or environmental ethics. The purpose of this type of research is often to

illustrate the value of natural resources, environmental goods, or ecosystem services, which may have been typically overlooked and undervalued (Satterfield and Kalof 2005). Relativistic values research, on the other hand, is designed to elicit public values for natural resources. This type of values study does not attempt to establish "true" value, but rather its purpose is to gauge the range and depth of public values for purposes such as policy-making and governance. Both expert-based and public perception-based approaches have been used to examine natural resource values in both monetary and non-monetary terms.

Expert-based value assessments may illustrate or argue for the monetary values of natural resources. Costanza et al. (1998) produced a prominent study on the market and non-market values of the world's ecosystem services. This study assigned a total economic value to the services produced by natural ecosystem functions such as water regulation, nutrient cycling and cultural value. Similar approaches have been taken in studies estimating the ecological, social, and economic importance of the world's oceans (Costanza *et al.* 1998) and the world's coasts (Martinez *et al* . 2007).

The monetary value of landscapes has also been estimated by hedonic pricing, which is a method used to estimate the value of ecosystem services related to the price of marketable goods such as real estate. With the hedonic pricing method, monetary property value is used to estimate the value of related environmental characteristics such as air quality (Freeman 1979). The monetary value of landscapes can be assessed in a similar way. Hamilton (2006), for example, examines the relationship between the price of coastal accommodations and coastal landscape value in the German coastal state of Schleswig-Holstein. The results of this analysis show that the type of surrounding coastal

landscape affected the price of accommodations. A monetary value for these types of landscape was then estimated using the price that tourists pay for coastal accommodations.

Monetary natural resource value may also be estimated through public perception-based studies. The dominant method for monetary value elicitation has been contingent valuation, in which surveys are used to assess willingness-to-pay (WTP) and/or willingness-to-accept (WTA) in dollar amounts (Satterfield and Kalof 2005). WTP refers to the maximum amount that a person will pay for a good or service, while WTA refers to the amount that a person will accept in compensation for the loss of a good or service (Carson 2000). Willis and Garrod (1993) used a WTP-based survey to understand resident and visitor preferences for landscapes in the Yorkshire Dales National Park, U.K.

Interestingly, Knetsch and Sinden (1984) have shown that WTA often exceeds WTP, meaning that people often assign a higher monetary value for losses than they do for gains. This has implications for environmental values in particular (Knetsch 1990), especially when deciding compensation measures for environmentally degrading activities. For example, if a compensation value were to be measured for the degradation of landscape due to coastal development, it may be more appropriate to use WTA than WTP.

Studies of public perception may also be designed to investigate the value of a resource in non-monetary terms. One example of such an approach is the environmental damage schedule (Chuenpagdee *et al.* 2001a, 2001b), which uses the paired comparison method to elicit public perceptions concerning the importance of resources and potential environmental changes. In a paired comparison survey, respondents are given a set of

questions in which they must choose one object from a pair, based on the particular question a researcher is interested in, such as which is most preferred, or which is most important. The results of paired comparison are analysed to produce scale values measuring the relative importance of each object. These scale values reflect the collective judgments of respondents, or groups of respondents. Chuenpagdee *et al.* (2001a) use an environmental damage schedule approach to produce scales of importance for coastal resources in Ban Bon Bay and Phangnga Bay, Thailand.

3.3 Tourism

3.3.1 Sustainable Tourism and Community Participation

Richards and Hall (2000) note that with tourism increasingly being focused on community-based attractions, sustainable tourism depends on sustainable communities. While community sustainability has clear benefits for the tourism industry, questions may arise concerning the reality of the benefits and harms that tourism can bring to a community. Research suggests that the reality of these impacts depends on what type of tourism is being developed, and also on the context of the community in which it is being developed. For example, Garrod and Wilson (2004) show that rural ecotourism can bring socioeconomic benefits through increased employment, while providing alternative development options in areas where traditional resource-based economies have declined. Orams (2002) discusses the socioeconomic benefits affecting the rural coastal community of Kaikoura, New Zealand, where tourism related to whale-watching and other marine mammals has helped the town improve its economy. There also may be cultural benefits to certain kinds of tourism, as seen in the Evangeline region of Prince Edward Island

(PEI), where cultural tourism development has helped to support traditional Acadian culture and heritage (McDonald and Jolliffe 2003). Stewart (1993) discusses the potential for nature tourism to provide economic incentive to protect coastal resources, while also increasing environmental awareness through educational experiences.

However, tourism development can bring harms such as environmental pressure related to increased human disturbance in natural areas or development of accommodations (Stewart 1993). There are also limitations to the socioeconomic benefits of rural tourism development. For example, Marcouiller (2007) discusses the reality of tourism-related jobs, which are often seasonal and part-time positions that can only supplement, rather than drive, regional economic development. Further, tourism development requires considerable resources in terms of capital for marketing and promotion, and for building and maintaining amenities and infrastructure. This can create concern about whether the economic benefits are worth the costs of rural tourism development (Marcouiller 2007). Conflicting priorities over community development may also arise, as tourism can bring changes to the social structure and character of communities. For example, in a study of rural cultural tourism in Atlantic Canada, George and Reid (2005) note that the commoditization of culture can erode the longstanding social and cultural bonds that are important for community sustainability.

Because of these relationships between communities and the tourism industry, community participation has become an important focus of sustainable tourism debates (Taylor 1995). The importance of community participation for sustainable tourism has been frequently noted (Murphy 1985; Ap 1992; Jamal and Getz 1995; Joppe 1996). The key benefit of community participation is the ability to identify and include resident

perceptions in the planning process, which can help define destination carrying capacities in terms of locally-acceptable conditions for tourism development (McCool and Lime 2001).

3.3.2 Ecotourism

Sustainable tourism has also often been linked to the concept of ecotourism. While experiencing the "natural" environment is a main component of nature-based tourism and ecotourism, ecotourism is distinguished from the broader nature-based tourism as being more concerned with sustainability and non-invasive activities rather than the simple experience of visiting natural areas (Fennell 2008).

The type of tourism that is most relevant for coastal communities in NL can be defined as marine ecotourism. This type of tourism includes both coastal land-based and ocean-based activities (Wilson and Garrod 2003). Marine ecotourism activities are centered on wildlife attractions, recreational pursuits such as hiking or fishing, as well as the culture and heritage of coastal communities. Ecotourism in general is discussed in the literature as an alternative to mass tourism (Fennell 2008). Some elements of ecotourism, such as smaller numbers of tourists and an emphasis on education about the environment, have led supporters to promote it as a less harmful, more sustainable form of tourism (Wall 1997).

Before determining ecotourism's relationship to sustainability, it is necessary to first consider what defines the term ecotourism itself. Much like the concept of sustainability, ecotourism has been defined in many ways (Wall 1997; Garrod 2003). In an analysis of definitions for ecotourism, Garrod (2003) identified three widely-accepted

ideas: that ecotourism should involve education and interpretation, that it should be managed with an appropriate regime, and that it should aim to be sustainable. Wall (1997) discusses the imprecise use of the term sustainable with regards to tourism – does sustainable tourism simply mean managing the industry so that it continues to perform well, or is it referring to the sustainable development of host communities and the environmental sustainability of ecologically sensitive areas? In the case of ecotourism, it appears that the sustainability of the industry is connected to sustainable development, at least at the conceptual level (Garrod 2003). This has led researchers to conduct case studies which evaluate the realities of ecotourism and sustainable development (Place 1995; Orams 2002; Garrod and Wilson 2004).

There appears to be a consensus that, while ecotourism does have potential to benefit sustainable development, there are conditions in which it also has negative impacts. For example, one theoretical benefit of ecotourism is that it provides an incentive for the conservation of ecologically sensitive areas. However, Orams (2002) notes that marine ecotourism may put pressure on marine wildlife, and Place (1995) points out the planning difficulties that arise when parks and protected areas exclude local people from a resource base. Despite these difficulties in reconciling theory with practice in ecotourism management, several case studies support Garrod and Wilson's (2004) conclusion that ecotourism does have the potential to contribute to sustainable development. For example, Burger (2009) gives three examples where tourism development has supported conservation of landscape, leading to habitat protection and biodiversity conservation. She writes "By contributing to the economic base of regions, eco-tourists/recreationists can influence the protection of land and biodiversity on a

landscape scale, contributing to ecosystem management. The human dimensions of land preservation and biodiversity protection are key to long-term sustainability, and eco-tourists/recreationists can be one management option" (Burger 2000, 39).

3.3.3 Landscape and Tourism

The connections between landscape and tourism are interesting to explore, as landscapes are assigned multiple values by both residents and visitors. Resident and visitor landscape values can sometimes differ, and tourism development may involve negotiation between these value sets. For example, in a study of Norwegian rural tourism, Daugstad (2007) discusses the different landscape perceptions of tourists, tourism operators, and farmers. The study suggests that these three groups assign different sets of cultural and aesthetic values to rural agricultural landscapes. Daugstad (2007) notes that, while these landscapes play an integral role in the farmers' home and livelihood, they can also be attractive to tourists as an escape from the urban/modern lifestyle. Garrod and Wilson (2004) discuss similar attributes of coastal landscapes and seascapes for marine ecotourism, in which main attractions include the remoteness of natural areas and the psychological benefits associated with the feeling of getting back to nature.

The potential for subtle differences in how different types of value are assigned also exists within a particular value category. For example, the aesthetic values associated with experiencing coastal landscapes might include appreciation for the visual beauty, enjoyment of the relative quiet and/or sounds of nature, as well as the quality of fresh air compared to that of urban environments. How such values are prioritized when compared with other values, such as economic potential, can differ for tourists and residents.

Differing values may stem from the difference between resident, or insider, and visitor, or outsider, views of landscape. This difference in landscape perception is discussed by human geographers, such as Relph (1976) and Tuan (1977), who theorize that insiders and outsiders experience the landscape of a particular place differently. An insider view of landscape may recognize specific contexts or meanings that are based on years of living and working with the landscape. In comparison, the outsider view forms with less familiarity and experience with the landscape. The insider/outsider perspective provides an interesting lens through which differences in resident and visitor landscape values may be understood.

While differences in landscape values and meaning are important to consider, Knudsen *et al.* (2008a) point out that there are congruencies and concordances in how landscapes are perceived. In their view, these shared meanings are what make landscape an important part of tourism, which can be understood as an activity in which a visitor, or outsider, engages with the landscape to understand the identity of the resident/insider. The authors advocate a landscape based perspective for tourism studies, an approach that is promoted through an increasing body of tourist landscape literature (Greer *et al.* 2008). This approach is exemplified by studies such as those compiled by two recent books, *Landscape, Tourism and Meaning* (Knudsen *et al.* 2008b) and *Leisure and Tourism Landscapes: Social and Cultural Geographies* (Aitchison *et al* . 2000).

3.4 Landscape Perception Studies

Similar to the development of natural resource values research, landscape value has been investigated through both expert-based assessments and studies of public

perception (Taylor *et al.* 1987; Daniel 2001). The antecedents of perception-based landscape research can be seen in interpretive works of the 1960s and 1970s, with advancements in the theory of landscape perceptions forwarded by Lowenthal (1961; with Prince 1964, 1965), Tuan (1974, 1977), and others (see Rowntree 1996). While interpretive in nature, and thus not designed to elicit public perceptions, this current of literature did emphasize the role of perception, meaning, and interpretation in how landscapes are valued.

Landscape studies began capturing public perceptions through surveys in the 1970s, most often to meet the needs of natural resource management and public policy regarding landscapes (Taylor *et al.* 1987). Referring to these studies collectively as a psychophysical paradigm in landscape perception research, Taylor *et al.* (1987) note that their basic element is the use of methods in which respondents are presented with landscapes, or representations of landscapes, and asked to assess them based on selected criteria. Arthur *et al.* (1977) describe public evaluation of scenic environments as a then-burgeoning field, with psychophysical methods arising to provide quantitative representations of public perceptions. For example, Daniel and Boster (1976) presented a method for Scenic Beauty Estimation (SBE), a quantitative measure of visual quality assessments for public lands. In this method, respondents are asked to rank the visual quality of landscape photos on a scale of 1-10. The results of this exercise are then used by researchers to model the perceived scenic beauty of landscape features. Specific to coastal areas, Cendero and Fischer (1997) provide a method for determining environmental quality using indicators for natural and human components of the coast. Human aspects included the visual quality of the landscape, as well as the potential use of

the coastal area for historic purposes, recreation, and development. While landscape perception in NL has rarely been studied, Catto *et al.* (2003) consider such methods in a geomorphological study of the eastern Newfoundland coastline to discuss aesthetic quality preferences.

There is a well-established tradition of using photos to represent landscape in landscape perception studies (Jacobsen 2007). The necessity for representations of landscape arises due to practical limitations of time and funding, which prevent researchers from bringing respondents to landscapes for evaluation. Concerns have been raised, however, over whether respondents are actually expressing perceptions of the landscape in question, or if they are reacting instead to the photos (Scott and Canter 1992). With such concern over the validity of landscape representation by photographs, several studies test survey results when using photos compared to the results when respondents actually experience the landscape on-site (Stewart *et al.* 1984; Hull and Stewart 1992). In general, the use of photos has been justified through these studies, although Scott and Canter (1992) found different results for preference ranking depending on whether respondents were asked to answer in reference to the landscape represented by the photo or to the quality of the photo itself. They stress that it is important for researchers to make this distinction in instructions to respondents.

Landscape photos have been used with a variety of psychometric methods to capture public perceptions. For example, Pitt and Zube (1979) advocate the use of a psychometric method called Q-sort in landscape visual quality assessments, while Brown and Daniel (1991) used the paired-comparison method to obtain an interval ranking of scenic views along a northern Colorado River. Recently, methods derived for landscape

perception studies have also been applied to studies on tourism experiences involving landscape, natural scenery, and environmental activities. Fairweather and Swaffield (2001), for example, use landscape photos with the Q-sort method to interpret visitor experiences of landscape in Kaikoura, New Zealand. In another study, Brush *et al.* (2000) use videos of Wisconsin highway landscapes to ask how different groups of people would enjoy driving through this area. The researchers use the videos to survey six different respondent groups, three of which included respondents who earned their livelihood from the land. The other three groups included people such as prospective tourists, who were likely to value the landscape for related amenities. The results show that the respondent groups differed in their landscape preferences, according to their knowledge and experience with the landscapes.

There are several landscape features that are shown to be generally preferred by respondents, including the presence of an open viewscape or the presence of water. In one study, Arriaza *et al.* (2004) conduct a survey of observers' preferences using photos of rural Mediterranean landscapes in Southern Spain. Respondents were asked to choose the four photos they liked the best, and the four they liked the least. By analyzing the results of the preference survey with the features of the landscape photos, the researchers correlated perceived visual quality with landscape features. They found that the perceived visual quality depended most on the degree of perceived wilderness represented by the photo, followed by the degree of well-preserved human-made features, the presence of water, and the colour contrast.

Common visual landscape preferences have been explained through biological evolutionary theories (Appleton 1975) and through examinations of cultural preferences

(Tuan 1974). Bourassa (1991) offers a tripartite framework for landscape aesthetics, which holds that visual landscape preferences are based on biological laws and influenced by culture and personal experience. Fry *et al.* (2009) follow this type of integrative approach to examine linkages between landscape visual qualities and ecological function. Interestingly, the authors find substantial overlap between visual landscape quality and ecological indicators. This supports the notion that common landscape preferences are based both on sociocultural and biophysical characteristics of landscape.

Despite the evidence for consensus on preferred landscape features, studies also show that a range of personal factors influences how the landscape is perceived and preferred. For example, Dearden (1984) used photos of urban, rural, and wilderness landscapes from Vancouver Island, British Columbia, to test factors influencing landscape preferences. The results showed that factors having to do with landscape familiarity, such as experience as a resident or visitor, were positively correlated with landscape preferences.

Approaches to the measurement of landscape perceptions, judgements, and values have evolved with considerable methodological debate. Dearden and Sadler (1989) posit several reasons for this, including the fact that landscape evaluation is a relatively new field with a very broad scope. Landscape has been studied from the perspective of many different researchers and practitioners who approach the subject with different philosophical and methodological backgrounds. In addition to the survey-based methods discussed above, landscape preferences and values have been studied using the qualitative methods such as interviews (Collins and Kearns 2010), as well as through other innovative methods, including participant employed photography (Hull and Revel 1989;

Beckley *et al.* 2007), and map-based surveys (Brown *et al.* 2005; Brown and Raymond 2007). Dearden and Sadler (1989) assert that quantitative and qualitative approaches to landscape aesthetics are not mutually exclusive, and that all techniques should reveal information about landscape quality, given that they are applied with appropriate rigor.

3.5 Landscape and Place

Landscape has been closely linked with the "sense of place" concept as discussed by Relph (1976), Tuan (1977), and developed as a central notion in humanistic geography. Tuan (1977) distinguishes place as embodying the experience and meaning that people associate with a location, or space. This physical space becomes place when it has meaning for people. Relph (1976, 1) notes the significance of place in human experience, writing "To be human is to live in a world that is filled with significant places: to be human is to have and to know *your* place". As a visual component of space and the point of interaction between people and their environment, landscape is one factor that defines the essence of place.

Place has also been a focus of environmental psychology, and the concept of place attachment has been used to refer to the positive bonds and connections between people and place (Low and Altman 1992; Giuliani 2003). Two contributing factors for a person's attachment to a place are place dependence and place identity (Williams *et al.* 1992). Place dependence is related to the functional interactions through which a person engages with a place to satisfy needs and goals, for example, in the pursuit of a livelihood. Place identity refers to the emotional attachment of a person who incorporates the physical environment of a place as part of his or her own identity (Williams *et al.* 1992).

Stedman (2003) notes that these components of place attachment are influenced both by the physical environment and the socially constructed meanings that are given to the environment. Beckley *et al.* (2007) show that place attachment can be based on a combination of biophysical and sociocultural aspects of place, with some places being important to people due to a combination of these factors. The authors use a mixed method approach called photo elicitation to research the contribution of these factors to place attachment for residents in four communities, including the NL communities of Rocky Harbour and Deer Lake. They found that places were often important to residents for a combination of biophysical and sociocultural aspects. There was also considerable consistency in the relative importance given to biophysical, sociocultural, and combined aspects by respondents in all four communities. Interestingly, NL respondents showed a higher importance for the sociocultural aspects of place attachment than respondents did from the two Alberta communities. The authors suggest that this was because, compared to Albert, NL communities had been settled for longer periods, with less migration, contributing a greater cultural attachment to place (Beckley *et al.* 2007).

Landscape has also been shown to be a key element of place attachment. Brown et *al.* (2007) showed that the presence of valued landscapes is correlated with a person's attachment to a place. Using a map-based survey, the researchers asked respondents to identify the location of valued landscapes and special places in the Otways region of Australia. Analysis showed that landscape values, especially spiritual and wilderness values, could predict place attachment. The researchers also found that landscapes identified with aesthetic, recreation, economic, spiritual, and therapeutic values spatially

correlated with areas identified as special places, supporting the argument that landscape value contributes to place attachment.

The associations between landscape and place attachment are important to consider for governance decisions affecting this resource. For example, Collins and Kearns (2010) discuss the role of place attachment in debate over a development proposal for Ocean Beach, a scenic recreational beach in New Zealand. Interviews with residents indicated that this undeveloped beach area was important as both the site of natural landscapes and as a place rich with human meaning and related to characteristics of identity such as childhood memories or family connections. The residents conceived of the beach in visual terms as a unitary landscape. This was in opposition to the view of planners and developers, who felt that some areas of the beach could be protected for their landscape value while others were fit for development. The authors write that "at the centre of debates over coastal development is the fundamental question of what kind of place a particular beach, or coastal landscape, should be" (Collins and Kearns 2010, 437). This fundamental tension over meaning suggests that disrupting sense of place through management decisions is likely to provoke strong public response.

3.5 Approaches to Governance of Coastal Landscapes

Pollock-Ellwand (2001, 99) notes, "Landscapes have universal appeal, but defining the idea so it can become a useful part of public planning policy is challenging." Perhaps because of this ambiguity, the coastal landscape is a natural resource that is likely to be managed and/or governed through a number of networks and organizations rather

than specific governance mechanisms. These could include governments at the municipal, regional, or federal level, as well as development and industry associations and environmental conservation groups. Coastal landscapes may not be explicitly regulated as a natural resource in the same way that a particular species of fish or a specific mineral would be. Thus, discussion about the management and governance of this resource requires consideration of the many organizations and associated policies that may affect them.

The conservation of coastal landscapes could potentially be covered by policies that aim to conserve coastal ecosystems. These would include policies based on sustainable development practices, often identified as a key component of integrated coastal management (ICM) (Clark 1996, 2; Cicin-Sain and Knecht 1998, 40). ICM has developed as a holistic approach to managing coastal resources, which attempts to plan for the multiple uses of the coastal zone with collaboration between stakeholders such as governments, industry and public citizens (Cicin-Sain and Knecht 1998). ICM involves a participatory approach and stakeholder inclusion, so there is, in theory, potential for stakeholders with concerns about coastal landscapes to promote conservation through ICM processes. However, Vallega (2003) notes that ICM rarely addresses cultural heritage of the coast, including the value of landscapes and seascapes. Vallega (2003) identifies this as an important future direction for the progression of ICM. Pereira da Silva (2006) advocates for the inclusion of landscape perception studies within ICM frameworks as a way to encourage public participation. The author used landscape photos and a questionnaire to survey beach users in a coastal area of Portugal. Pereira da Silva asserts that the information gained through such methods can contribute to the goals of

ICM, providing data on public perception, land use patterns, and expectations for the future regarding coastal landscapes.

Coastal landscapes may also be governed through specific policies outside of the ICM framework. Integrated management principles have been applied to the area of landscape policy research, leading some to advocate for the adoption of integrated landscape management (ILM) as a new framework for land use planning. This research trend is particularly notable in Canada, where a number of researchers and organizations have begun to advocate this approach (CILM 2005; Kennett 2006; Bellefontaine *et al.* 2010). While the specific term ILM does not yet appear to be widely used, there have been regulations and policies that aim to address landscape management in a holistic, integrated approach. Vallega (2003) notes that legal frameworks for coastal conservation may operate at different jurisdictional levels, including international treaties and national or regional policies. In Canada, for example, integrated land use planning is implemented through diverse projects that vary in scale and in jurisdiction (Bellefontaine *et al.* 2010).

Several international conventions could act as guiding principles for national and provincial landscape policy in Canada and NL. For example, the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention has included cultural landscapes as a specific category of World Heritage Site (UNESCO 2008). Originally enacted in 1972 to promote the conservation of natural and cultural sites of outstanding universal value, the convention was amended to include cultural landscapes in 1992 (Rössler 2002). As another example, the European Convention on Landscape (Council of Europe, 2000) is an international treaty designed to promote the identification and protection of European landscapes.

The International Union for the Conservation of Nature (IUCN) has listed "protected landscape/seascape" as a category of protected area. The IUCN website provides the following definition for a protected landscape/seascape:

> A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value; and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values (IUCN 2009).

Philips and Clarke (2004) suggest that this IUCN protected area category has received growing international attention because of the emphasis on preserving traditional interaction between people and landscapes. This is an alternative to strictly protected areas that exclude people from the resources that were traditionally accessed for purposes such as livelihood or subsistence. The authors also note that this definition allows for the inclusion of community traditions and values in the management of protected landscapes.

It is important to understand however, that landscape management does not necessarily involve total protection from change, which may arise from misguided interpretations of landscape as static entities. Groenewoudt (2011) asserts that landscapes are dynamic, by definition. He stresses the importance of understanding historical processes of landscape change, which can lead to policy that is more effective to manage current and future changes in landscape. Antrop (2005) confirms that landscapes always change naturally, expressing the shifting relationships between people and environment.

However, contemporary landscape changes are seen as a threat because they negatively affect the diversity, coherence, and identity of the existing landscapes (Antrop 2005). This threatens those unique characteristics of landscape that make it a valuable resource. Landscape planning is thus required to reduce the negative impacts described above, while recognizing that landscapes will continue to change as they are influenced by multiple factors. This challenge is expressed by O'Rourke (2005, 80), who writes "Evolving landscapes require policies and actions that satisfy the shifting sands of market forces, changing societal demands on the landscape, as well as the resilience of the dynamic ecological systems in question."

As discussed by Selman (2007), while landscape is often understood on a local scale, it is affected by social and ecological factors on a much wider geographical scale. In his view, national and regional policies are required to address these factors, along with governance partnerships that address them through connections between the national, regional, and local scales. However, Groenewoudt (2011) points out that governance at the regional and local levels is still best suited to manage landscape change. This is because these levels provide the best scale for understanding the processes of landscape change, while also allowing for the inclusion of local expertise. Land-use policy is also usually within the jurisdiction of regional or municipal institutions. Pollock-Ellwand (2001) notes that for landscape conservation and land use planning there are often gaps between regional policy and local implementation. This can result from a lack of common understanding about landscape and landscape values, with the potential for differences in perception between politicians, developers, advocates, citizens and planners at both the regional and local level. In examining the failure of implementing a provincial land use

policy in Ontario, Pollock-Ellwand (2001) concludes that increased community engagement is a key strategy to averting such policy failures.

CHAPTER 4

METHODS

This chapter describes the data collection methods used for both the landscape inventory and the landscape values survey. The chapter begins with a description of the landscape inventory methods and results, including an explanation of the research design process. The chapter proceeds with an explanation of how the landscape survey was designed and administered. The development of the landscape values survey is described from the test-phase through to data storage and analysis, and the survey instrument is summarized with sample questions provided.

4.1 Landscape Inventory Methods

The landscape inventory was produced using a three-step process. First, landscape photos were collected to provide an overview of landscape types in the study area. Second, photos were coded according to key variables in landscape features. Finally, cluster analysis was used to examine what significantly different types of landscape are found in the study area.

4.1.1 Photo Data Collection

An inventory of coastal landscape photos was collected using VIEWS™, a portable laptop-based data collection and visualization system. Developed by ImageCat Inc., a risk management company, the system was originally designed to collect GPS-registered photos and video to help assess damages in areas affected by natural disasters,

such as earthquakes or tsunami. The application of VIEWS™ as a data collection tool for the landscape inventory in this study is the first of its kind. The system was selected as a tool to conduct this landscape inventory because of its ability to integrate landscape photos with GPS and GIS with relative ease and in a simple set-up suitable for field deployment. The system consists of a laptop, a high-definition video camera, and a GPS unit, which are integrated with the VIEWS™ software application. It is able to collect a large amount of video and photo data that is geo-referenced through automated post-processing functions, allowing for easy spatial representation of the landscape inventory. Training in the set-up and use of the equipment and software was provided by a representative of ImageCat Inc., and the operation of the system was tested several times prior to conducting the actual landscape inventory.

The software functions in two different modes, for data collection and data visualization. In collection mode, the software records the coordinates from connected GPS hardware in real time. A GPS log is automatically recorded from the GPS unit and stored on the hard drive during data collection. The software's post-processing function time-links this GPS log to frames of the video, producing geo-referenced photos. The post-processing module is accessed through user menus. It involves importing the video files from the camera and selecting the proper GPS log to be time-linked with these video files. The visualization mode is accessed after post-processing. The data collection route is displayed in a GIS, and a separate window allows the user to view frames of video along with the GPS trail taken during data collection.

As shown in Figure 4.1, data collection involved shooting video from the car, with the video camera positioned on a tripod facing at right angles to the road. This orientation

was chosen to maintain a systematic collection of landscape photos, producing a sample of photos representing the variety of landscapes that would be seen while travelling this route by car. The Heritage Run tourism area consists of attractions and communities that are spaced by drives of several kilometres. The HRTA promotes tourism in the area as a package deal, the idea being that visitors would stay in the area for a period, visiting the different attractions and communities by car. With this study design, it was possible to create an inventory of the majority of landscapes a visitor actually experiences, rather than the selected landscapes promoted as tourism attractions.

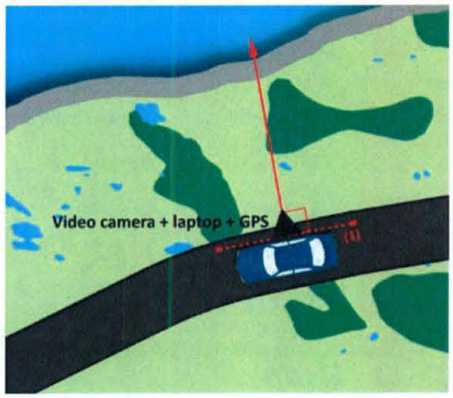


Figure 4.1 Orientation of VIEWS™ set-up for data collection

The hardware set-up, data collection and post-processing procedures were tested in April 2010. Landscape photos were collected along a stretch of coastal road in the town of Torbay, on the Northeast Avalon Peninsula. During this test, technical details were noted such as proper camera placement, appropriate driving speed to prevent blurring of photos, and management of power supply for the camera, laptop and GPS. Post-

processing of the test data produced results that were satisfactory, with geo-referenced photos being easily displayed in the VIEWS™ visualization mode, as well as easily exported to external GIS software.

These procedures were followed for the actual data collection in the study area during a 3-day period in May 2010. To prevent the blurring of photos, the driving speed was kept below 30km/hr. The landscape was recorded along a route of approximately 200km, shown in Figure 4.2.

Figure 4.2 Landscape inventory data collection route

4.1.2 Photo Feature Coding

A total of 20,803 GPS-registered photos were collected. This complete inventory was stored as a VIEWS™ project file. When accessed in visualization mode, the software

allows the user to view each photo and its associated point on the GPS trail taken during data collection.

An analysis of the photos was performed to determine significant types of coastal landscape on the Burin Peninsula. The procedures for analysis of photo content were based on a method developed by the Théma Laboratory, an interdisciplinary research unit specializing in environment and landscape studies at the University of Franche-Comté, France. This method involves a spreadsheet-based matrix, in which systematic observations of landscape features are recorded for each photo. An example of the matrix is included in Appendix A.

Although there were over 20,000 GPS-registered photos taken for the inventory, consecutive photos often showed a near-identical view of the same landscape. This is because VIEWS™ creates geo-referenced photos by linking the GPS log, which takes one point per second, to frames of the continuous video, producing one photo per second. Because of the repetition in landscape detail, it was not necessary to code the landscape features of every single photo to look for significant landscape types. Based on reviewing the content and extent of each photo in the total sample, it was determined that partitioning the video into photos taken at 200m intervals would yield sufficient information on landscape types. A systematic spatial selection method was used to choose one picture for each 200m extent of road, and these photos were then examined and coded according to landscape features. This selection of photos was enabled by ArcGIS software. The process for selecting one photo per 200m point is outlined in Figure 4.3.

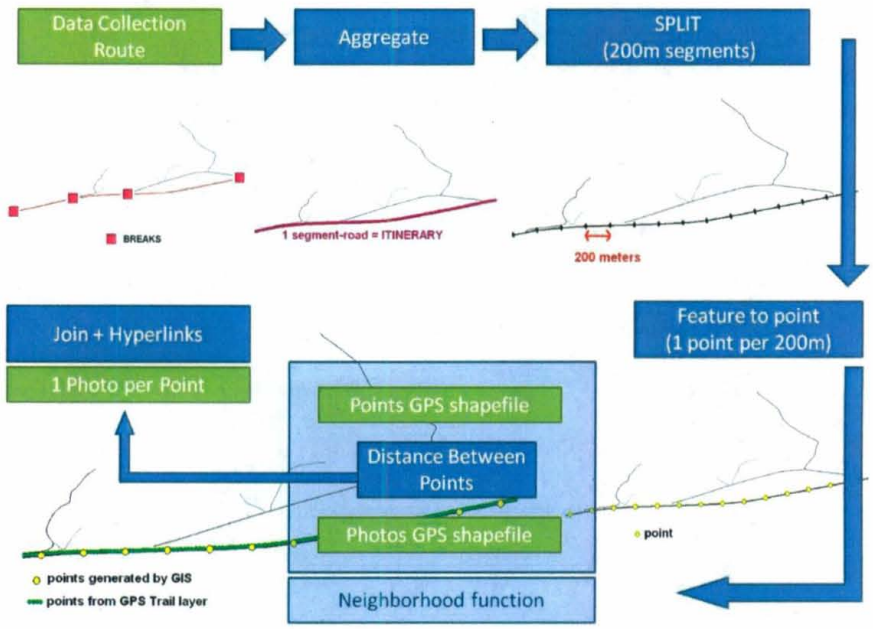


Figure 4.3 Systematic photo selection process in ArcGIS.

The green boxes indicate GIS data layers and blue boxes indicate data processing steps.

As discussed above, the data collection route was recorded by VIEWS™ as a series of GPS logs. The data collection route was aggregated into a single vector file, and the resulting vector file was split into segments equal to approximately 200m in length. A single point was created for each 200m segment. The points were then linked to the appropriate photo using a neighbourhood function, which is a tool in ArcGIS that links values based on location to create an output layer. This tool was used to choose one photo per point based on the coordinates of the points and of the photos. In this manner, the photo with the nearest coordinates to each point was selected. The result was a systematic

selection of 898 photos, with one representative photo for each 200m segment of the data collection route.

These photos were coded in a matrix according to the selected variables in landscape features. Variables for photo coding were determined by watching the entire video sample in the VIEWS™ visualization mode and recording any distinguishing landscape features. Each photo was coded based on the presence or absence of these features, with a 1 marking the presence of a given feature, and a 0 marking the absence. Coding was recorded in a Microsoft Excel spreadsheet.

With this method, the photos were coded to show the presence or absence of key landscape features. Also considered was the degree to which the landscape photo appeared open or closed. A closed landscape photo refers to an image with a dominant foreground, with relatively little distance seen in the photo. An open landscape refers to photos with more than one ground, allowing for a view of relatively greater distances. A full list of 15 variables used for the coding process is listed in Table 4.1.

Table 4.1 Features coded for analysis of landscape photos

Landscape Feature
Open landscape
Closed landscape
Aquatic scene with no distinct features other than open sea
Aquatic scene with a visible beach
Aquatic scene with a visible island(s)
Aquatic scene with visible relief (hills, cliffs, etc.)
Terrestrial scene with flat grasslands/barrens/bog/etc.
Terrestrial scene with vegetation/bushes/forest
Terrestrial scene with lake
Terrestrial scene with relief (hills)
Terrestrial scene with rocks
Terrestrial scene with sea
Fisheries related features (boats, pier, lighthouse)
Industrial Use
Residential Use

4.1.3 Cluster Analysis and Results

Cluster analysis was employed as a tool to examine whether there were significantly different groups of coded landscape photos. Cluster analysis was performed using XLSTAT, a statistical add-in for Excel. The photos were analysed with agglomerative hierarchical clustering, using the Jaccard coefficient to measure similarities. This method has been shown to be effective for asymmetric binary variables, such as the presence or absence of a feature (Kaufman and Rousseuw 2005, 26-27). When set to automatically select the number of groups, the cluster analysis showed a clear dominance of terrestrial scenes with five clusters of landscape types. The dendrogram in Figure 4.4 illustrates the five clusters grouped by this analysis.

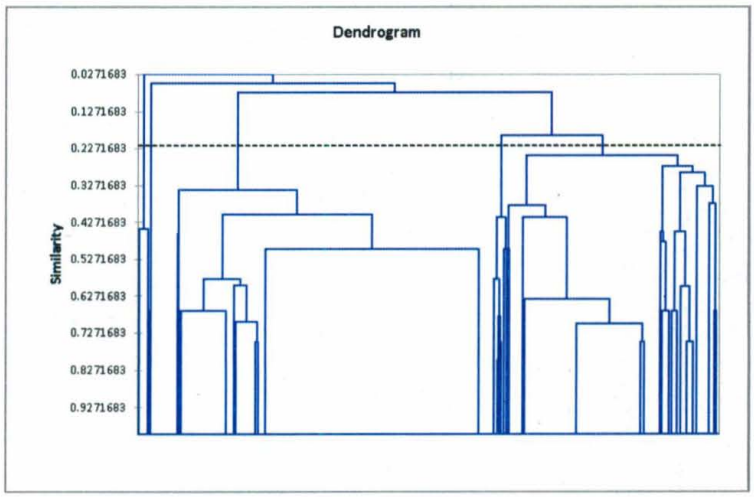


Figure 4.4 Dendrogram from cluster analysis of coded coastal landscape photos. The dotted line shows the largest relative increase in similarity measured by the software, resulting in five clusters.

The results of the cluster analysis, with an automated number of clusters, show a relatively homogeneous collection of landscape types dominating the study area. The majority of landscape photos were sorted into one of the two largest groups. The five clusters were classified into descriptive landscape types, as shown in Table 4.2. Results from the cluster analysis are used in conjunction with other considerations in the landscape survey explained in the next section.

Table 4.2 Features and number of photos for five landscape clusters

Cluster Features	Number of Photos
1. Closed terrestrial scene with forest/bushes	487
2. Open terrestrial scene with heathlands/barrens	329
3. Closed terrestrial scene with rocks	17
4. Closed terrestrial scene with residential area	43
5. Open terrestrial scene with relief and residential area	22

4.2 Landscape Survey Methods

Landscape preferences were studied by the use of a self-administered, electronic survey, which was designed using Sawtooth SSI Web software. The survey included three sections. The first section contained a series of paired comparison questions related to landscape appeal. Respondents were shown pairs of landscape photos, and asked to choose which one was more appealing to them. In section two, they were further asked to indicate what type of values they associated with each landscape photo. The final section of the survey included demographic questions, and questions pertaining to respondents' experience and familiarity with the landscape. A sample survey is provided in Appendix B.

4.2.1 Use of Photos

Landscape photos were used in the survey as visual representations of Burin Peninsula landscape types. Sections 1 and 2 of the survey are both exercises requiring visual representations of landscape. The use of paired comparison method posed certain limitations on the number of photos included in the survey. Generally, the total number of

pairs (P) is expressed as $P = n(n-1)/2$, where n represents the number of objects to be compared (Chuenpagdee *et al.* 2001a). For example, with nine photos there were thirty-six pairs presented to each respondent for comparison. The pre-tests showed that these numbers were appropriate for the study, since it was possible to complete the survey within a range of ten to fifteen minutes.

The photos used for the survey were chosen based on a number of considerations. First, the most dominant landscape types according to the results of the cluster analysis were included. These included one photo to represent a forested landscape and one to represent barrens. Two photos were selected to represent residential areas, one with an open view of the coast and community from a distance, and one showing a less open view from inside a community. The remaining five photos were added to represent other notable landscape types, identified by informal discussion with key informants in the early stages of the research design, and as shown on tourism brochures and websites. These photos represented a scenic natural coastline, a recreational beach area, an open seascape, a commercial fishing harbour, and a traditional community with fishing infrastructure. A list of the nine photos and descriptions of their landscape types is shown in Table 4.3. Note that the descriptive titles listed here were not provided to the survey respondents, but they are included here to allow for easier reference to the photos.

Table 4.3 Landscape photos and descriptive features of each landscape type

	Recreation		Sea
	Fishing		Community
	Harbour		Forest
	Residential		Islands
	Barrens		

4.2.2 Landscape Preferences

Section 1 of the survey asked respondents about landscape preferences. According to Thurstone (1927), paired comparison method can be used to elicit preferences by asking participants to make qualitative judgements about paired objects. Generally, respondents are presented with two objects, *A* and *B*, and asked to evaluate these objects according to a specific question. The method can be used to produce an interval scale ranking, showing the order of preferences for each object in the study. In this study of

landscape preferences, respondents were shown pairs of landscape photos and asked, "Which of these landscapes is more appealing to you?" Several variations on the wording of this question were tested with respondents during the survey design phase, and this question had the best results in terms of conveying the intended meaning – that the respondents were to examine the pair of photos and select the one that best reflected the landscape type they most preferred. An example screenshot of a paired comparison question from this section is shown in Figure 4.5.

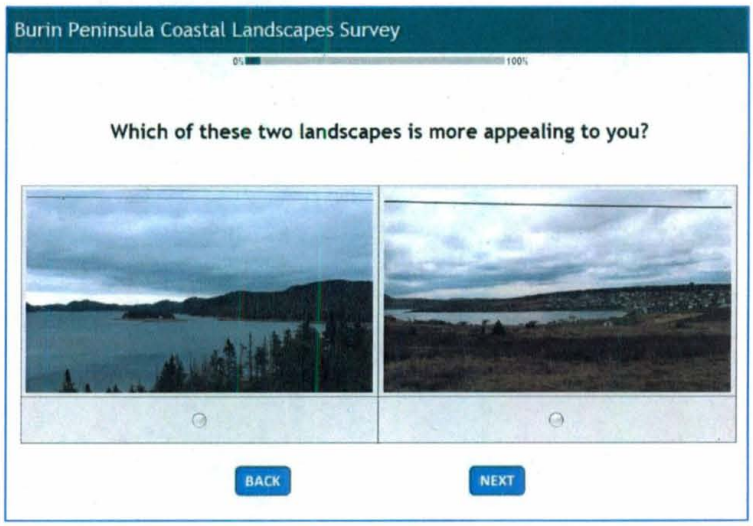


Figure 4.5 Sample question from the landscape choices section

Paired comparison data from Section 1 of the survey were analyzed using the Dunn-Rankin (1983) method, in which responses from each respondent were scored to reflect the number of times each photo was chosen when paired with others. These individual scores were then aggregated to get collective scores for the total respondents and for respondent groups. The collective scores were then normalized to the scale of 0 to

100, where 0 means the photo was never chosen in any of the paired comparisons by any respondents, and 100 means the photo was chosen as the most preferred one by all respondents. The photos were then ranked from 1 to 9, with 1 being the highest rank, according to the normalized scale value. Note that the scale value given for each photo shows not only which photos were preferred by the respondents, but also by how much they were preferred on a scale of 0 to 100. For this study, scale values were calculated for all respondents as one group, and for the three respondent groups of residents, visitors, and non-visitors (i.e., people who had never visited the area).

Correlation among the respondent groups was tested using Kendall's *t* rank-order correlation coefficient, which is a non-parametric test applicable to paired comparison results. This test measures the degree and significance of correlation between the ranking of objects by different judges, or groups of judges. The *t* coefficient ranges from 1, indicating perfect agreement, to -1, indicating perfect disagreement (Kendall and Gibbons 1990). This analysis was completed with SPSS statistical software, using the bivariate correlation function. The function produces a data report indicating the Kendall *t* coefficient and tests for significant correlation.

4.2.3 Landscape Values

In this section of the survey, respondents were shown each of the nine photos and asked a multiple choice question: "What values do you associate with the landscape in this photo? Check all that apply." Respondents were able to check any of the following value types: ecological, economic, historic, recreational, scenic/aesthetic, social/cultural, no value, and a respondent-specified other value. These value types were selected after an

extensive review of literature on landscape values and assessment, as well as studies in nature-based tourism and ecotourism. An example screenshot of a question from this section is shown in Figure 4.6.

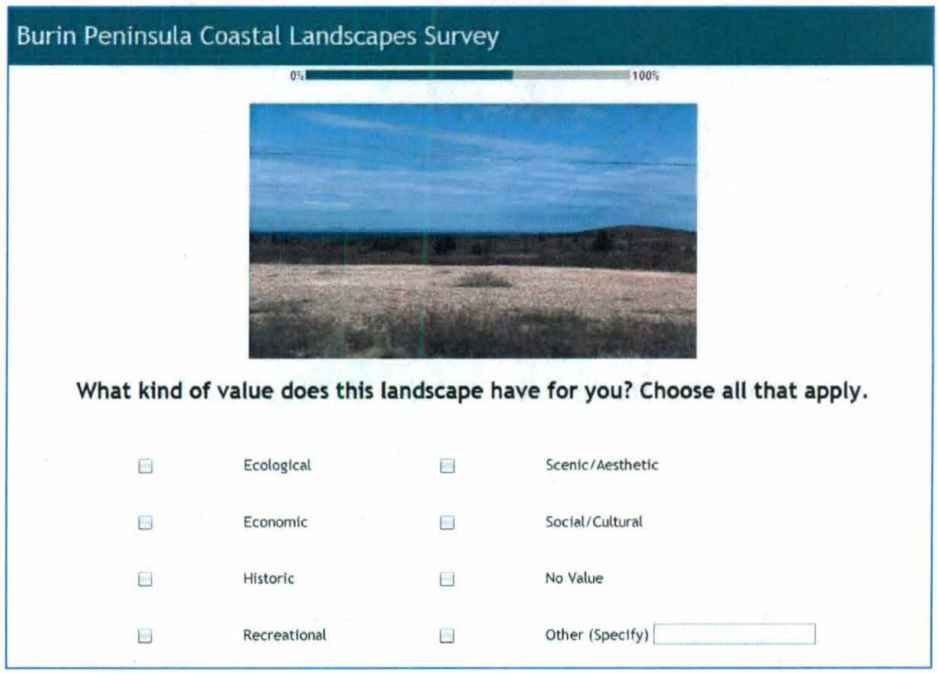


Figure 4.6 Sample question the landscape values section

The responses for this section were recorded by Sawtooth SSI Web as either a 1, indicating that the respondent had chosen a particular value type, or a 0, indicating that the value was not chosen. This provided a record of which value types were associated with each photo by individual respondents. To analyse this data for each respondent group, the number of respondents who associated a value with each photo were aggregated and then divided by the total number of respondents in that group to give a

percentage. The results of this analysis indicate the percentage of respondents who associated a particular value with each photo. This analysis was completed on the aggregate value scores of the total respondents, as well as the aggregate value scores of resident, visitor and non-visitor respondents. With this analysis, it is possible to compare the percentage of respondents in each group who associated a particular value with a particular photo.

4.2.4 *Respondent Information*

Additional information was requested from respondents in order to help interpret the data from sections 1 and 2 of the survey. This information included the age, gender, and occupation of respondents. Respondents were asked about whether they participated in various outdoor activities and whether they were a part of an environmental advocacy group. The section also included questions about the respondent's degree of familiarity and experience with the types of landscapes presented in this study.

4.2.5 *Survey Administration*

The survey was tested with respondents representing each of the three target groups in June 2010. Pre-tests were conducted with colleagues at Memorial University, who had varying degrees of experience with the Burin Peninsula, as well as with residents of the Burin Peninsula. The test period included a two-week trip to the study area, during which contact was established with representatives of the Heritage Run Tourism Association, the Burin Peninsula Rural Secretariat, the Schooner Regional Economic Development Board, and the College of the North Atlantic Burin Campus. These

meetings provided the opportunity to get feedback on survey design, to learn more about tourism in the region, and to hear suggestions on when and where the survey could be administered to achieve the best collaboration.

After some adjustments were made to improve question clarity and to ensure the software interface was easy to use, the survey was conducted during the period of August to December 2010. Quota sampling was used to obtain about thirty respondents for each of the three respondent groups. From August through September, the survey was administered to residents and visitors in the study area. The survey was set up as a kiosk with a touch-screen computer at several locations, including the visitor centres in Marystown and Fortune, as well as at the College of the North Atlantic in Burin and local shopping centres. To accommodate for groups of respondents, a second elicitation style was administered using a projector and a paper answer sheet. This style of survey administration was used with respondents in a classroom setting at the College of the North Atlantic, as well as to survey members of the Burin Peninsula Environmental Reform Committee at their monthly meeting.

Recruitment of resident respondents was approached with the help of local contacts established during the test period. Posters and brochures with a description of the study and contact information were displayed at appropriate public locations and forwarded electronically to community organizations, tourism facilities, and municipalities in the study area. Visitors were recruited at the two visitor centres, as well as the other locations where the survey kiosk was set up. There were few recruitment challenges faced, aside from those arising from the fact that this study involved an electronic, computer-based survey. A small number of potential participants decided not

to take the survey when they were told it involved using computer. This possibility was anticipated during the research design phase, when the survey was updated several times in order to make it as accessible as possible.

Following the two-month period of field research, the survey was conducted in St. John's in order to recruit respondents who had no experience with the Burin Peninsula. The survey was conducted at Memorial University as both a touch-screen computer/kiosk and with a projector and paper answer sheet in a classroom setting. Some respondents who took the survey during this period identified themselves as residents of the Burin Peninsula despite the fact that they were currently residing in St. John's for study or work. There were also respondents who had visited the Burin Peninsula among those surveyed during this period.

The survey typically took between 10 and 20 minutes to complete, with some respondents taking longer. Before taking the survey, respondents were instructed to express their own opinions in answering the questions, and they were informed that there were no right or wrong answers to these questions. A test paired-comparison question was included at the beginning of the survey to ensure that respondents understood this method of questioning and to familiarize respondents with the software's user interface. In the case of individual survey, each survey was unique to each respondent due to the randomization (automatically generated by Sawtooth SSI Web) included in the first two sections. In the first section of the survey, thirty-six pairs of photos were shown to respondents in random order for paired comparison. The nine individual photos were shown in random order for the values question in Section 2, as well. Section 3 concluded the survey with demographic questions and questions on the respondent's experience and

familiarity with the study area. In the case of those surveys administered to groups with paper answer sheets, the photos were presented in a random order unique to that group. In order to ensure that there were not significant differences in how individual and group administered surveys were answered by respondents, the results obtained from each method were also tested for correlation using Kendall's *t*.

4.2.6 *Ethics Review*

Prior to conducting survey research, the final version of the survey was subjected to ethics review by Memorial University's Interdisciplinary Committee on Ethics in Human Research (ICEHR). The Committee's ethics review procedures are based on Memorial University's Policy on Ethics of Research Involving Human Participants, which complies with Canada's Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. Upon review by the ICEHR, this research was given full ethics clearance.

All of the ICEHR's required procedures were followed during survey administration. Participants were informed that this research was to contribute to the completion of a master's thesis, and that by participating in the survey they were giving permission for the resulting data to be used in this manner. Participants were told the purpose, nature, and estimated length of the survey. Contact numbers and email addresses were provided if they had any further questions or interest in the results.

4.2.7 Data Entry and Storage

Survey results were stored automatically by Sawtooth SSI Web. The software allows survey results to be exported in a Microsoft Excel spreadsheet. A master spreadsheet was kept in the format provided by the software, with new data added as more surveys were completed. This provided a back up of data stored by Sawtooth SSI Web, and allowed for preliminary analysis of results while the data collection phase continued. In the case of those surveys conducted with a projector and answer sheet, results were entered manually into the master file. Electronic data was stored on a password-protected computer and paper answer sheets were kept in a locked filing cabinet at the International Coastal Network office at Memorial University.

CHAPTER 5

ANALYSIS AND RESULTS

A total of 98 respondents completed the survey. Forty-eight of them were residents, 28 were visitors, and the remaining 22 were non-visitors. The Kendall's *t* rank correlation analysis indicates that there was agreement among the three respondent groups in their ranking of landscape photos. However, there were some differences in the relative scale values of the photos among the groups. Furthermore, the results of Section 2 of the survey (Landscape Values) suggest that while there is agreement between the groups on landscape preferences, the types of values associated with the landscapes differ for residents, visitors, and non-visitors.

5.1 Survey Elicitation Styles

As previously indicated, not all of the surveys were conducted using an individual, computer-based format, with 22 surveys administered with slides and a paper answer sheet in a group setting (Table 5.1). Following the Dunn-Rankin (1983) method of paired comparison data analysis, scale values and rank order of the photos were calculated for each group in order to check for potential bias from the different elicitation methods. Correlation of the ranks was then tested using Kendall's *t* rank-order correlation. With a t=0.761, there was significant correlation at the 0.01 level between the rankings of the two groups. This indicates no significant differences between the way respondents ranked the photos, regardless of which data elicitation style they were presented with during survey administration.

Table 5.1 Number of respondents by survey elicitation style

Elicitation method	Number of Respondents
Individual/Electronic	76
Group/Slides + Paper	22
Total	**98**

5.2 Ranking of Landscape Photos

The results of the paired comparison question were aggregated for all respondents in order to produce a rank-order of the nine landscape photos in terms of appeal. As discussed, the paired comparison analysis resulted in each photo being given a rank as well as a scale value indicating the photo's relative rank on a scale of 0 to 100. A clear preference was shown for two particular photos, identified in Table 4.3 as "Islands" and "Fishing", which had scale values of 78 and 73, respectively. The photos receiving the lowest appeal represented the closed view of a coastal community (named "Residential" in Table 4.3), and the barrens landscape ("Barrens"). A complete list of nine landscape photos with their scale value and rank is given in Figure 5.1.

In order to look for similarities and differences in how the landscape photos were perceived by residents, visitors, and non-visitors, results of the paired comparison questions were aggregated for these three groups. Dunn-Rankin analysis was completed for the aggregated results of each group. The results of this analysis are shown in Table 5.2.

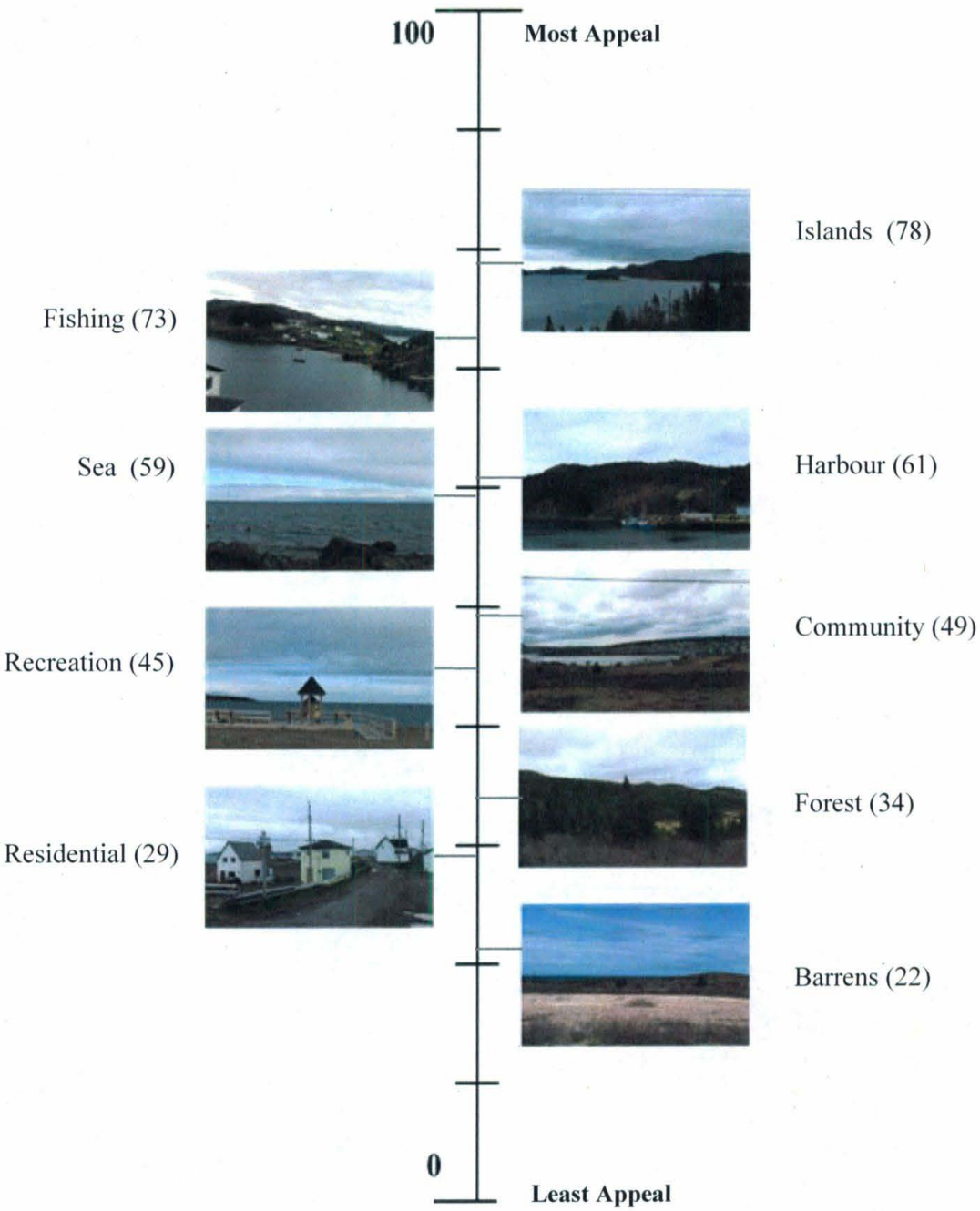


Figure 5.1 Scale value and rank for nine landscape photos by total respondents. Scale values are shown in parentheses.

Table 5.2 Dunn-Rankin scale values and rank values for landscape photos

Landscape Photo	Residents		Visitors		Non-Visitors	
	Scale	Rank	Scale	Rank	Scale	Rank
Islands	73	2	82	1	84	1
Fishing	74	1	69	2	79	2
Harbour	62	3	57	3	66	3
Sea	62	3	55	4	56	4
Community	48	6	54	5	41	7
Recreation	49	5	42	6	42	6
Forest	28	8	38	7	44	5
Residential	34	7	27	8	18	9
Barrens	19	9	27	8	21	8
Number of Respondents	48		28		22	

The Kendall's *t* rank correlation analysis shown in Table 5.3 indicates significant agreement between all groups in their ranking of landscape photos. The strongest correlation of ranking (t=0.816) was between the non-resident respondents, i.e., the visitors and non-visitors. There was also significant correlation between the rankings of residents and visitors (t=0.799), as well as between residents and non-visitors (t=0.704). The lowest level of agreement was between resident and non-visitor respondents.

Table 5.3 Kendall correlation coefficient *t* rankings of landscape photos for respondent groups

	Residents	Visitors	Non-Visitors
Residents	1.000		
Visitors	0.799*	1.000	
Non-Visitors	0.704*	0.816*	1.000

* Correlation is significant at the 0.01 level.

Despite the significant level of agreement between groups, the results of the paired comparison analysis show some differences in how the photos were ranked and in the appeal values of the photos. The three respondent groups were similar in ranking the islands, fishing, and harbour photos as the three most preferred landscapes. However, there was a difference in the rank order of these photos, with the residents group ranking the fishing photo in first place, while the other two non-resident groups ranked the islands photo in first place. The resident group also showed less difference in scale value for the two highest ranked photos, with 74 for the fishing photo and 73 for the islands photos. In comparison, the difference between these two photos was more pronounced in the collective ranking by visitors and non-visitor groups.

In terms of rank, the greatest difference was between residents and non-visitors for the forest photo. This photo was ranked fifth by the non-visitors, while it was ranked eighth by the residents. Other interesting differences occurred in the case of the community photo, which was ranked fifth by visitors compared to seventh by non-visitors, and the residential photo, which was ranked seventh by residents compared to last place for non-visitors.

5.3 Values Selected for Landscape Photos

In Table 5.4, the values associated for each landscape photo are represented by the percentage of total respondents who chose that value. For example, the islands photo shows a value of 64 in the column for ecological value, indicating that 64% of respondents chose to associate this value type with this landscape photo. The photos are listed in order of rank, from highest to lowest in order of preference by total respondents

(see Figure 5.1), to allow comparison of the ranking and associated values for each photo. The most frequently selected value for each landscape photo is shown in bold text for emphasis.

A comparison of the photo ranking and the values associated with each photo suggests, as would be expected, that the photos that had scenic/aesthetic value for a high percentage of respondents also tended to rank the highest in terms of appeal. This trend is particularly noticeable for the non-resident respondent group, in which the ranking of photos corresponds with the percentage of respondents who selected scenic/aesthetic value for each photo. However, this association of scenic/aesthetic value and the photo rank order is not always the case. The harbour photo, for example, was ranked third with 61% of all respondents attributing scenic/aesthetic value to it.

Table 5.4 Ranking and value scores (percentage) of landscape photos by all respondents. The most frequently selected value for each photo is shown in bold text.

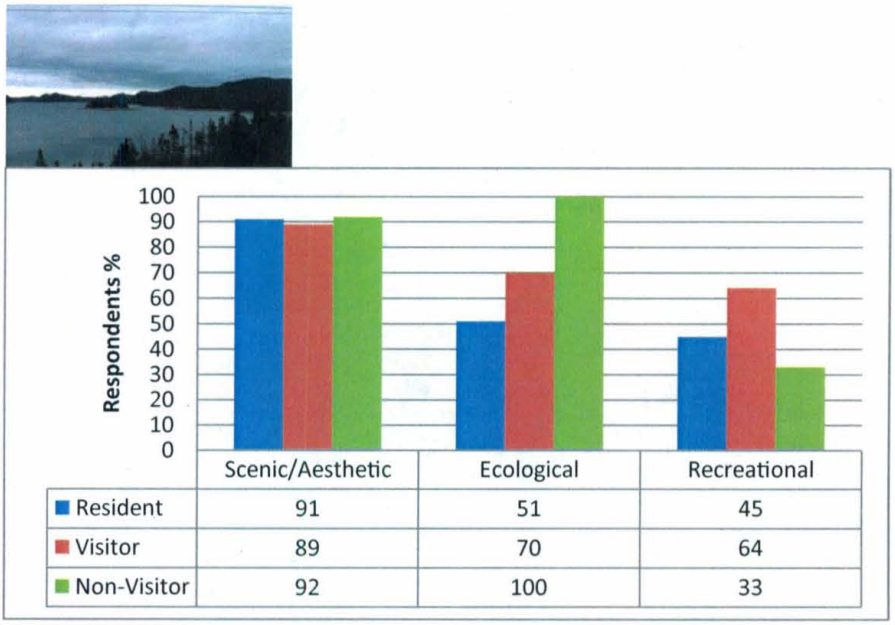
Landscape Photo	Total Respondents (n=98)								
	Rank	Ecological	Economic	Historic	Recreational	Scenic/ Aesthetic	Social/ Cultural	no value	other
Islands	1	64	7	15	49	**91**	23	1	1
Fishing	2	28	53	72	39	**82**	78	1	0
Harbour	3	30	72	60	37	61	**70**	0	0
Sea	4	66	13	23	44	**83**	24	0	0
Community	5	**76**	8	21	43	64	25	5	1
Recreation	6	40	26	44	56	**72**	38	2	0
Forest	7	38	44	51	36	**70**	69	1	0
Residential	8	8	20	74	13	44	**87**	3	0
Barrens	9	**61**	8	8	29	49	6	16	2

A higher percentage of respondents associated the sea, community, recreation, and forest photos with scenic/aesthetic value – even though these photos were ranked lower than the harbour photo in terms of appeal. A higher percentage of respondents associated the harbour photo with economic (72%) and social/cultural (70%) values. These results suggest that varying types of values may have influenced how appealing a landscape was to respondents. The results also suggest that a landscape photo that had low appeal to respondents may still represent a landscape that is highly valued for other reasons. For example, the residential photo was ranked eighth place according to the paired comparison section, but 74% of respondents associated historic value with this landscape, and 87% chose to associate it with social/cultural value.

A similar analysis was done for the three interest groups to see if there were differences in the types of values selected for each landscape. The results of this analysis show that, for several photos, there were differences between the three respondent groups in both the types of value selected and the percentage of respondents who selected a value. For example, for the islands photo, there were differences in how each of the three respondent groups associated values with this landscape. Tables comparing the landscape preference ranking and values selected for all three respondent groups are contained in Appendix C.

Figure 5.2 shows the percentage of respondents in each group who associated a particular value with the islands photo. The values shown are the three most frequently chosen values for this photo, according to the results for the total respondents shown in Table 5.4. As shown in Figure 5.2, respondents in all three groups tended to associate scenic/aesthetic value with the coastal islands landscape shown in this photo. However,

there is a noticeable difference regarding ecological value, with higher percentages of non-resident respondents choosing to associate this type of value with this landscape. Of respondents in the resident category, 51% selected ecological value for this photo. In comparison, 70% of visitor respondents and 100% of non-visitor respondents chose ecological value for this photo.

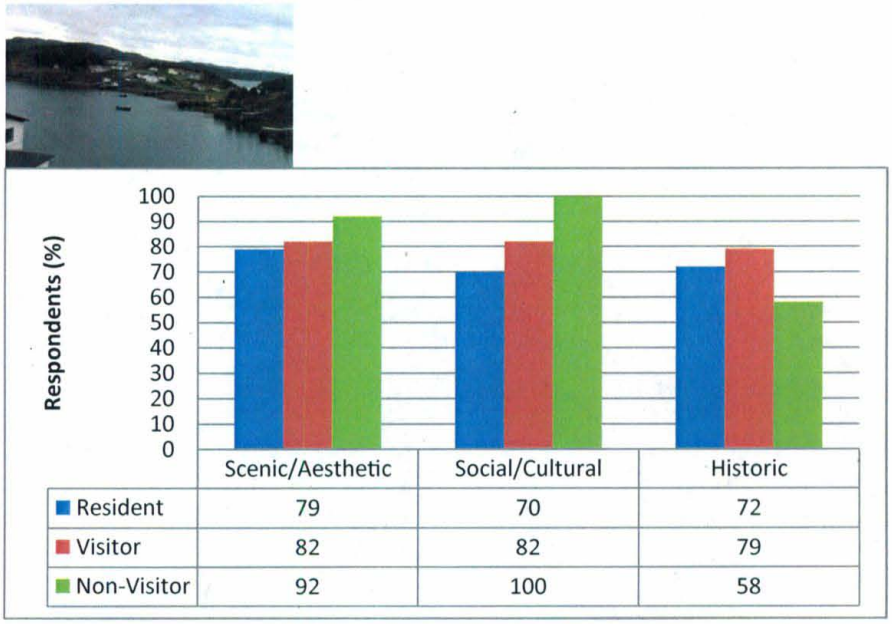


	Scenic/Aesthetic	Ecological	Recreational
Resident	91	51	45
Visitor	89	70	64
Non-Visitor	92	100	33

Figure 5.2 Values selected for the islands photo

Figure 5.3 further illustrates the differences in value selection for each respondent group. The three most frequently chosen values are shown for the fishing photo, along with the percentage of respondents in each group who chose each value for this landscape. In the case of the fishing photo, the most noticeable difference in the selection of values was between the resident and non-visitor respondent groups. High percentages

of respondents in the non-visitor category chose to associate this landscape with social/cultural value (100%) and scenic/aesthetic value (92%). In comparison, 70% of residents chose social/cultural value for this photo and 79% of residents chose scenic/aesthetic value. There is also a noticeable difference in how many respondents chose historic value for this photo. Only 58% of non-visitor respondents chose this value, compared to 72% of residents and 79% of visitors.



	Scenic/Aesthetic	Social/Cultural	Historic
Resident	79	70	72
Visitor	82	82	79
Non-Visitor	92	100	58

Figure 5.3 Values selected for the fishing photo

These examples show that there were differences in how respondents in different groups valued some of the landscapes in this study. The results suggest that while there was general agreement in the rank order of landscape photos for all respondents, the landscapes in the photos are valuable to respondents for a range of reasons. These

differences are discernible in the types of values that were associated with each photo by each respondent group. The type of value that was most frequently chosen for each photo shows differences according to respondent group. Table 5.5 summarizes the similarities and differences in how values were associated with each photo by resident, visitor, and non-visitor respondents.

Table 5.5 Most frequently chosen values for each photo by respondent group

Landscape Photo	Values Associated by Respondent Group		
	Resident	Visitor	Non-Visitor
Islands	Scenic	Scenic	Ecological
Fishing	Scenic	Scenic, Social	Social
Harbour	Economic	Social	Social
Sea	Scenic	Scenic	Ecological
Community	Ecological	Ecological	Ecological
Recreation	Scenic	Scenic	Scenic
Forest	Social	Scenic	Scenic, Social
Residential	Social	Social	Social
Barrens	Ecological	Ecological, Scenic	Ecological, Scenic

5.4 Respondent Demographics

The age and gender of respondents in each of the three respondent groups is shown in Tables 5.6 and 5.7, respectively. The 18-34 age group was the most represented category, with 50 respondents. There were a fairly balanced number of male and female respondents in each of the three groups.

Table 5.6 Age-group distribution of survey respondents

Group	Age					**Total**
	18-34	35-50	50-65	65+	Missing	
Residents	21	10	16	1	0	**48**
Visitors	18	6	2	1	1	**28**
Non-visitors	14	5	3	0	0	**22**
Total	**53**	**21**	**21**	**2**	**1**	**98**

Table 5.7 Gender distribution of survey respondents

Group	Gender		**Total**
	Male	Female	
Residents	22	26	**48**
Visitors	15	13	**28**
Non-visitors	10	12	**22**
Total	**47**	**51**	**98**

Respondents in the resident category lived in a number of communities on the Burin Peninsula. An attempt was made to survey resident respondents from communities throughout the study area. Resident respondents reported living in eleven different communities, as shown in Table 5.8.

Table 5.8 Communities of residence for resident respondents

Community	Number of Respondents
Bay Largent	1
Burin	7
Fortune	8
Garnish	1
Grand Bank	9
Lamaline	2
Little St. Lawrence	1
Marystown	6
Red Harbour	1
St. Lawrence	2
Winterland	1
Unknown/Missing	9
Total	48

In addition to demographic questions, respondents were asked about their familiarity with the landscapes represented by the photos in this study. As shown in Table 5.9, 49 respondents indicated that they were somewhat familiar with these landscapes, while 32 chose "very familiar" and 16 chose "not familiar".

Table 5.9 Respondents' familiarity with landscapes in this study

Group	Familiarity With Landscapes				**Total**
	Not Familiar	Somewhat Familiar	Very Familiar	Missing	
Residents	0	24	24	0	**48**
Visitors	5	15	7	1	**28**
Non-visitors	11	10	1	0	**22**
Total	**16**	**49**	**32**	**1**	**98**

5.5 Agreement among respondents

The information collected on respondent demographics and familiarity with the landscapes in this study was used to analyse the paired comparison results based on these factors. Differences in these factors among respondents did not lead to significant disagreement in the ranking of landscape photos. For example, the paired comparison results showed agreement by respondents of different gender, with the Kendall's *t* correlation coefficient showing perfect agreement (1.00) between male and female respondents in the ranking of landscape photos.

There was also agreement in the ranking by respondents who indicated that they were not familiar, somewhat familiar, and very familiar with the landscapes presented in this study. The Kendall's *t* correlation coefficient showed perfect agreement (1.00) between respondents who indicated they were somewhat familiar with the landscapes and those who indicated that they were very familiar with the landscapes. Correlation between each of these groups and the respondents who were not familiar with the landscapes was not as strong, with a *t* value of 0.761, while still in significant agreement. Results of this comparison are shown in Table 5.10.

Table 5.10 Kendall correlation coefficient *t* rankings of landscape photos for respondent groups

	Not Familiar	Somewhat Familiar	Very Familiar
Not Familiar	1.000		
Somewhat Familiar	0.761*	1.000	
Very Familiar	0.761*	1.000*	1.000

* Correlation is significant at the 0.01 level.

CHAPTER 6

DISCUSSION

This chapter begins with the interpretation of the landscape preferences and values elicited through the study. The implications of these results will be discussed with respect to tourism development, sustainability planning and coastal landscape governance in the Burin Peninsula, as well as generally in NL. This is followed by a methodological discussion, which will consider the use of landscape inventory and the landscape values survey as tools in this research, and suggest how they may be better implemented, adapted, or improved upon by other researchers and practitioners.

6.1 Landscape Preferences

The two photos that were considered most appealing by all three respondent groups were the photos of coastal islands and of a coastal community with small-scale fishing infrastructure, including boats and wharves. These results concur with a study by Arriaza *et al.* (2004), in which the two landscape characteristics most related to respondent preferences were the degree of perceived wilderness and the presence of well-preserved human-made structures of a particular vintage or style. However, some differences are observed in the ranking of these two photos by residents and non-residents. Resident respondents ranked the fishing photo first, while both groups of non-resident respondents ranked the islands photo first. As noted in Table 5.2, the interval between the two photos was more pronounced for both non-resident groups, with a clear preference for the islands photo, while the scale values for the photos were very close in

the resident ranking. At least two possible explanations for this discrepancy can be made – the desire of the visitor to experience a "wild" nature, and the differences in insider and outsider perceptions of landscape arising from different levels of familiarity.

On the first point, studies by Garrod and Wilson (2004) and Daugstad (2007) have noted that with increasing globalization and urbanization there has been a rising trend in which rural tourism is pursued as an escape to nature. Bell and Lyall (2002, 7) suggest, "Nature has become an aesthetic luxury", and tourism often commodifies landscape to offer a perceived wilderness as an escape to tourists. Efforts by HRTA and the province to attract tourists to NL follow this trend, with promotional materials and advertisements that include landscape photos to emphasize the wilderness of the coast. However, these "wild" shots do sometimes include humans or evidence of human disturbance to the landscape. For example, while the caption of one photo on the NL tourism website reads "Hike 29,000 km of untouched coastline" (TCR 2011), the accompanying photo shows a solitary figure walking along a well-worn coastal path. The overall effect is to promote the perception of NL as a place that is rich with wilderness, which is still, nevertheless, accessible to be experienced by tourists. This recognizes that for the people who visit the province, having a meaningful, unique, or adventurous experience is a key element of their trip.

The different preference rankings in this study may also be related to the differences in insider and outsider perceptions of landscape discussed by Relph (1976). This interpretation would be supported by the possible role of familiarity in landscape preference ranking that is observed in this study. Perfect agreement is found, for instance, in the ranking of photos by respondents who identified themselves as "somewhat

familiar" and "very familiar" with the landscapes in this study (Table 5.10). There are precedents for familiarity influencing landscape preferences, including a study by Dearden (1984) that measured landscape preferences using photos of urban, rural, and wilderness scenes from Vancouver Island, British Columbia. Respondents were asked to rank factors in terms of influence on their landscape preferences. The highest rated factors were related to familiarity, including past experience with landscapes. Familiarity was also identified as a key factor in a study of landscape preferences by Brush *et al.* (2000), in which a group of farmers were the only respondent group to rank the agricultural landscape highest. In the context of the current study, it may be that local knowledge of the landscape in the fishing photo led residents to prefer it more often. In other words, the residents or the insiders' view may be based on years of living and working with the landscape, while the visitors' views are those of outsiders who are consumers of the landscape, both visually and as an object to be experienced.

6.2 Landscape Values

In relation to landscape preferences, the landscape value most frequently selected for the two most preferred photos are scenic/aesthetic. However, the results of the landscape value survey show that multiple values were selected for each landscape photo by respondents in all three groups. The values selected reflect both anthropomorphic and intrinsic value, including several types of economic value discussed by de Groot and Hein (2007). Direct use value, for example, is implied for landscapes that were assigned values such as economic or recreational value. It is also possible that by assigning ecological value to landscapes, respondents were expressing indirect use value and/or intrinsic value.

Interestingly, some photos that did not score well in the preference survey were still frequently assigned ecological landscape values. For example, the lowest ranked photo of barrens was still assigned ecological value by a relatively high number of respondents in each of the three groups, and 61% of the total respondents. The option value of landscapes in this survey is difficult to interpret from the survey results, since the survey did not ask about respondents' desire to conserve these resources for the future. However, this type of value could be elicited from surveys measuring respondents' preferences for possible future land use scenarios.

Similar to the landscape preference results, the greatest noticeable difference in value association is between the non-visitor group and the resident group. For example, with the fishing photo, a higher percentage of the non-visitor respondents selected ecological value. In comparison, higher percentages of residents and visitors picked historic value for this photo (see Figure 5.2).

The differences in insider and outsider views of landscape may also explain some variations in how the respondent groups associated value types with the coastal landscape photos. As discussed in Section 5.3, while the landscape photos may have been ranked similarly by each respondent group, there were differences in the types of value that were chosen for each photo. The most notable one is that values requiring experience with the landscape to understand, such as historic value, were not frequently chosen by the non-visitor respondent group. Instead, the respondents in this group were more likely to associate ecological or scenic/aesthetic value with a number of photos. Another noticeable difference is that respondents in the visitor category tended to select recreational value more frequently than respondents in the other two groups did. Two examples of this are

seen in the landscape values assigned to photos referred to as "Islands" and "Sea" in Table 4.3. While both photos were ranked similarly by all three respondent groups, a higher proportion of visitors chose recreational value for these photos than seen in the other two groups.

In general, context dependent variables were selected less frequently by the non-visitor respondents, who would not have had experience or familiarity with these landscapes. These respondents were more likely to select ecological or scenic/aesthetic values for the landscapes in this survey. Brown *et al.* (2005) found similar results in a map-based survey of landscape values in the Prince William Sound area of Alaska. The authors found that respondents who were less familiar with the landscapes were more likely to select abstract, non-experiential values such as intrinsic value.

The multiple values assigned to landscapes of the Burin Peninsula suggest that the coastal areas of the region are potentially important places for people. This is supported by Beckley *et al.* (2007), who found that respondents' sense of attachment for important places was influenced by both the biophysical and sociocultural aspects of a spatial location. Work by Brown and Raymond (2005) also supports the idea that valued landscapes indicate places to which people feel strong attachment. In a values mapping survey, the researchers found that certain values - in particular aesthetic, recreation, economic, spiritual and therapeutic values – spatially correlated with the places that respondents identified as important. However, their study also showed that place attachment increased with experience factors such as knowledge of the area, or length of residence (Brown and Raymond 2005). It is possible that the landscape values expressed by residents and visitors of the Burin Peninsula are related to the sense of place they have

for this region, while the values expressed by the non-visitor respondent group weigh more heavily towards intrinsic values.

With multiple value sets being assigned to the landscapes of the Burin Peninsula, there is a question of whose values should count in management. Discussing forestry management, Rolston and Coufal (1991) argue for the need of planning that not only recognizes multiple uses, but also multiple values. There is a similar challenge for landscape management, which should recognize the different values of multiple stakeholders.

6.3 Implications for Tourism

Several implications for tourism can be drawn from the study of landscape preferences and values. The discussion of these implications may be facilitated with an understanding of why tourists choose to visit NL. In the latest available visitor exit survey for the province, travellers were asked to rate a number of statements about visiting NL. The top three rated statements were:

1) Desire to meet the people and experience the culture

2) Desire to visit unique and off-the-beaten-track destinations

3) Experience contributes more to the vacation than the sites (TCR 2006)

The second and third statements are most relevant to the current discussion, revealing the importance for tourists of both perceived wilderness and related wilderness experiences. While both provincial and regional tourism marketing would appear to be

doing a good job of appealing to these related visitor expectations, there may be some implications to improve visitor experience on the Burin Peninsula.

First, the most preferred photos showed open views of scenic coastal islands and of a fishing community, representing classes of coastal landscape that are not dominant on the region's main highway (see Table 4.2). The shorelines of the region, however, offer an abundance of open coastal views. The easiest way to access these views is through the communities, which are settled on the coast with roads that are often closer to the shore than Route 210. Other sightseeing opportunities are available at public areas such as Frenchman's Cove Beach. While many locations in the region have coastal scenery to offer visitors, getting from one location to the next requires substantial driving time, and there is little signage to guide visitors to scenic areas or to appropriate areas for experiences such as hiking, bird-watching, or fishing. Providing visitors with clear and easy directions to areas of impressive coastal scenery or areas with potential for landscape experiences may be a priority for overcoming this challenge, and a potential benefit of this research.

Similar to many areas promoting nature as an attraction, the Burin Peninsula faces a challenge to depict local natural features as unique and different enough to be worth visiting. Bell and Lyall (2002) note that a global competition for nature tourists creates this need for marketing to assert the uniqueness of the place. Referring to the second highest rated statement by visitors to NL, one can reason that how far "off-the-beaten-track" a visitor is willing to go may depend on the degree to which they perceive the destination as "unique". With accessible coastal scenery and historic coastal communities located in other areas of NL such as the Avalon Peninsula, which is much closer to a

major airport and other amenities, it is important to make potential visitors to the Burin Peninsula aware of the biophysical and sociocultural aspects of landscape that make it unique. It may be that emphasizing the experience factor, especially the experience of meeting people and being immersed in culture, is a key strategy for asserting the uniqueness of the Burin Peninsula region as a tourist destination.

As discussed by Knudsen *et al.* (2008a), one way to view tourism landscape experiences is as activities in which an outsider (visitor) is provided opportunities to learn about the identity of the insider (resident) through their interactions with the local landscape. This activity is mediated by tourism managers and promoters, who present selective images of the local landscapes as tourism attractions, providing a "checklist" of sites for the visitor to see (Bell and Lyall, 2002). With this perspective, it can be understood that a challenge for tourism promotion in NL is to effectively mediate the interactions between visitor and the landscape. The results of the survey administered for this research show that there are some differences in how the coastal landscapes of the Burin Peninsula are valued by resident and non-resident respondents, which may have influenced their landscape preferences. One possible explanation for this is that there may be interesting things about some landscapes that are known by locals, but may not be understood (or valued) by outsiders. This possibility is supported by personal experience during the design phase of this research, which included participation in a familiarization tour arranged for employees of the HRTA. This training session involved a bus tour to every community in the region, allowing employees to become familiar with attractions and amenities. In casual conversations about this research, many of the HRTA employees

discussed specific places and landscapes that were important to them, often referring to personal stories, historic information, or local lore about the place.

This type of contextual information, through which residents give meaning to local landscapes, is not typically included in tourism promotional materials or visitor interpretation. Instead, promotional materials for NL and the Burin Peninsula often emphasize the beautiful scenery of coastal landscapes and the opportunity for sightseeing. Given visitors' desire to experience culture, as expressed by the exit survey, interpretive materials that help visitors understand why certain landscapes are important to residents should be developed with reference to local stories and history. The HRTA on the Burin Peninsula has already implemented this idea with their view-parks, which are pull-off areas on the highway that have interpretive panels and viewfinders during the tourism season. With this approach, visitors are not only passively interacting with the landscape through sightseeing, but also learning more about the culture and identity of the local people. Continuing to pursue this direction of interpretation would be an effective way to incorporate cultural tourism with landscape tourism.

Another challenge for tourism promotion is to mediate visitor experience with an even geographical distribution, providing more communities on the Burin Peninsula with the opportunity to benefit from tourism. As noted by Bowler *et al.* (2002), the changes brought about because of rural restructuring lead to some communities being advantaged and some being disadvantaged. With tourism development for rural NL, some communities may be disadvantaged due to factors such as a lack of amenities or a more peripheral location. A challenge for regional tourism promotion on the Burin Peninsula is that some communities are further away than others are from Route 210 and the amenities

of major centres such as Marystown. These communities require a more substantial effort by visitors in terms of driving time, as well as in other practical matters such as purchasing gasoline and finding stores, restaurants, public restrooms, and other amenities. Tourism marketing must show visitors why the effort to get to these areas is worthwhile. A key strategy for overcoming this challenge may be to promote different types of experiences in different communities.

In one study of visitor preferences in the coastal town of Kaikoura, New Zealand, Fairweather and Swaffield (2001) showed that visitors had subtly differing expectations for coastal landscape experiences on their trip. The authors categorize these expectations as five different types of visitor experience for this area. These experiences include ecotourism, marine recreation such as boating or fishing, small coastal community tourism, picturesque landscape experiences, and coastal family holiday experiences in locations with appropriate amenities (Fairweather and Swaffield, 2001).

While the specific characteristics of these experiences would be different for the Burin Peninsula region from those described for New Zealand, it is possible that there is also a range of subtly differing expectations for landscape experiences among visitors in this region. An effective strategy for regional tourism governance on the Burin Peninsula might be to identify and understand the different types of experiences that visitors to the province expect, which is partially indicated through sources such as the provincial visitor exit survey (TCR 2006). Tourism development could focus on fostering and promoting different experiences in different communities, providing incentive for tourists to visit several places in the region. To some extent, a geographical distribution of different visitor experiences can already be identified for the Burin Peninsula region. For example,

Grand Bank may be seen as a centre for amenities such as restaurants and accommodations, while smaller communities such as Little Bay East offer picturesque natural and cultural landscapes for sightseeing. One way to strengthen regional tourism promotion might be to emphasize these differences and focus on the unique experiences available in different areas.

The landscape preference results may suggest a discrepancy between the type of cultural heritage landscapes shown in tourism promotional materials and the real appearance of coastal communities on the Burin Peninsula. Of the three photos showing coastal residences, only the photo with fishing related scenery received a high rank in preference or a high percentage of respondents who selected scenic/aesthetic value. The heritage associated with coastal communities is a major part of tourism promotion for NL, and the Burin in particular (whose highway is after all named the "Heritage" Run). The landscape photography used to attract visitors to NL and the Burin Peninsula often includes iconic images of coastal villages, including fishing wharves and stages. However, elements of the actual appearance of Burin Peninsula communities may sometimes resemble towns in many areas of North America.

The loss of local landscape identity and diversity has been discussed as a potential negative effect of development. For example, Antrop (2005) writes that contemporary development and globalization can result in homogenization of cultural landscapes, essentially creating human-made structures that look alike everywhere. Relph (1976) refers to this homogenization of landscape as resulting in a state of "placelessness." While this has not become a major problem for the Burin Peninsula, there are signs of globalization in the development of some towns. The most obvious

example of this is Marystown, which is the major centre for the region and has more development such as shopping centres, restaurants, and other amenities. However, development in Marystown is centralized, with the identity and diversity of traditional coastal landscapes maintained through much of the town. The town, and the region, have received benefits from development, including employment opportunities, and increased goods, services and amenities. As the region continues to develop, there may be challenges for governance to balance the benefits of such development with the conservation and protection of valued landscapes.

As a final implication of this research for tourism, the variety of landscape values indicated by respondents underscores the need for tourism to develop in a way that promotes the sustainability of coastal landscapes. As discussed in Section 3.3.2, ecotourism has the potential to promote the sustainability of environmental tourism resources, by providing an economic incentive for conservation and educating the public on their value (Burger 2009). Regional tourism planning could promote this by continuing to encourage the application of sustainable ecotourism principles for tourism development in the Burin region.

6.4 Implications for Governance of Coastal Landscapes

This study examines preferences and values for coastal landscapes on the Burin Peninsula using interactive governance as a theoretical framework (Kooiman *et al.* 2005). There are several implications of the study results for governance of coastal landscapes at the local, regional, and provincial level. As a starting point, the study gives evidence that landscapes are valued assets for the region. The type of public values elicitation methods

used in this research can be seen as an approach to the participatory processes advocated for community sustainability planning (Ling et al. 2009), coastal zone management (Cicin-Sain and Knecht 1998), and sustainable tourism planning (Murphy 1985; McCool and Lime 2001). Landscape has also been advocated as an appropriate concept through which to understand tourism (Knudsen et al. 2008a) and to approach sustainable development (Philips and Clarke 2004). For these reasons, it is possible that the type of research completed in this study could provide inputs for existing regional governance processes that may have influence over landscape as a resource, while not having explicit policies or institutions established to address it. Figure 6.1 illustrates the possible connection between landscape evaluation and governance approaches such as tourism planning, coastal zone management, and community sustainability planning.

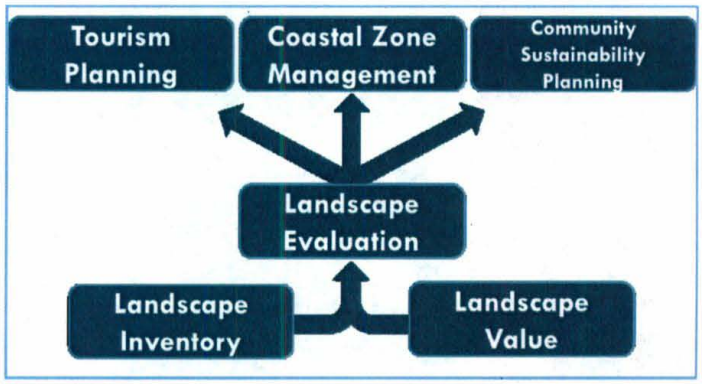


Figure 6.1 Possible contributions of landscape inventory and values research

In terms of community sustainability planning, it is clear from the landscape values section of the survey that the coastal landscapes have values related to several pillars of sustainability (Municipal Affairs 2009), including ecological, economic, social,

and cultural sustainability. Planning for the sustainability of local landscapes could be compatible with the ICSP process, contributing to community sustainability by supporting these pillars. In terms of sustainable tourism planning, as discussed in section 6.3, it may be necessary to re-examine tourism in NL and the Burin Peninsula to ensure that it meets the standards of true ecotourism, in which the sustainable development of the community, rather than the industry, is the goal (Fennel 2008). There is also potential for the landscape values revealed by this study to bring a landscape focus to ICM processes, as advocated by Vallega (2003) and Pereira da Silva (2006).

On the provincial level, there is a need for a comprehensive land use plan that will recognize the value of coastal landscapes and provide legislation for resolving conflicts. The provincial tourism association, Hospitality Newfoundland and Labrador (HNL) has identified this as a policy priority for tourism in NL. The policy priority section of their website reads, "As a resource-based industry, tourism requires vision and stewardship for the planning and maintenance of landscapes and seascapes" (HNL 2011). There is some indication that the need to fill this policy gap is gaining attention from the provincial government. For example, in November 2010 the Rural Secretariat organized a public forum entitled "Session to Explore the Future of Land Use Planning in the Province", which invited participants from a wide variety of stakeholder backgrounds to forward their ideas on the subject. The integrated landscape management framework advocated by the CILM (2005) and Bellefontaine *et al.* (2010) has potential to provide guidelines for a landscape-focused approach to land use planning. As of now, however, this is an emerging policy option in Canada, and it is usually discussed in relation to terrestrial land uses planning involving forestry.

The study also implies a need for provincial policy that addresses landscape protection, as there is currently no provincial framework in NL for identifying and protecting valued landscapes. Areas included in provincial or federal parks are protected as a part of park mandates, but there are no landscape-specific protection measures applicable to areas outside of these jurisdictions. Developing provincial policy on landscape protection could complement a comprehensive land use plan. The definition for protected landscapes/seascapes as given by the IUCN in Section 3.5 may provide a suitable guideline for such policy. The IUCN emphasis on preserving traditional interaction between human and environment is an important aspect to ensure that landscape protection legislation does not exclude residents from traditionally used resources, which would reduce public support for landscape protection efforts. Widgren's (2011) definition for domesticated landscapes also advocates for a different conception of landscape, which does not separate nature and culture, but rather recognizes that the landscape is an expression of these interactions.

Landscape protection policy may also help to preserve important heritage landscapes, which have potential value for both tourism and community sustainability. The lure of heritage landscapes has been discussed as an element of cultural rural tourism (MacDonald and Jolliffe 2003). Heritage related aspects of traditional cultural landscapes have also been linked to residents' sense of place, history, and identity (Antrop 2005). While these factors may appear to suggest a need for policy to protect the character of heritage landscapes, it is important also to consider the point made by Antrop (2005) and O'Rourke (2005) that cultural landscapes have always changed naturally, as the relationships between people and their environment have changed. This poses a challenge

to develop policy that protects the valuable character of heritage landscapes, while allowing development to benefit coastal communities.

In the case of NL heritage tourism, some have argued that the cultural elements that are commoditised for tourists represent a romanticized version of culture, and that this focus on the past has the potential to limit development (Overton 1996; Ashworth 2003). Bannister (2002) discusses how the popular understanding of NL history has changed over time. The author notes that a popular contemporary view of this history laments the loss of "traditional" NL culture to the progression of modernization, industrialization and globalization. However, Bannister (2002) argues that this interpretation has been largely influenced by a romanticized version of NL past, as depicted in popular books, music, and films. It is possible that a similar mistake could be made by well-intentioned policy for landscape conservation in NL. In order to avoid this for heritage landscapes, governance approaches must avoid simplistic assumptions and simplistic solutions. There is a need to recognize that good landscape policy should not attempt to protect landscapes from change, but rather to recognize that change is inevitable and to focus attention towards managing change sustainably (Groenewoudt 2011).

There are definite challenges to implementing many types of landscape governance institutions. As Selman (2007) notes, partnerships between local, regional, and national scale actors are important for sustainable landscape management. However, like many types of community engagement, studying human perceptions of landscape value can be difficult, time-consuming, and costly to achieve. There is already a problem with implementation of regional development principles in NL due to a lack of local

capacity (House 2001). The addition of landscape inventories and values elicitation to local and regional governance responsibilities will probably not be practical, unless the local capacity is increased as well. In addition to the usual responsibilities of town management, planning duties delegated to municipalities already include completing ICSPs, and participating in regional collaboration for efforts such as coastal zone management or regional economic development. Providing opportunities and capacity for local involvement in landscape planning is essential, however, as the inclusion of local expertise is beneficial for identifying important local landscapes, documenting land-use, and understanding historic processes of landscape change (Groenewoudt 2011).

As noted by Relph (1976), insider views of landscape are inseparable from other implicit factors such as identity and sense of place. This is also true for outsiders, who may just have a different sense of place for the same spatial location. One potential benefit of landscape values research is to increase community engagement and begin to understand such implicit factors, especially among the resident respondents. In comparison with the resident respondents in this study, the visitors, especially at the Visitor Information Centres, were more enthusiastic initially, and seemed to understand more readily why they were being asked about this subject. This may also be due to cultural differences related to respondents' experience with community engagement or public perception-based research. Engaging the community in this way to explore implicitly held values about landscape is one potential benefit of this type of research. As noted by Kooiman and Jentoft (2009), the elicitation of implicitly held values about resources is also an important strategy for effective resource governance.

Recognizing the potential impact of coastal development on the sustainability of local landscapes is fundamental to effective governance of this resource. A challenge for local and regional governance is to promote coastal development, which may bring socioeconomic benefits to the region, while attempting to plan for the sustainability of valued landscapes.

6.5 Methodological Considerations

6.5.1 Landscape Inventory

This study provides evidence for the case that coastal landscapes are resources that are valued by multiple stakeholders. As such, they represent assets to communities. Effort has been made to encourage the inventorying of community assets in NL, including coastal resources (O'Brien *et al.* 1998) and cultural heritage assets (Dick *et al.* 2003). As Cendero and Fisher (1997) suggest, human perceptions of landscape could be a valuable addition to a coastal resource inventory. Because of the broad scope of landscape, an interdisciplinary approach is required to create such inventories, such as the approach taken by Catto *et al.* (2003) to consider human landscape perceptions along with coastal geomorphological data. Completing a landscape inventory is a step towards documenting and understanding local coastal landscapes, providing a baseline for discussion on their value and future land use decisions that could affect their appearance. As potential conflict may arise between development and conservation of coastal resources, having an inventory of coastal landscapes can provide a first step in facilitating landscape planning for the region.

The method used in this study takes advantage of available software and technology to collect large amounts of spatially referenced landscape photos. The method was used to successfully produce a systematic inventory of coastal landscapes for the study area. The potential benefits of this include understanding the spatial location and distribution of significant landscape types for both tourism development and community sustainability planning. As a method of landscape inventory, the procedures followed for this project using the VIEWS™ system were cost-effective and efficient. The landscape photos collected by this method could be used as a baseline for future land-use decisions, while also providing a reference for any future landscape protection policies. It would also be possible to use this method of landscape inventory characterize the scenic quality or the tourism potential of a particular route. However, modifications to the data collection procedures might be required, such as repositioning the camera to face the direction of travel, reflecting the perspective from which a person travelling in a car would view the landscape.

There were some limitations to the data collection process, including practical matters such as weather, traffic and driving conditions, all of which posed small problems. The choice of a car-based video survey of the coast served the purpose of producing a systematic coastal landscape inventory, in which landscapes were grouped according to variables in their physical appearance. However, this data collection procedure may not have captured specific places that were important for tourism or for other reasons. Other types of landscape inventory, such as an inventory of important tourist landscapes, would have to recognize this limitation.

The photo coding and cluster analysis methods were effective in developing a systematic inventory of landscape images and showing the dominant landscape types in the study area. However, as shown in Table 4.2, the cluster analysis did not result in any aquatic landscape classes, with the coded photos being grouped into five landscape terrestrial landscape types. Photos representing marine and coastal landscapes were manually selected for inclusion in the values survey, and the survey results show that these were the most highly valued landscape types. This suggests that, while cluster analysis was useful as a tool to understand dominant classes of landscape, it was not sufficient for deciding which landscape types would be included in the landscape values survey.

Finally, it may appear that the hardware and software chosen for this project could limit the applicability of the method. However, the choices of using the VIEWS™ system as a data collection tool and cluster analysis as a sorting tool are not key elements for inventorying coastal landscapes. The process of systematically capturing images from an area of interest, coding the images for important landscape features, and sorting them into groups could be performed using other tools such as a regular video camera and a GPS. It is also possible that the method could be improved at certain stages with more advanced tools. For example, the coding of photos for landscape features would be improved if image-recognition software could be applied to automate the process.

6.5.2 *Landscape Values Survey*

The use of photos has long been an integral part of landscape perception studies (Jacobsen 2007). In general, the use of photographs was an effective method for this

survey. Given that VIEWS™ outputs are in video format, it would be possible to use sections of video in the survey, as done by Brush *et al.* (2000) in their study of preferences for scenic rural driving routes. However, in the context of this study, this option would probably be more viable for in-depth interviews, focus groups or follow-up discussion than for an individual survey.

While a comparison of the rank and associated values of each photo does show some correspondence between preference and scenic/aesthetic value, there are value selections that suggest respondents were not simply picking the prettiest pictures. As suggested by Scott and Canter (1992), the survey questions were designed to stress the importance of evaluating the landscape, not the photo. A possible improvement to the method would be to include a test during the survey design phase in order to see whether people were really responding to the photographs or to the represented landscape. This could be done by showing respondents different photographs of the same landscapes, reducing the likelihood that the resulting landscape preferences were influenced by the quality of the photos. A similar approach could be incorporated into the survey design, so that respondents were shown one of a set of photos representing each landscape type.

The photos used in this survey were all taken during the landscape inventory process. The systematic nature of the landscape inventory technique used in this study may have helped to reduce respondent confusion about whether to judge the picture or place. The photos were all taken from the same perspective, under similar weather conditions, and without the perspective of an artistic photographer. In an artistic sense, they were all equally ordinary photos. Some resident respondents were displeased by this, however, feeling it was a misrepresentation of the landscape.

Respondent comments during survey administration also suggest that the term "landscape" may not be as familiar or meaningful to people as asserted by Philips and Clarke (2004, 53), who argue that it is a good concept on which to focus sustainable development approaches for just this reason. Many respondents did not immediately recognize what was meant by the term "landscape" during recruitment, with many residents suggesting local people involved in government or regional organizations as being more qualified as experts to answer the survey. However, once the nature of the survey became clear and residents began to recognize that they were being asked about their opinion on this aspect of their home region, they were usually more enthusiastic, and sometimes proud to offer their opinions.

It was also quite common for residents to tell a story about the landscape, or to identify it and mention somebody who lives nearby. This kind of response indicates that, at least for the residents, the landscape was usually being judged rather than the picture. There are possibilities that this tendency would not be as strong for visitors or non-visitors, who had less experience with the specific landscapes, and were probably more likely to view them as physical landscape types, rather than specific places. However, as noted above, the survey questions were carefully worded to reduce the likelihood of this by emphasizing that the landscape was the object in question. Written and verbal instructions also indicated that this survey was intended to gauge respondent perceptions of coastal landscapes on the Burin Peninsula (see the survey introduction screenshot in Appendix B). A possible improvement to the method would be to include one or two photos of landscapes from outside of the region, which were potentially unfamiliar to all respondents. Comparing residents' response to these images and images of local

landscapes could help explain whether they were favouring specific locally known places or responding more generally to the type of landscape.

The survey completed during this study is an example of what Satterfield and Kalof (2005) refer to as a relativistic values study, showing a range of values that may be useful to consider for policy makers and practitioners in the realm of landscape governance for this region. The use of quota sampling made it possible to obtain comparable response sets from the three respondent groups of resident, visitor, and non-visitor. The range of landscape preferences and values reported by these groups was useful for consideration of the relationships between landscape, tourism, and community sustainability for the Burin Peninsula region. Using a non-probability sampling method, the aim of this study was not to generalize the landscape values for larger populations, but to represent a range of values for discussion. This is an applicable approach to landscape preferences and values, which are subjective and dynamic, with the potential to change over the course of one's own lifetime (Linton 1968), as social attitudes toward the environment change, and even with changes in immediate factors such as the perspective from which a landscape is viewed or the company one keeps while experiencing the landscape (Lowenthal 1978).

As discussed in Section 3.2.2, this study was an adaptation of the paired comparison method and analysis employed by Chuenpagdee (2001a) to discuss environmental damage schedules. This study is the first application of this method to study landscape preferences and values in NL. The paired comparison method used with landscape photographs appeared to effectively engage respondents, allowing them to express their landscape preferences and values. The interval scale derived from analysis

of the survey results gives an interesting picture of the relative landscape preferences for the respondents in this study.

An interval scale would also be a valuable output for a similar study designed to assess the relative importance of threats to landscape sustainability. A possible further contribution of this method to this subject would be to design a survey gauging public reaction to potential resource loss related to future landscape use scenarios, similar to the study by Chuenpagdee (2001a) which gauged the relative importance of coastal resources. The inclusion of more photographs showing coastal development or other human disturbances could yield interesting results. While an option of "no value" was provided as a response to the landscape values question, it was very rarely selected, even for the least preferred photos. However, it is important to note that the landscape photos selected for the survey did not include photos that were likely to cause strong negative reactions. It would also be interesting to see how values were ascribed, or not ascribed, to landscape features more likely to cause contention. All terrain vehicle (ATV) use, for example, is a potential source of conflict regarding land use on the Burin Peninsula. While the activity is enjoyed by many residents, it has environmental consequences that can affect the ecological integrity and visual quality of local landscapes. Including photos that show the impacts of such disturbances on landscape could have made the survey results more interesting in terms of implications for future land use scenarios.

Another possible extension of this survey would be to use online surveying with software such as Sawtooth SSI Web. Several potential visitor respondents asked if the survey could be completed online after their trip, explaining that they did not have time to participate when approached. The software was easy to use for the majority of

respondents, and with detailed written instructions to respondents, the survey could have been effectively self-administered online. Roth (2006) advocates for the use of the internet as a valid alternative to on-site or photograph-based surveys on public landscape perceptions. If an online landscape values survey was developed for communities in NL, the resulting information could be integrated with the NL Community Accounts website, providing an online resource for tourism planning, community sustainability planning, and other processes affecting landscape governance. Interestingly, the ongoing National Geographic eastern Newfoundland Geotourism project may lead in the same direction (National Geographic Society 2011). This project includes an online, map-based application through which people can nominate important areas for geotourism in this region. An online landscape values mapping initiative has also been developed by researchers at the University of PEI Institute of Island Studies (UPEI 2011), based on the values mapping survey method used by Brown and Raymond (2007). Instruments such as these, developed through collaboration with universities and other institutions and organizations, may help address the problem of overcoming limited local capacity for community engagement.

Finally, the results produced through this method could be enhanced with more qualitative information related to landscape, identity, and meaning. An attempt was made in this study to understand some contextual information, with the survey comprising questions on both preferences and values. As noted by Penning-Rowsell (1981), landscape perception studies based solely on visual preferences may omit important underlying causes of perceptions, such as values. The results of this study support Penning-Rowsell's (1981, 32) argument that in preference studies, landscapes that are not

preferred may still be valuable for contextual factors such as rarity or historic associations. Further investigation of this type of contextual information could be gained through qualitative methods such as focus groups and interviews with representatives of each respondent group. As noted by Dearden and Sadler (1989), the use of multiple methods is likely to produce the most valuable information on a landscape, which is a broad, multi-faceted subject that warrants attention from interdisciplinary perspectives.

CHAPTER 7

CONCLUSION

7.1 Summary and Key Findings

Coastal landscapes are an important natural resource with potential value for communities. Governance of this resource can be made more effective with a greater understanding of the values of coastal landscapes and the reasons for which they are valued. This research has progressed with the goal of understanding coastal landscape values for the Burin Peninsula region of NL, where it is possible that landscapes have value for tourism and for community sustainability. This goal was addressed through the completion of a landscape inventory and a landscape values study. The key findings for each process are discussed below.

7.1.1 Landscape Inventory

The first aim of the study was to elicit public perceptions on landscape preferences and values. As an initial step, a landscape inventory was completed for the region's main tourism route. This provided baseline information about the landscapes in the study area, while also providing landscape photos to be used in the landscape values study.

The inventory was completed with an innovative application of VIEWS™, which integrates high-definition video and GPS to create geo-referenced images. A sample of these photos was coded according to landscape features, with cluster analysis used as a tool to group the photos into significant types of landscape. The results of this analysis

show that there is a relatively homogenous collection of landscape types to be viewed from the region's main transportation route, with forest and barrens dominating, and a lower number of open coastal views.

7.1.2 Landscape Values Survey

Nine photos from the landscape inventory were integrated into an electronic survey with Sawtooth SSI Web software. The photos were used as landscape surrogates in the survey to elicit landscape preferences and values. The included photographs were chosen to represent the dominant landscape types identified through coding and cluster analysis, as well as other landscape types identified as important by tourism materials and through consultation with key informants during the survey design phase.

The survey included three sections: landscape choices, landscape values, and respondent information. The first landscape choices section consisted of a paired-comparison exercise in which respondents were shown pairs of landscape photos and asked to choose which was most appealing. The results of this exercise were analyzed to show the collective rank-order and interval scale value for total respondents and for the three respondent groups. Results show a general consensus for landscape preferences, with the photos representing a coastal islands landscape and a coastal community landscape with fishing infrastructure ranked highest by all groups.

Consensus between groups was tested using Kendall's *t* rank correlation coefficient, which measures agreement in the ranking of objects. The results show significant correlation between the ranking decisions of all three respondent groups. The strongest correlation was between visitors and non-visitors, the two non-resident

respondent groups. The weakest correlation was between the resident and non-visitor groups.

These results suggest that experience or familiarity with the local landscapes was a factor in determining landscape preferences. Section three of the survey included a question on respondents' familiarity with local landscapes, asking whether they considered themselves to be not familiar, somewhat familiar, or very familiar with the landscapes shown in the survey photographs. To test for the influence of familiarity, respondents were also grouped by these three response categories and their collective rankings of landscape photos were tested for correlation using Kendall's *t*. The results of this analysis showed significant correlation between all three groups. The very familiar and somewhat familiar categories showed perfect consensus, while there was a weaker correlation between each of these groups and the not familiar group. Familiarity was the only respondent variable that showed differences between rank correlation, with no significant differences seen according to respondent age group or gender.

In Section Two of the survey, respondents were asked to choose the types of value they associated with the landscape in each of the nine photos. The range of values given included: ecological, economic, historic, recreational, scenic/aesthetic, and social/cultural. Respondents were also given a choice to select no value, or to specify another type of value. The results of this section show that the landscapes were associated with a range of values by all respondent types, with the option of no value being chosen very rarely. There is also evidence that the type of values selected by residents, visitor, and non-visitor respondents differed for several photographs.

A comparison of results from the paired comparison exercise with the values information from Section Two shows that, while there was a general consensus on landscape preferences, the values associated with preferred landscape types differed according to respondent group.

7.1.3 Key Findings

In summary, the key findings of the landscape inventory and landscape values survey include:

- The most preferred landscape types for all respondents were open coastal landscapes, with photos of a coastal islands landscape and a coastal community landscape with fishing infrastructure receiving the highest collective ranking from total respondents, and from each of the respondent groups.
- There was significant correlation between the collective landscape preference rankings by each of the respondent groups. The strongest consensus was between visitors and non-visitors, while the weakest was between residents and non-visitors. Familiarity and experience with local landscapes may have been a factor. While there was perfect agreement between the ranking by respondents who were somewhat familiar and those who self-identified as very familiar with the landscapes, there was a weaker correlation between these groups and the respondents who were not familiar with the landscapes.

- Respondents often chose to associate multiple values to the nine landscape types represented in the survey. Respondents rarely chose to assign no value to a landscape.
- There were differences in how the three respondent groups valued the individual photos. Results also show that while the different respondent groups ranked their preferred landscapes similarly, they sometimes valued them for different reasons.
- The ranking of preferred landscapes tended to place the landscapes frequently assigned scenic/aesthetic value in the highest position. However, sometimes landscapes valued for other reasons ranked higher in preference than landscapes with a higher number of scenic/aesthetic value selections.
- Landscape types which were not ranked high in terms of preference still had other types of values associated with them.
- The region's main transportation route, Route 210, does not frequently provide open views of coastal landscapes. The dominant landscape types are forest and barrens.

7.2 Potential Contributions to Policy

The second goal of this research was to consider how this information can help inform tourism planning, community sustainability planning, and other measures influencing the governance of this landscape as a resource. As discussed in Chapter 6,

there are several implications of this research for policy affecting these areas. By contributing information on the local landscape inventory and non-resident landscape preferences and values, this study may potentially contribute to tourism marketing and promotion for the Burin Peninsula region. The evidence for resident landscape values also supports the case for considering local landscapes in community sustainability planning. Also, by providing evidence for the value of this resource, the results of the study suggest that it is justifiable to address landscape as an authentic coastal resource, which requires a focused resource governance approach.

7.3 Methodological Contributions

The landscape inventory involved the first application of the VIEWS™ system for academic research. The method used in this study shows the utility of the system for landscape studies and for collecting useful baseline data for land use planning. While this study used an automobile-mounted camera to collect landscape photos on a regional scale, the method could also be used to capture data on a smaller geographic space. This could be useful for cataloguing important heritage features, valued coastal scenery, and other landscape features. Such efforts could help add spatial information on key local landscapes for land use planning and coastal development decisions.

The method used to code key landscape features in this study is also widely applicable. The method provides an effective, systematic way to sort landscapes into types according to biophysical features. While the appropriate features to be coded might vary according to local landscape characteristics, the method is flexible and applicable to other areas besides the Burin Peninsula.

This study also contributed a method of eliciting public perceptions on landscape preferences and values. The study supports the use of the paired-comparison method as a tool for this type of research. This method would be particularly useful for further studies which measure public attitudes towards future land use development and possible landscape impacts. The addition of a values question to the paired comparison exercise in this study contributes to a richer interpretation of paired comparison results. While the method used in this study did allow for the collection of some contextual information through the questionnaire format, interpretation could also be improved with the addition of qualitative information gained through interviews or focus groups.

The study also shows how a landscape values survey could be designed for the internet using software such as Sawtooth SSI Web. While this survey was not made available online for this study, it provides a useful template for developing online surveys to capture public landscape perceptions.

7.4 Future Research

While this study has effectively captured important information about landscape values, there are limitations to the possible application of these results for governance of coastal areas. The study shows the scale of landscape preferences and the range of landscape values for the three interest groups of residents, visitors and non-visitors, allowing for the identification of similarities and differences in how the resource is valued by multiple stakeholders. However, the values expressed by these results are related to biophysical landscape types, rather than specific locations. Further work on the meaning and location of important landscapes for residents would contribute to planning processes

affecting the resource, while studying tourist preferences for specific landscape attractions would be valuable for tourism marketing and development purposes.

Qualitative information gained through resident interviews or focus groups would be particularly applicable to the identification and interpretation of important heritage landscapes. Further work on resident place attachment, including measures of place dependence and place identity, could be valuable for understanding the sociocultural importance of landscapes on the Burin Peninsula. This type of information could be collected using an online map-based application, such as the one used by Brown and Raymond (2007). This method is currently being implemented in an online application to study landscape values and important places in PEI (UPEI 2011).

Another online application has been set up by the Eastern Newfoundland Geotourism project (National Geographic Society 2011). This project allows users to enter spatial and qualitative information on important places for tourism in eastern NL. This information will be valuable for understanding tourism experiences in the area. Additional studies with Burin Peninsula tourists could be designed to contribute an understanding of the range of landscape experiences expected by visitors to the region. Understanding the different expectations that tourists have for experiencing local landscapes may help inform regional tourism development and guide tourism marketing and promotion.

Finally, further work is required to establish best practice policies concerning coastal landscape use and development. While this thesis has suggested directions for such policy, there is collaboration required between local and regional institutions to further these efforts.

7.5 Concluding Remarks

Coastal landscapes have formed the setting for communities on the Burin Peninsula since it was first settled for fishing. As such, they have played an important role in the history of Burin Peninsula residents, who have traditionally lived and worked closely with the coastal environment. This study suggests that the coastal landscapes of this region are still valuable to its residents for a wide range of reasons. Visitor and non-visitor responses also show that the landscapes of the area have value for outsiders for reasons such as scenic/aesthetic quality or ecological importance. The different values selected for these landscape types reflect a variety of meaningful interactions between people and the landscape. There is a need for landscape management that recognizes the value of these interactions.

Governance approaches such as community sustainability planning or integrated coastal management could be improved by recognizing this value and planning for the sustainability of this resource. Sustainable tourism initiatives for the region must also be integrated with these wider governance measures, since coastal development decisions are likely to have consequences for valued coastal landscapes. These governance needs could be met by a comprehensive provincial land use policy, including guidelines for sustainable landscape management, and enacted through collaboration with local authorities. Increasing local capacity to affect governance on the local landscape scale is another challenge and a priority. Local expertise can be used to identify and interpret important local landscapes, while providing information on past and present land use to understand the processes of landscape change. Community engagement is a key factor to facilitating this, and public perceptions on preferences and values may help inform

effective governance. By investigating the values of coastal landscapes in the Burin Peninsula region, this study has made progress toward this goal, while illustrating the value of coastal landscapes to rural areas of NL.

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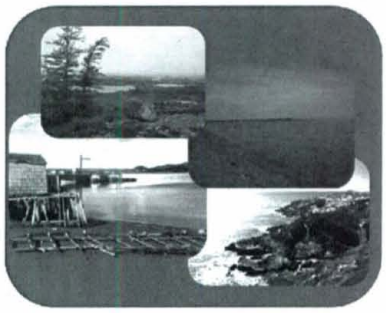
APPENDIX A: PHOTO CODING MATRIX EXAMPLE

PHOTO_ID	O	A1	A2	A3	A4	T1	T2	T3	T4	T5	S	F	I	R
Burin-2010_05_13-15_58_43.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-15_58_59.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-15_59_14.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-15_59_29.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-15_59_44.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-15_59_59.jpg	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_00_13.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_00_25.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_00_40.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_00_55.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_01_10.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_01_25.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_01_41.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_01_56.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_02_11.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_02_25.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_02_40.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_02_55.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_03_10.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_03_24.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_03_40.jpg	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_03_56.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_04_11.jpg	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_04_27.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_04_43.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_05_00.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_05_18.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_05_37.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Burin-2010_05_13-16_05_56.jpg	0	0	0	0	0	0	1	0	0	0	0	0	0	0

APPENDIX B: SURVEY SCREENSHOTS

Burin Peninsula Coastal Landscapes Survey

Welcome



NEXT

Burin Peninsula Coastal Landscapes Survey

0% 100%

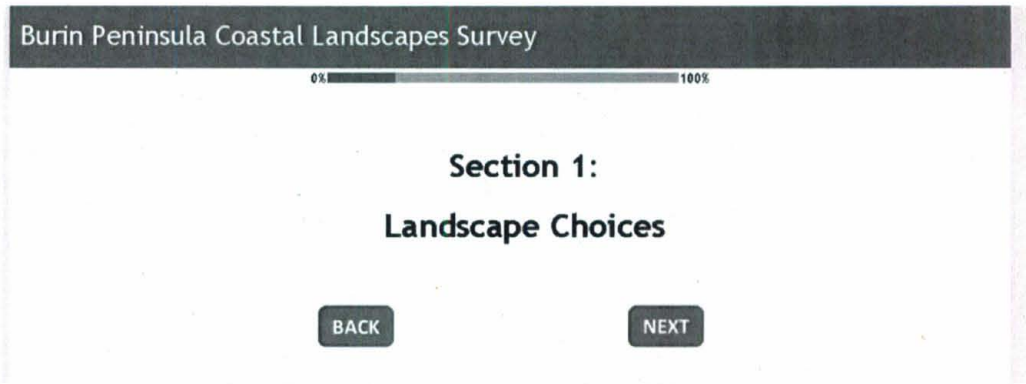
Introduction

This survey is about the potential values of coastal landscapes on the Burin Peninsula of Newfoundland

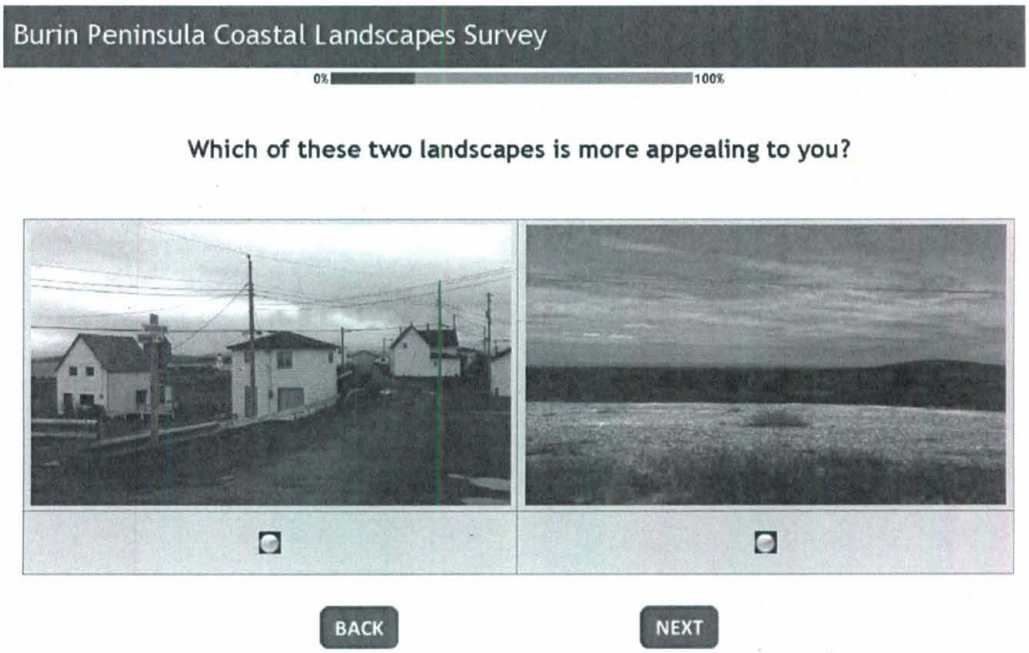
We would like to ask what you think about the value of landscapes in this area.

Please note, there are no right or wrong answers -
we are only interested in what you think.

NEXT



(Thirty-six variations of the following question comprise Section 1)



Burin Peninsula Coastal Landscapes Survey

0% 100%

Section 2:

Landscape Values

BACK NEXT

(Nine variations of the following question comprise Section 2)

Burin Peninsula Coastal Landscapes Survey

0% 100%

What kind of value does this landscape have for you? Choose all that apply.

☐	Ecological	☐	Scenic/Aesthetic
☐	Economic	☐	Social/Cultural
☐	Historic	☐	No Value
☐	Recreational	☐	Other (Specify)

BACK NEXT

Section 3:

Information About Yourself

BACK NEXT

Are you a resident of the Burin Peninsula?

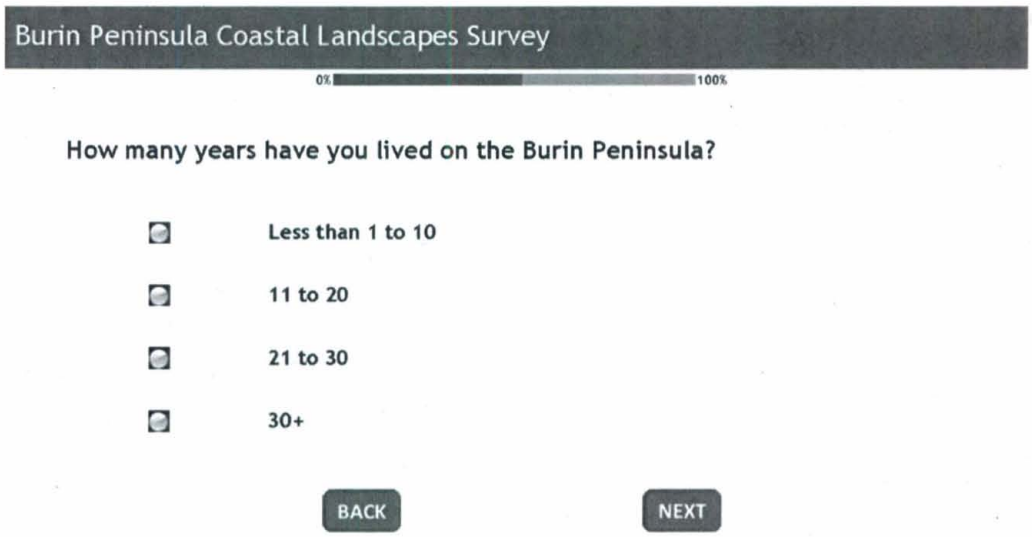
- ☐ Yes
- ☐ No

BACK NEXT

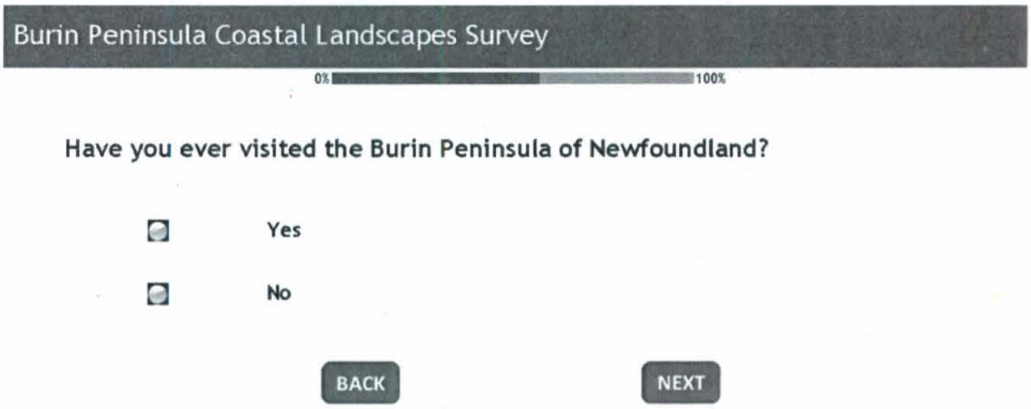
(The following 2 questions are for residents only)

What community do you live in?

BACK NEXT



(The following five questions are for non-residents only)



Burin Peninsula Coastal Landscapes Survey

0% 100%

How many times have you visited the Burin Peninsula?

- ○ 1 to 5
- ○ 6 to 10
- ○ 11 to 20
- ○ 20+

BACK NEXT

Burin Peninsula Coastal Landscapes Survey

0% 100%

Do you live in Canada?

- ○ Yes
- ○ No

BACK NEXT

Burin Peninsula Coastal Landscapes Survey

0% 100%

Which province/territory are you from?

- ☐ Alberta
- ☐ British Columbia
- ☐ Manitoba
- ☐ New Brunswick
- ☐ Newfoundland & Labrador
- ☐ Northwest Territories
- ☐ Nova Scotia
- ☐ Nunavut
- ☐ Ontario
- ☐ Prince Edward Island
- ☐ Quebec
- ☐ Saskatchewan
- ☐ Yukon

BACK NEXT

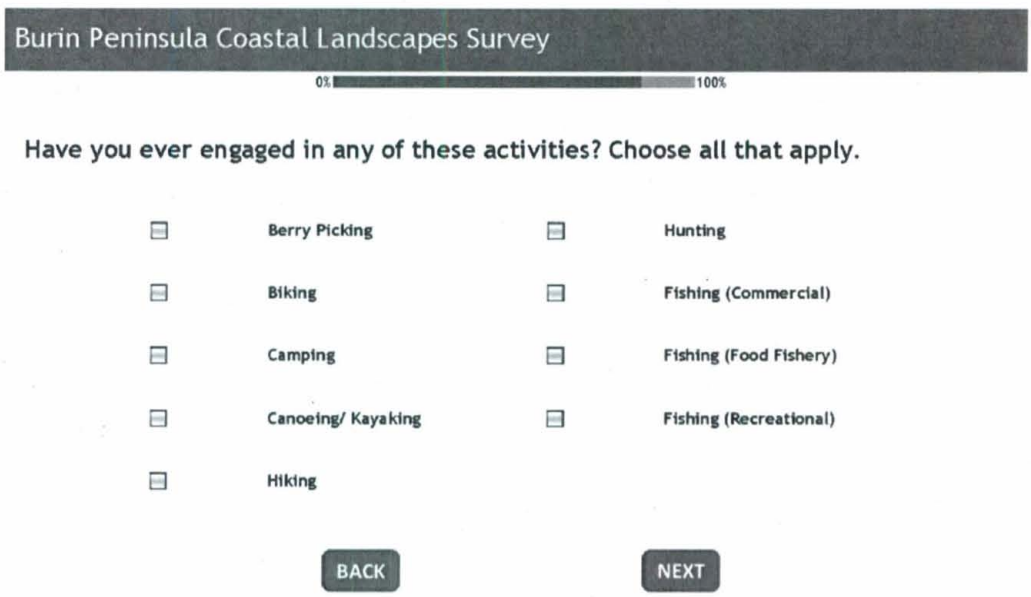
Burin Peninsula Coastal Landscapes Survey

0% 100%

What country do you live in?

BACK NEXT

(The remaining questions are for all respondents)



Burin Peninsula Coastal Landscapes Survey

0% 100%

What is your occupation?

Are you a member of any environmental organization?

- Yes
- No

BACK NEXT

Burin Peninsula Coastal Landscapes Survey

0% 100%

What is your gender?

- male
- female

Which age group are you in?

- 19-34
- 35-50
- 50-65
- 65+

BACK NEXT

Burin Peninsula Coastal Landscapes Survey

0% 100%

Thank You

You have now completed the survey.

Thank you for participating.

If you have any questions about this survey,
or you would like to see a copy of the results,
please contact Ian Murphy.

Phone: 709-864-8019
email: ian.murphy@mun.ca

APPENDIX C: PHOTO RANKING AND VALUES TABLES

Ranking and value (%) of landscape photos by residents

Landscape Photo	Resident Respondents (n=48)								
	Rank	Ecological	Economic	Historic	Recreational	Scenic/ Aesthetic	Social/ Cultural	no value	other
Fishing	1	19	45	72	34	79	70	2	0
Islands	2	51	4	13	45	91	21	2	0
Harbour	3	23	74	55	36	55	64	0	0
Sea	3	64	13	21	43	79	23	0	0
Recreation	5	47	23	43	51	66	30	0	0
Community	6	81	9	19	40	70	23	2	2
Residential	7	9	19	81	11	45	89	0	0
Forest	8	32	49	55	34	70	77	2	0
Barrens	9	66	4	11	19	45	4	19	0

Ranking and value scores (%) of landscape photos by visitors

Landscape Photo	Visitor Respondents (n=28)								
	Rank	Ecological	Economic	Historic	Recreational	Scenic/ Aesthetic	Social/ Cultural	no value	other
Islands	1	71	7	21	64	89	29	0	4
Fishing	2	39	64	79	46	82	82	0	0
Harbour	3	39	68	64	39	64	75	0	0
Sea	4	57	11	25	61	93	29	0	0
Community	5	64	4	21	54	50	29	11	0
Recreation	6	36	29	46	64	82	46	4	0
Forest	7	36	39	50	39	68	54	0	0
Residential	8	11	25	71	21	46	79	11	0
Barrens	8	57	11	7	50	57	11	11	7

Ranking and value scores (%) of landscape photos by non-visitors

Landscape Photo	Non-Visitor Respondents (n=22)								
	Rank	Ecological	Economic	Historic	Recreational	Scenic/ Aesthetic	Social/ Cultural	no value	other
Islands	1	100	17	8	33	92	17	0	0
Fishing	2	33	58	58	42	92	100	0	0
Harbour	3	33	75	67	33	75	83	0	0
Sea	4	92	17	25	8	75	17	0	0
Forest	5	67	33	33	33	75	75	0	0
Recreation	6	25	33	42	58	75	50	8	0
Community	7	83	17	25	25	75	25	0	0
Barrens	8	50	17	0	17	50	0	17	0
Residential	9	0	8	50	0	33	100	0	0