Opportunities for Redistribution and Area Planning in Parks
A Case Study at Bruce Peninsula National Park

by

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Authors Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of my thesis, including any required final revisions, as accepted by my examiners.
I understand that my thesis may be made electronically available to the public.

Abstract

Some national parks in Canada are experiencing growing visitor numbers and changes in visitor demographics. Bruce Peninsula National Park, located in Tobermory Ontario is one such park experiencing this phenomenon. Increased visitation at Bruce Peninsula National Park is encouraged by the Parks Canada Agency to keep revenue high as these earnings account for up to 80% of a park's funding (Parks Canada, 2014d). With these changes come problems of out-dated infrastructure no longer keeping up to demand, unknown status of whether social and ecological carrying capacities are exceeded, and issues of crowding potentially affecting visitor experiences. Management at Bruce Peninsula National Park must determine social, ecological, and economic carrying capacities to determine sustainable thresholds and indicators to influence management decisions. One form of social monitoring is visitor surveys. The most important method used to determine whether visitors are feeling crowded is a visitor information survey specifying visitor motivations and expectations. If visitor surveys find demographics of visitors are feeling crowded, measures must be taken by management to combat this problem to retain high visitor numbers. Monitoring ecological carrying capacity must also be employed by park management to ensure ecological integrity is being maintained through increases of visitation. These values are influenced by park zoning, identification of critical elements such as species at risk, and knowing what areas are best experienced at different levels of crowding.

The most common and successful techniques used to set and maintain social and ecological carrying capacities and identify perceptions of crowding include setting use levels, area restrictions, and temporal and spatial redistribution. Using these methods at Bruce Peninsula National Park may take pressure off primary visitor nodes, improve visitor experience, and retain ecological integrity. Management at the park must employ these techniques to ensure that the park is managed effectively, ecological integrity is maintained, and positive, high quality visitor experiences are fostered. This thesis will provide insight into best management practices for redistributing visitors to reduce the potential for crowding through area planning at eight visitor nodes; specify most accepted methodologies for issuing visitor caps and carrying capacity limits using indicators and thresholds; reveal strategies that reduce crowding perceptions, including redistribution and visitor expectations, demands, and experiences; and provide temporal and spatial redistribution tactics for management to use to increase visitation while maintaining ecological integrity.

Acknowledgements

Upon finishing my undergraduate degree at University of Waterloo, I never thought I would pursue further education. However, after starting my career and finding happiness working at Bruce Peninsula National Park, I decided to pursue a Masters' Degree. Firstly I would like to thank my mentors and managers at Bruce Peninsula National Park, including John Haselmayer, Jenna McGuire, Cavan Harpur, and Frank Burrows. Without their guidance, wisdom, and knowledge, this thesis would not have been as accurate, or as useful to the park. The experiences I have had at the park have not only strongly influenced my personal and professional life, but have also allowed me to grow my knowledge of park management above and beyond what I gained in my education.

I like to thank my partner, Justin Cann for supporting me and pushing me to pursue further education. Without him supporting me in this goal, I probably wouldn't have left work to start a Masters degree. The support from my parents, John LaCroix and Karin Kristoferson and sister Claire LaCroix also kept me inspired and driven towards completing this degree and kept me grounded and passionate about my work in the environmental field. They remind me to never limit myself and that a strong work ethic will never let you down. I would also like to thank my co-worker Michael Evegroen from Algonquin Provincial Park, who took the time to look over and help me edit this thesis.

Finally, I would like to acknowledge and thank my advisors, Dan McCarthy and Stephen Murphy at the University of Waterloo for allowing me to work with them. Their assistance greatly helped me refine my work to stay relevant and important to my field of study. Their wisdom and humour was greatly appreciated and they both took great lengths to accommodate me finishing this thesis from all over the province.

I hope my enthusiasm for park management and planning shine in this thesis and help provide some solutions to maintain the health and wellbeing of my favourite place on earth – The Bruce.

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Chapter 1 - Introduction

National parks in Canada are popular destinations that enable visitors to experience the Canadian wilderness and engage in a variety of recreation activities. Canadian national parks receive over 12 million visitors every year and some parks individually receive hundreds of thousands of visitors each year (Parks Canada, 2014d). Such a diverse array of parks and visitor types come with concerns about the quality of visitor experience, perceptions of crowding, and necessities for carrying capacities (Parks Canada, 2013). Literature about parks and protected areas have voiced concerns since the 1930's regarding a park's ability to sustainably manage visitors to prevent perceptions of crowding and continue to foster excellent visitor experiences (McCool & Lime, 2001). The issue of crowding and its effect on visitor experience has been studied in many state parks in the USA, but has not been tackled in-depth by the Parks Canada Agency (Manning, 2011; Stewart, 2001). Whether a visitor perceives an area as crowded depends on their motivations for visiting, their expectations of the visit, and their tolerance of crowding determined by their background (McCool & Lime, 2001). Visitors coming to parks and staff working at these parks have varying opinions of what constitutes a quality visitor experience and how many people make an area crowded. It becomes very difficult to measure a visitor's satisfaction quantitatively because of these qualitative factors. In some cases, infrastructure installed when parks were founded has become ill equipped to provide today's visitors with a safe and diverse experience that people wish to have in parks today. This discrepancy will require managers to update management plans, use adaptive management strategies, and use foresight to provide experiences that can withstand higher visitor numbers and different recreation types (Eagles et al., 2002). Adaptive management is defined as managing an area or environment in a way that builds upon and learns from the results of past endeavours to be flexible to unforeseen changes and issues that arise (Eagles et al., 2002).

The Parks Canada Agency keeps track of attendance to determine how many visitors attend each park and historic site per year, and these numbers affect management decisions such as demands for new infrastructure, interpretation, and recreational diversity (Parks Canada, 2014d). Bruce Peninsula National Park (BPNP) began collecting detailed visitor demographics in 2007 through a standardized study called the Visitor Information Program (Parks Canada, 2008). Although the data from this study is limited to a seven-year window between 2007 and today, the growth in visitors and change in visitor demographic is clear (Parks Canada, 2008). The park does not have comparable data pre-2007 to use for reference regarding earlier numbers.

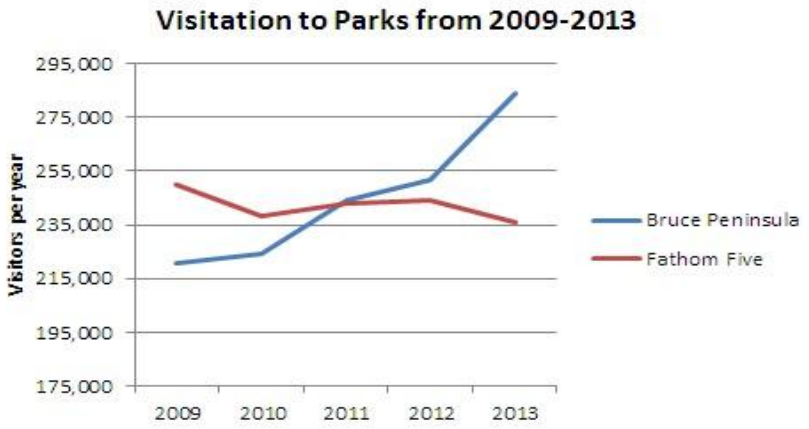


Figure 1 - Visitation to BPNP & FFNMP 2009-2013 (Parks Canada, 2014a)

During Bruce Peninsula National Park's peak season in July and August, the amount of visitors has increased from 220,694 to 283,831 person visits from 2009 to 2013 (Parks Canada, 2014a; Fig. 1; Fig. 2).

Visitor numbers at BPNP and Fathom Five National Marine Park combined have risen over 500,000 per year, potentially compromising the experiences of 'traditionalist' visitors seeking solitude in nature (Parks Canada, 2010; Parks Canada, 2014a; Fig. 1). Although reports from visitors show that only 33% of visitors feel crowded, park management believes that the impacts of crowding are more concerning in certain visitor groups and should be looked at more carefully to ensure all visitor demographics are receiving superior visitor experiences (Kettle, 1998; Haselmayer, 2014, pers. comm). The demographics of these visitors are also changing. The majority of visitors today come to the park for a day trip and are there to see the main attractions – whereas 17 years ago in 1998, more visitors were interested in weekend visits and experiencing more of the park (Parks Canada, 2010; Kettle 1998). The quality of visitor experiences is significantly affected by increases in visitors to parks, as well as the ecosystems contained in parks (Manning, 2007). Management at Bruce Peninsula National Park is therefore concerned with the increased visitation, the consequence it will have on visitor experience and the toll it will take on the environment (Haselmayer, 2014, pers. comm).

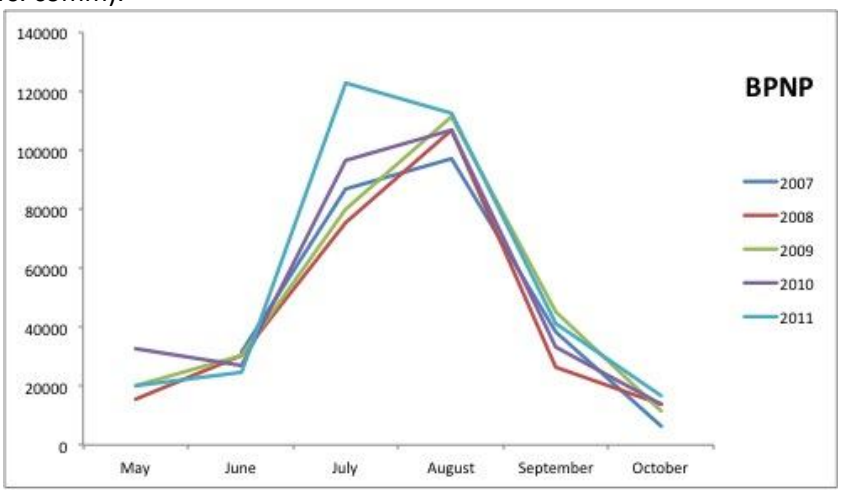


Figure 2 - Monthly Visitation Numbers at BPNP (Parks Canada, 2014a)

Management at Bruce Peninsula National Park have come forth with the belief that the recent increasing visitation at key visitor nodes in the park may be leading to a reduced visitor experience in certain visitor demographics coming to seek solitude and appreciate nature, and has potentially caused exceeded social and ecological carrying capacities (Haselmayer, 2014, pers. comm). This thesis is based on the normative concept that perceptions of crowding are occurring in specific visitor demographics; however, there has been no quantitative data to disprove this assumption since 1998 where a study done by Kettle concluded that approximately one third of visitors felt crowded (Kettle, 1998). If one third of visitors feel some negative impacts from crowding with today's visitor numbers that would equate to 93,664 people (Parks Canada, 2014a). Management must determine whether it is suitable that this number of visitors feel somewhat crowded to the point where it was enough to report it on a visitor survey. If this number is deemed acceptable by park management, then there is no issue over whether this crowding is important to park management. However, if park management feels that this number is too high, than actions must be taken to reduce the amount of people that perceive BPNP as crowded. From the researcher's time as a staff member at BPNP, park management has given the impression that these feelings of crowding are important and addressable for management to act upon. Therefore, although one third is not the majority of visitors, management still deems this number to be important to the future of visitor satisfaction at BPNP. Consequently, the determination of how many visitors feel crowded and the relationship between whether increased visitation changes the amount of people feeling crowded at primary visitor nodes is in question. This thesis will determine whether redistribution can reduce the potential for perceptions of crowding and contribute to positive visitor experiences at Bruce Peninsula

National Park. This thesis' main focus is on social and ecological carrying capacities, visitor perceptions of crowding, and solutions to these concepts.

1.1. Study Purpose

Visitor use monitoring, visitor satisfaction, and carrying capacity are three out of the ten most important research priorities in park tourism as of 2013 in Ontario (Eagles, 2013). "Visitor use monitoring involves the collection of data on important aspects of visitor use of parks, including use volumes, types of uses, the location of those uses, and various impact measurements, such as visitor satisfaction and environmental impacts" (Eagles, 2013, p.2). Visitor satisfaction is defined as a combination of ecological and social factors and the quality of customer service leading to a level of satisfaction dictating the desire of a visitor to return (Eagles, 2013). Visitor satisfaction relates how the behaviour of visitors affect others, the attitudes of visitors, and whether visitors feel their expectations have been met (Manning, 2011a). Thirdly, management capacity is the ability of management to meet visitor demands including infrastructure, customer service and the experience they provide which relies on staff commitment and funding (Eagles, 2013). Visitor use monitoring, visitor satisfaction, and carrying capacity will all be considered and applied to this thesis for Bruce Peninsula National Park.

Along with academia highlighting these three research priorities, park management at Bruce Peninsula National Park has identified the need for research that focuses on visitor carrying capacities and area plans of its top three visitor nodes; Singing Sands, Flowerpot Island, and Indian Head Cove (Haselmayer, 2014, pers. comm). Determining what type of visitor experience BPNP hopes to provide will establish whether visitors will feel crowded -impacting their decision to return in the future (Manning, 2011a). There are differences in the level of visitation park management and visitors consider crowded, and understanding which methodologies can be used to distinguish what level of visitation park management will tolerate is a serious knowledge gap management at BPNP acknowledges (Haselmayer, 2014, pers. comm). Although management admits the need for social and ecological carrying capacities and realizes that there is potential that crowding is occurring in certain visitor demographics at specific visitor nodes, there are currently no best practices used by the Parks Canada Agency to rectify these issues that do not include reducing visitation and by association, profits (Parks Canada, 2010; Haselmayer, 2014, pers. comm).

In 2013 BPNP management identified the need for a study that would, "determine the long-term social and ecological carrying capacities for high-visitation areas within [BPNP and Fathom Five National Marine Park (FFNMP)]" (Parks Canada, 2013, p.5). Management wishes to decide if there is a static number, or enforceable use limit allowing them to increase visitation while fostering great visitor experiences without harming the area's ecological integrity (Haselmayer, 2014, pers. comm). Park management hopes to reduce the ecological impacts caused by increasing visitation, and identify the effects heavy visitation may be having on different visitor demographics coming to the park (Parks Canada, 2013).

Comparable case studies and methodologies from other national parks will be reviewed to provide park management with suggestions for actions if and when crowding occurs and remedying these effects using redistribution techniques. Boundaries and limitations to complete this study include issues related to bureaucratic information restrictions from the Parks Canada Agency regarding what the Agency deems appropriate to study in the park; what studies can include visitors; and the time and money available to the researcher. The main limitation is the ability of the researcher to conduct a survey to determine whether visitors feel crowded at main visitor nodes, which was not approved by the Parks Canada Agency. The inability to conduct this survey leads to a level of assumption by the researcher gained during their participatory action research during their time as a staff member at the park and a 25-year patron to the park. Due to these restrictions, the researcher can only suggest sections for inclusion in future studies at the park to answer questions posed by the researcher in this thesis.

This thesis is not focused on restricting visitation in the name of conservation or to limit environmental impacts. This thesis is meant to look at how the Parks Canada Agency can meet its mandate

to provide parks for the enjoyment of future generations and avoid unnecessary restriction of access due to inadequate management techniques or infrastructure. This thesis will discuss the issues of carrying capacity and the effects of crowding in parks and possibilities for redistributing visitors to handle current and future levels of visitation. This thesis will provide insight for management regarding accepted best practices of redistributing visitors to manage social and ecological carrying capacity limits through area planning; uncover methodologies to defining visitor caps; reveal techniques for crowding management; and specify what temporal and spatial redistribution tactics will maintain ecological integrity.

1.2. Main Question

How can Bruce Peninsula National Park set social and ecological carrying capacity limits to reduce the potential for perceptions of crowding; use redistribution to maintain current and future visitor numbers; reduce ecological impacts incurred by this land use style; and continue to foster high quality visitor experiences for a range of visitor types.

1.3. Research Objectives

This thesis will explore five questions investigating how Bruce Peninsula National Park can adopt social and ecological carrying capacity frameworks and how management can reduce the potential for feelings of crowding to occur and maintain high quality visitor experiences while increasing visitor numbers. The objectives of this thesis are as follows:

1. What best practices are used to set social and ecological carrying capacities?
2. How can management use redistribution as a tool to increase visitor numbers without impacting visitor experience negatively?
3. What methodologies are used most successfully to diagnose perceptions of crowding?
4. What adaptive management techniques can be used to control and prevent crowding?
5. How can area planning and infrastructure reduce crowding at visitor nodes?

This thesis will contribute to the conceptual understanding of park management at Bruce Peninsula National Park in their quest to increase visitation numbers without negatively impacting the visitor experience through crowding or overextending social and ecological carrying capacities. This thesis is useful to researchers, park managers and planners because it showcases the beginning stages of a park hoping to develop best practices for visitor use, carrying capacity, and impact monitoring to attain a high level of sustainable park management. This thesis will also contribute to the general topical literature of carrying capacity and crowding studies in the Canadian parks context. It will also provide a case study example of Bruce Peninsula National Park to be used by other park managers and researchers in this field to compare when addressing similar issues in other areas.

1.4. Methods

Two literature reviews were undertaken in this thesis. A review and amalgamation of literature from Bruce Peninsula National Park's internal library including internal unpublished documents was done to analyse previous research outcomes. The consideration placed on previous studies will be paramount as this information can have overarching similarities in perspective and will be used to discern the overall most accepted changes the park should undertake within new area plans. Although most of this documentation remains unpublished, internal study type literature, there is great emphasis placed on this information as it provides historical context and internal insight into area planning and visitor node specifics, and carrying capacity limit creation benefits and hurdles. The second review will be of published literature concerning carrying capacity and effects of crowding in parks including that of Manning and park specific management plans. This secondary research will uncover best practices that will help Bruce

Peninsula National Park learn from the experiences of other parks that have followed carrying capacity limits and have dealt with crowding. The information from these two types of literature will help management at BPNP determine whether perceptions of crowding are occuring and how to combat negative visitor experiences caused by exceeded carrying capacities and crowding.

This thesis will use participatory action research as one if its main tools to gain 'inside information' about park management at BPNP. Participatory action research is a research method that uses partnership collaboration in order to benefit all parties involved in research to provide a product that is accurate, un-biased, and useful to the researcher and the other partners being researched (Green et al., 2003). Related to my objectives, there were three reasons to use this method: (1) to ensure that the research outcomes would be useful to park management and provide answers to questions management wanted answered; (2) to allow park management to have some say in how the research was developed and conducted in order to ensure they would acquire valuable insight into issues of crowding at the park; (3) to gain inside information about what questions the park is asking regarding carrying capacity and crowding determinations. My involvement as a staff member at the park and my participation in area planning and development for new recreation features has given me tremendous awareness regarding the importance of this research and which possibilities are realistic for management at BPNP. My involvement as park staff is also considered participatory action research. Participatory action research helped give this thesis an inside perspective of what goals the park has and how management decisions will frame outcomes for actions to reduce crowding and install carrying capacity thresholds. Management's input and direction of this thesis' research focus helped me narrow down top priorities for research at the park, limitations in place agency wide for research at national parks, and what results would be most helpful for management at Bruce Peninsula National Park.

A goal of this thesis' original scope was to design a survey that would be completed by visitors to gain insight on whether crowding is prominent in visitor experiences at the park and what coping processes visitors may use to tolerate higher visitor numbers. However, surveys are not permitted by the Parks Canada Agency unless it is an agency wide study distributed by the agency itself. This made distributing surveys impossible compromising a considerable primary research section of this thesis that could have provided greater insight and empirical data to compare to older similar studies done at the park (Kettle, 1998). Therefore, this thesis can only provide guidance on the perceptions of crowding that may be occurring at BPNP, and cannot speak to empirically supported evidence that crowding is occurring.

1.5. Study Site

Bruce Peninsula National Park (BPNP) is a federally protected area located on the tip of the Bruce Peninsula in South-western Ontario. Bruce Peninsula National Park inhabits a large part of St. Edmunds Township and will cover 156 square kilometres when all land acquisitions are complete (Parks Canada, p.2; Fig. 3). BPNP shares a doorstep with Fathom Five National Marine Park (FFNMP) in Tobermory Ontario and together, "form a significant protected area and a world-renowned tourist destination. The two parks share staff, resources and a visitor reception centre which serves as a hub for visitors to both parks" (Parks Canada, 2013a, p.10). For the purpose of this thesis, FFNMP will be included when referencing BPNP or 'the park'.

Parks Canada classifies lands and waters into 5 zones. These zones represent protection requirements and capabilities to provide a visitor experience and to maintain ecological integrity within parks (Parks Canada, 2007; Parks Canada, 2013b). The five zones are explained in Parks Canada (2007) and their percentage occupying BPNP are outlined in Parks Canada 2013b (p.29);

- Zone 1 – Special Preservation (strict resource preservation), 14%
- Zone 2 – Wilderness (representative examples of natural history), 61%
- Zone 3 – Natural Environment (can sustain low-density activities), 2%

- Zone 4 – Recreation (can sustain a broad range of use), 1%
- Zone 5 – Park Services (concentrated facilities, administration, and visitor services), 1%

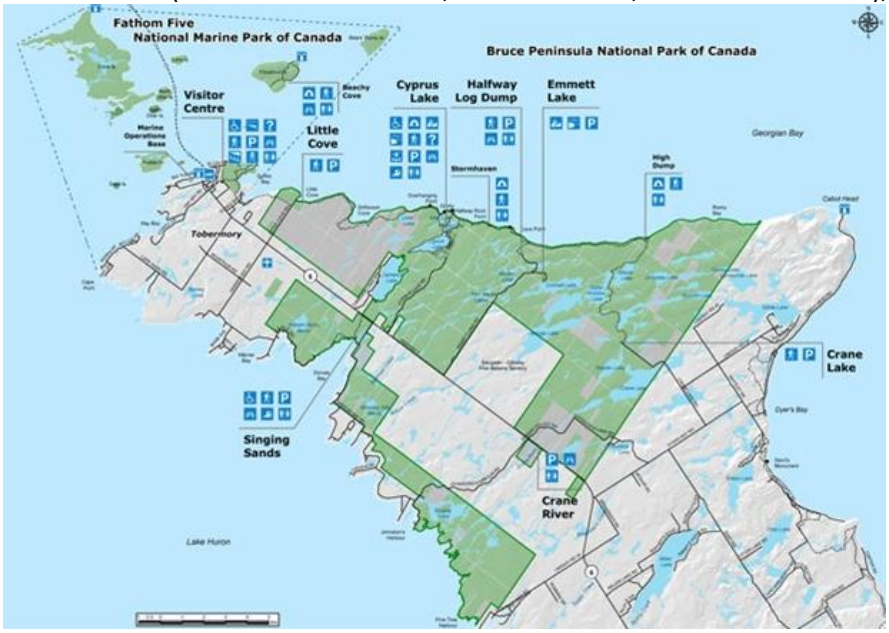


Figure 3 - Map of BPNP (pc.gc.ca)

Zones 4 and 5 at BPNP occupy a small portion of the overall park and some areas may fall into more than one category requiring special designation (Parks Canada, 2007). For example, most of the islands in FFNMP are listed as Zone 1 with no development permitted. This zoning dictates what areas will be available for management to develop or protect and what areas still need to be acquired to finish filling in the park boundary and is illustrated in Figure 4.

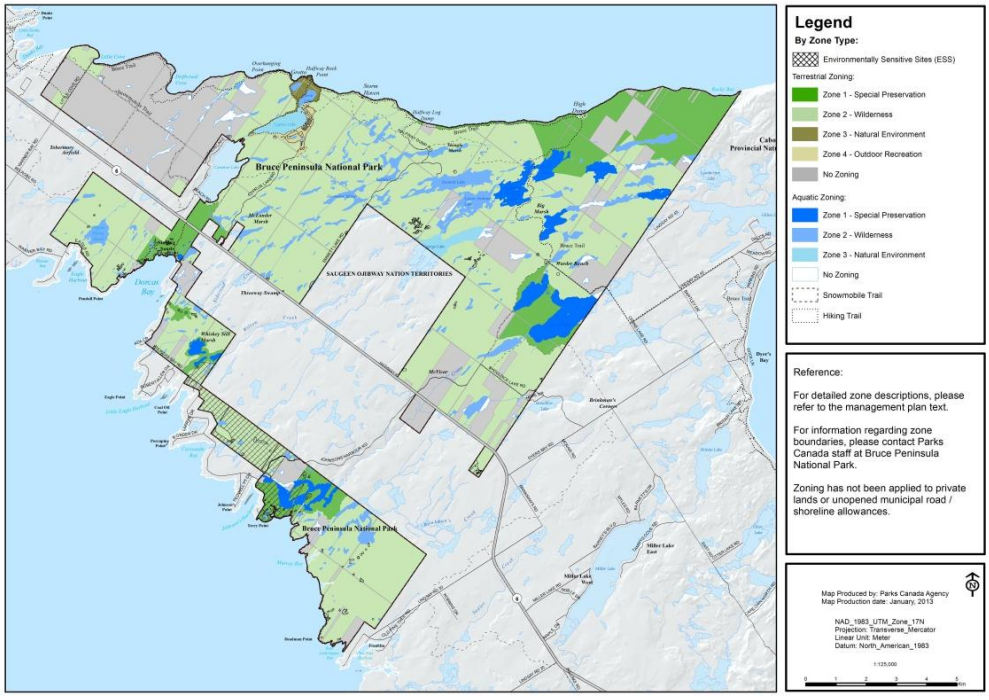


Figure 4 - Bruce Peninsula National Park Zoning Map (Parks Canada, 2014a)

Annually, over 350,000 visitors come to BPNP to see the spectacular shoreline, camp, hike and swim (Parks Canada, 2010). Bruce Peninsula National Park has experienced an increase in visitation from 260,015 in 2007 to 392,149 in 2013 (Parks Canada, 2014d). This increase is contrary to the overall trend of declining visitation experienced by other National Parks in Canada (Parks Canada, 2014d). With changing Canadian demographics and increasing urbanization, Parks Canada is reaching out to engage new audiences including urban residents, youth, and new Canadians (Parks Canada, 2013b). In the past, the main demographic of visitors coming to the park consisted of individuals, small recreation groups such as divers, and families coming for extended weekends to hike, camp, and appreciate nature (Kettle, 1998). Today, thirty percent of visitors to BPNP are new Canadians with minimal exposure to Canadian nature and experiencing the main attractions in a one-day visit (Parks Canada, 2008; McFadyen, 2010). Recently, large extended family groups and couples coming for short day trips mainly from large urban centers dominate the majority of visitors to BPNP (Parks Canada, 2008; Parks Canada, 2010). Toronto, Hamilton, St. Catherine's, Kitchener/Waterloo, London, Windsor, Buffalo and Detroit are all within a six-hour radius of the park, and the short distance becomes both an opportunity and a threat to the park both ecologically and socially (Wilkes, 2001). The shift from long trips to short day trips within the last decade is consistent in North American tourism, and the literature recommends that parks continue to study their visitor demographic to reveal expectations and motivations (Wilkes, 2001). Current visitor trends of quick trips and lack of research when coming to the area are not representative of their true motives to appreciate nature and have a Canadian wilderness experience (Davenport et al., 2002). The most popular motivations for visiting Bruce Peninsula National Park in 1998 included:

- 76% - Nature appreciation
- 58% - Wilderness experience
- 52% - Health/ exercise
- 43% - Spend time with friends
- 29% - Escape pressure
- 21% - Seek solitude
- Having a natural setting, beautiful scenery, and a pristine environment were very important to the visitor (Kettle, 1998, p.76-77).

Other motivations for visiting parks that are prominent in the literature include achievement/ stimulation, autonomy/ leadership, risk taking, learning, creativity, and introspection (Booth et al., 2011). In 1998, 94% to 68% of visitors were at Bruce Peninsula National Park to hike, walk, or appreciate nature (Kettle, 1998). More recent numbers for these factors have not been found. Since visitors have different opinions of what constitutes a quality visitor experience and what the definition of crowding is, it is very difficult to measure visitor satisfaction quantitatively. Although quantitative data is hard to retrieve, visitors to Canadian national parks come with high expectations and strong motivations (Davenport et al., 2002). Visitors get very upset when preservation or restoration limits their ability to experience an area, whether that be in recreational restrictions or the closing of areas all together (Davenport et al., 2002). Some accepted remedies to this include group size limits and limiting access to areas of specific interest (Davenport et al., 2002). Bruce Peninsula National Park's increased visitation is supported by the Parks Canada Agency and enables the park to be economically self-sustaining. However, without proper management and analysis of clientele and why they are or aren't utilizing the park's attractions directly affects in the park's ability to meet expectations.

Chapter 2 – Carrying Capacities, Crowding, and Visitor Studies at BPNP

Parks need visitors to survive, so visitor satisfaction is no different in parks than in any other business. High quality visitor experiences may persuade return visitation and attract more visitors; this will enable parks to remain more economically stable, even during economic downturns (Moore et al., 2013). The number one organizational priority of the Parks Canada Agency in 2014 was to, "increase revenue through more visitors and more revenue per visitor" (Parks Canada, 2014, p.9). Increasing revenue has become the highest priority because most Canadian national parks use visitor revenue for up to 80% of their annual budget, the other 20% comes out of the federal government budget (Parks Canada, 2014d). Increasing revenue by increasing their user-base with new visitors and creating more potential for return visitation are two ways Parks Canada Agency hopes to accomplish this, and this means more marketing to new demographics of visitors including new Canadians (Parks Canada, 2014).

Whether a visitor's experience aligns with their expectations can influence whether or not the visitor returns which would directly impact the PCA's goal to increase the amount of return visitation (Parks Canada, 2014). The visitor and their perception of crowding can drastically affect a visitor's experience at a destination due to satisfaction. "Similarly, social science research has documented impacts of increasing visitor use on the quality of the recreation experience through crowding, conflict, and the aesthetic implications of resource degradation" (Manning, 2007, p. 22). Some demographics of visitors have a higher sensitivity to social impacts such as increased use levels (Manning, 2011a). Therefore, if Parks Canada's goal is to increase visitation, visitor types seeking solitude or escape may feel like their visit did not meet expectations and these people may not return to the park. "If such visitors are 'displaced' by those who are less sensitive to recreation-related impacts, then visitor satisfaction (at least as measured in conventional on-site visitor surveys) may remain high despite a substantive change in the type of quality of recreation opportunities (Manning, 2011a, p.15). Therefore, visitors with less tolerance of increased visitor levels are displaced and not being included in visitor surveys causing their opinions to be missed completely in the consideration as to whether an area is perceived as crowded. This is a huge problem for Parks Canada because they could potentially be losing the input of a large demographic of their previously loyal patrons and therefore the return visitation and profits made from these individuals.

Literature on this topic states that management may have their own biases clouding what they believe may be crowded versus what the visitor may feel is crowded, therefore a quantitative study should be employed to look past these biases and seek objective results (Manning, 2011a). The judgment of whether a place is perceived as crowded varies from visitor to visitor, and this opinion makes it hard for managers to quantify how many visitors are too many. The Parks Canada Agency may need to seek new methods for capturing this lost demographic of visitors who may not be returning to parks because of crowding in order to re-engage this audience. With this information, the Parks Canada Agency may be able to provide new experiences and recreation offers in parks to offer those seeking solitude, not only those that are less sensitive to crowding. Defining and measuring perceptions of crowding, determining carrying capacities, and understanding visitor demographics and motivations will enable this thesis to prescribe methods to determine how park management can set social and ecological carrying capacities and diagnose crowding accurately using visitor opinions at Bruce Peninsula National Park

2.1. Carrying Capacities and Use Limits

Bruce Peninsula National Park is an exception to most other national parks where its annual visitation is not dropping but increasing steadily. This increase is being accredited to its proximity to Toronto, and the Bruce Peninsula's growing popularity as a day-trip away from the city (Parks Canada, 2014). During the 2013 peak season over 10,000 cars were turned away from the Cyprus Lake access point alone due to full parking lots (Parks Canada, 2014). Turning visitors away due to inadequate capacity occurs every long weekend at the park's main visitor nodes of the Cyprus Lake Campground and Halfway Log Dump (LaCroix, 2014, pers. comm). Visitors are reminded that the best times to come are during off peak

times during early morning and late afternoon, or during the shoulder seasons- though this doesn't seem to reduce visitor numbers (LaCroix, 2014, pers. comm). Whether to cater to visitors seeking social interaction, learning experiences, or to those seeking solitude and nature appreciation is at the discretion of park management. The 1998 Bruce Peninsula National Park Management Plan specified that they would adopt the Visitor Activity Management Process (VAMP) to ensure recreationists would have opportunities, "to enjoy a variety of experiences that are appropriate to national park values, are not harmful to the natural or cultural resources on which these experiences are based, and respond to the needs of visitors" (Parks Canada, 1998). The decision to open areas catering to both these visitor types is a decision park management will need to make if they hope to embrace the trend of increased visitation to satiate the demands from the Parks Canada Agency while still holding true to park management's standards of a quality visitor experience.

Whether visitor caps are appropriate for combating potential for crowding has not been addressed by park management at Bruce Peninsula National Park (Haselmayer, 2014, pers. comm). Management has voiced a desire to find the 'magic number' use limit to determine visitor carrying capacity. Some literature cautions against the use of a 'magic number' but thinks the focus should lie on what biophysical and social thresholds are appropriate for the area (McCool & Lime, 2001; Manning 2011a). Carrying capacities are understood to fluctuate during certain times of year and throughout years and one overarching magic number would not be an appropriate management tool for Bruce Peninsula National Park. How much crowding is acceptable can be determined by what type and quality of experience the park wishes to provide (Manning, 2002; Manning, 2011a). Managers will need to make informed decisions to establish use levels in certain areas of the park by using adaptive management techniques and thresholds from ecological and social considerations (Parks Canada, 2013). Some questions Bruce Peninsula National Park can ask itself in regards to area standards include:

1. "What experiences are being provided at the destination?
2. What value system is represented in carrying capacity estimates?
3. How much change from desired conditions is acceptable?
4. What trade-offs among competing objectives need to be made?" (McCool & Lime, 2001, p.373).

The park has recognized that a great challenge lies in specifying a 'magic number' due to the numerous points of entry and exit (Kettle, 1998). Carrying capacities of sites this large aren't necessarily fixed, but can be increased with the help of management inputs and infrastructure such as boardwalks, viewing platforms, and groomed trails (Kettle, 1998). Another complication for determining carrying capacity within the park is the multitude of ecosystems contained in any one area. Sensitive ecosystems such as alvars, wetlands, and islands will have much lower carrying capacities than interior forest types or disturbed lands such as old agricultural fields. Park management has subsequently developed zones on a site-by-site basis to cater to the differing levels of sensitivity (Fig. 4).

Reducing the number of visitors permitted to access Bruce Peninsula National Park is unrealistic under the Agency's current mandate. As a result, using techniques that will offset impacts of increasing visitation is imperative for future success in park management and retaining ecological integrity. Examples in the literature show that areas sustaining high visitation would have to endure drastic reductions before any changes or reversals of impacts are seen (McCool & Lime, 2001). Past impacts need to be resolved, but a mere reduction of visitors will not rectify these impacts. Subsequently, changes in infrastructure may be needed to help alleviate stress on the environment using current visitor numbers as a baseline to cater to potentially higher visitation in the future. Further thoughts on how this can be done lie in chapter 4 of this thesis.

Carrying capacity can be defined as, "a determined standard for levels of visitor use; It assesses the amount and type of visitor use that can be accommodated within an area without unacceptable resource

or social impacts" (Manning & Lawson, 2002; Parks Canada, 2013, p.5). Carrying capacity is determined in relation to environmental impacts such as soil compaction, vegetation trampling and wildlife disruption and also in social impacts visitors have on each other (Manning, 2002). Carrying capacities are challenging to determine due to the subjectivity surrounding how much change an area experiences is appropriate, what type of visitor the park should cater towards, and how extensive management actions should be in controlling changes to the park (Manning, 2007). Subjectivity and bias is also a hurdle for management to overcome when deciding what level of perceived crowding is appropriate and acceptable at visitor nodes within the park, because of a great diversity of opinions within visitor groups (Manning, 2007). Socially, carrying capacity is influenced by visitor expectations, previous experiences, and how their present experience compares to previous experiences. Visitor expectations, attitudes, environmental impacts and management goals all contribute to carrying capacities, and will influence what type of visitor the park attracts (Kettle, 1998). Carrying Capacity has four categories: physical, ecological, social, and economic (MacLeod & Cooper, 2005; Bosley, 2005). Social carrying capacity is the focus of this thesis:

- Physical carrying capacity: specifies the number of individuals an area can accommodate.
- Ecological carrying capacity: specifies the number of species populations an area can sustain or the amount of disturbance an area can withstand without negatively changing.
- Social carrying capacity: represents the number of people socially acceptable before becoming crowded influenced by factors such as infrastructure and visitor attitudes.
- Economic carrying capacity: represents the change an area can withstand before its economy is impacted (MacLeod & Cooper, 2005, p.226).

Resilience strongly influences carrying capacities and is defined as an ecosystem's, "ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Holling, 1973). Bruce Peninsula National Park's main attractions are resilient, but there are some species at risk and sensitive ecosystems such as lakeside daisy (*Tetraneuris herbacea*) populations and alvars that could be harmed by increased visitation (Parks Canada, 2010). These areas are somewhat isolated, but increased visitation may decrease ecological integrity at these nodes.

Social carrying capacity employs thresholds through the 'Satisfaction Model' approach to arrive at a measurable standard. Managers can use this model to quantify whether or not the capacity exceeds the threshold limit in order to reduce negative visitor experiences (Booth et al., 2011). Although reducing visitation is not an option, restricting visitation to these sensitive areas is important to maintain ecological integrity. With agency goals to increase visitation in mind, exceeding carrying capacities at these nodes may require visitors to be redirected to other areas of the park. Carrying capacity limits are set by evaluating what level of use is desired and what impacts are considered acceptable (Parks Canada, 1978; Manning, 2011a). If the impacts are not considered acceptable, there are three accepted actions to take; (1) move the recreation to a less sensitive area, (2) adopt new infrastructure or trail surfacing to mediate impacts, (3) limit use to the area (Parks Canada, 1978). Eight commonly used methods park management can use to set indicators and determine acceptable and desired conditions include:

- Visitor Impact Management (VIM), Visitor Activity Management Process (VAMP) or Visitor Experience and Resource Protection (VERP) programs
- Carrying Capacity Assessment Process (C-Cap)
- Indicators & thresholds
- Limits of acceptable change (LAC)
- Recreational opportunity spectrums (Eagles, 2001; Manning, 2011a, p.88).

These methods are common within both American and Canadian parks, and have proven successful in many applications making them frameworks to use for a park like BPNP to determine their own levels of

acceptable and desired conditions and indicators (Manning, 2007). Limits of acceptable change refers to how much change an area can withstand before detrimental change happens to the ecosystem, and recreational opportunity spectrum refers to the range of recreational opportunities a landscape can give (Eagles, 2001). "The LAC concept places an emphasis on positive planning and management pre-empting inappropriate or over-use, thus avoiding the need for remedial management actions" (Boyd & Butler, 1996, p. 559). LAC requires management to determine their desired conditions and what experience they hope to provide at each area (Manning, 2011a). These desired conditions will help set thresholds for carrying capacity and determine whether the current use is meeting the experience they want to provide. Both the limits of acceptable change and recreational opportunity spectrums need to be considered when management determines the thresholds of each visitor node with respect to the opportunity for recreation above and beyond traditional recreation types like hiking and swimming. A further analysis of recreational opportunity spectrums will be discussed in Chapter 4 of this thesis.

An amalgamation of three of the most common ways to determine carrying capacity has morphed into this step by step process as outlined in Robert Manning's book, *Studies in Outdoor Recreation (2011)* suggesting that management must:

1. *Identify the areas concerns and issues and assemble an interdisciplinary team.*
2. *Recognize opportunities and potential for a range of visitor experiences and review management objectives or zoning restrictions.*
3. *Select social and ecological indicators and thresholds and develop a monitoring plan.*
4. *Inventory the ecological and social conditions and analyse current and past visitor use.*
5. *Specify management actions related to each opportunity and produce long and short-term strategies.*
6. *Monitor resources and indicators and implement management actions.*

Indicators play a key role when setting limits of acceptable change and desired conditions as dictated by management. Indicators are commonly used to determine the effects of crowding on visitor experiences and ecological integrity. Indicators are empirical and measurable standards of quality and are typically benchmarks followed to define whether the park is meeting social, ecological, and management standards (Lawson et al., 2009; Manning, 2011a). These forms of measurement are required to be objective and measured in absolute numbers to be able to quantitatively compare them over time (Manning, 2007). They must also be reliable and repeatable in order to get accurate measurements from sample to sample over long and short time periods (Manning, 2007). Indicators have been used by the National Park Service from the USA to set standards for addressing user capacity using long term monitoring and thresholds set in social and physical attributes (Vezeau et al., 2010). The National Park Service uses indicators for adaptive management plans to warn management that action is needed to maintain visitor experience quality due to a myriad of factors (Lawson et al., 2009). Having awareness that carrying capacities are not static, but change over time and throughout the year will enable more accurate indicators to be set and reduce error and improve repeatability in monitoring (Manning, 2007; NPS, 2014). Bruce Peninsula National Park (BPNP) is currently using studies such as the VIP as indicators to inform management decisions. The VIP could also help shape what indicators and thresholds are needed to determine appropriate carrying capacity levels. The 2010 *State of the Park Report* (Parks Canada, 2010), specified managements acknowledgement of three types of indicators – Ecological Integrity, Cultural Resource Management and Visitor Experience. Ecological integrity indicators include forest measures, wetland ecosystems, species at risk, inland lake ecosystems and stream ecosystems indicators such as habitat abundance and connection, frog diversity, and water quality (Parks Canada, 2010). Cultural resource indicators include archaeological sites, landscapes and features (Parks Canada, 2010). Visitor experience indicators include attendance, satisfaction with information, enjoyment, appreciation and understanding (Parks Canada, 2010). Management at BPNP clearly demonstrates in the 2010 State of the Park Report that they have a diverse set of social, managerial,

and ecological indicators that are necessary for determining carrying capacity (Manning, 2011a; Parks Canada, 2010). Although park management at BPNP has a strong list of indicators currently monitored, suggested indicators within the body of related literature include this list of social indicators that can be used to gauge potential for crowding and undesirable ecological changes (Manning, 2007). This list includes:

Percent of time other visitors are in sight while I am on the trail; total number of people seen while hiking a trail; group sizes; total time you have in an area without seeing or hearing anyone else; number of vehicles at a trail head; amount of noise heard in the area coming from other visitors; number of wilderness areas that are very remote vs. not remote; condition of trail and amount of trail impacts (erosion, invasive species, trail braiding, compaction,); types of recreationists encountered; behavior of visitors (keeping to the right when passing, speed, veering off trails); people at one time at attractions (Manning, 2007, Appendix A).

Therefore, there are many other social indicators and types of monitoring park management should use to determine whether desired conditions are being met or exceeded without surveying visitors.

2.2.1. Conclusions and Suggestions for Implementing Carrying Capacity Limits

Although park management has voiced a desire to use a 'magic number' to help create a carrying capacity limit, 'magic number' use limits are not promoted in the literature. Therefore, management should consider using existing indicators and creating new indicators and thresholds to influence their desired conditions and will help park management determine social and ecological carrying capacities visitor nodes can withstand during a day, month, or year. As laid out in Manning's 2007 book, *Parks and Carrying Capacity – Commons Without* Tragedy, there is a basic general framework that can be followed when considering issues of carrying capacity. The three steps are:

1. *Defining what park conditions need to be maintained through management objectives considering desired conditions, indicators and standards, and should address social, managerial and ecological considerations.*
2. *Monitor these indicator variables and determine if they are approaching or exceeding desired conditions*
3. *Apply management actions to ensure the desired conditions are maintained. (Manning, 2007, p.25).*

If management follows these three steps, and uses influences from VIM, VAMP, VERP, C-Cap, or VIP studies to help influence their level of desired conditions and indicators and thresholds, they will be able to comfortably assign a range of acceptability that will maintain the delicate balance of protecting the environment while providing it for the enjoyment of Canadians. Table 1 summarizes management strategies for Bruce Peninsula National Park's ecological, social, and economic carrying capacity creation, and provides actions that can be used by management to determine acceptable levels of visitors.

Thresholds must be ecologically and socially based and can be acquired using methods of monitoring and surveying already done at the park such as the Visitor Information Program (VIP) and species at risk monitoring program. Indicators will narrow down a carrying capacity range of visitors that take into consideration visitor safety, visitor experience, and ecological integrity. Determining these thresholds and indicators can be decided relatively quickly, but seeing the results from these indicators may take time.

Table 1 - Carrying Capacity Goals for Management at BPNP (Manning, 2011a; Kettle, 1998; Manning 2007a)

Park Management Goals	Actions
1. Ecological Carrying Capacity	- Remember that carrying capacities aren't fixed numbers, they fluctuate. - Determine the limit of acceptable change (resilience factor). - Use monitoring results to influence indicators and thresholds. - Refer to park zoning and stick to the limitations of each site to ensure ecological integrity is maintained.
2. Social Carrying Capacity	- Use recreational opportunity spectrums to determine what kind of experience you wish to provide (solitude vs. social). - Use visitor surveys like the Visitor Information Program as an indicator. - Thresholds can include the satisfaction model approach. - Include physical carrying capacities in this analysis to determine how many people can be accommodated at each visitor node.
3. Economic Carrying Capacity	- Determine the acceptable financial spectrum the agency is willing to work within and use as a threshold. - Try to retain visitors turned away to increase revenue. This will require better marketing of other visitor nodes. - Adjust park fees on an agency level to better reflect peak demand and shoulder season costs. - Financial trade-offs may be necessary to keep ecological integrity intact.

2.2.2. Case Study of use limit strategies from Yosemite National Park (USA)

The U.S. National Park Service operates Yosemite National Park in California and Nevada. Yosemite was founded in 1864 and spans 1,200 square miles (National Park Service, 2014). Although this park is fully inland, Yosemite National Park is a comparable case study for Bruce Peninsula National Park because of its great reputation, high visitor numbers, and proximity to urban areas. Yosemite suffered the same problem BPNP currently faces with increasing visitor numbers and limited out-dated infrastructure (Meldrum & DeGroot, 2012). BPNP, much like Yosemite is currently using infrastructure as a type of use limit strategy – purely by necessity and not by design. This makes Yosemite an interesting case study to compare to BPNP because of how they designed the use limit strategy and how well it worked for them. These factors combine to make Yosemite, "an example of the issues that challenge many national park managers. Primary among these are balancing public access and park protection, determining recreational 'carrying capacities,' and managing visitor use in ways that protect the quality of park resources and visitor experiences" (Meldrum & DeGroot, 2012, p.302).

Yosemite had increasing visitation throughout the past 4 decades expanding from ~2 million visitors a year in 1970 to ~4 million per year today. Yosemite experienced a similar phenomenon to BPNP including inadequate infrastructure, potential crowding issues, and lack of enforcement. Yosemite experienced an exponential visitor increase that led to congestion at key visitor nodes and along roads in the park (Meldrum & DeGroot, 2012). This problem also occurs on roads at Bruce Peninsula National Park most predominantly during long weekends and peak seasons. Meldrum & DeGroot (2012) recognize that transportation systems and infrastructure directly influence visitor distribution within parks. The issue of multiple access points and entryways also complicate transportation systems and ensuring park fees are being paid and information is being transmitted to visitors. The transportation network's ability to distribute visitors throughout a park is a direct mirror of the park's ability to reduce crowding perceptions

and congestion at visitor nodes and keep visitor experience quality high (Meldrum & DeGroot, 2012). They also specify that the condition, signage, and accessibility of roads directly determine what visitors will be drawn to.

Managers at Yosemite have been aware of transportation issues since the 1970's and have created a General Management Plan and Integrated Transportation and Capacity Assessment (ITCA) to combat issues associated with congestion and overcrowding. Yosemite's management plan confirms the importance of a high quality visitor experience and believes a key aspect of this is to reduce the amount of day-use vehicles to heavily visited areas of the park while allowing visitation through shuttles and public transportation (Meldrum & DeGroot, 2012). The ITCA uses indicators through computer modelling and visual simulation to measure variables in order to make informed management decisions (Meldrum & DeGroot, 2012). The ITCA model counts visitors at different entrance points in the park and uses these numbers to simulate numbers possible at the parks trail heads and road networks and to determine visitation levels and trends of visitor use (Meldrum & DeGroot, 2012). This monitoring and modelling takes visitor counts and translates it into data used to extract information on experience quality and recreation types to dictate management decisions (Meldrum & DeGroot 2012). The modelling technology could be analysed and applied almost directly to Bruce Peninsula National Park to help solve issues of congestion on roads within the park.

Other forms of use limits have been applied by managers at Yosemite, including first-come first-serve strategies, price increase, and lotteries to attempt to control visitation but all have proven to be less affective than management hoped (Molinaro, 2010). From a visitor perspective, those coming to Yosemite support management emphasizing solitude and use restrictions over providing wider access to parklands and more frequent encounters with other visitors (Manning, 2011a). This leads management to assume solitude is higher in importance than gaining access to the park, or simply that solitude is a key factor drawing visitors to the park (Manning, 2011). Other suggestions to offset crowding and congestion at parks include providing a diversity of recreation offerings and experiences that span various spatial scales and cater to a diverse audience of visitors. These visitor use and impact monitoring techniques are imperative to continued use and infrastructure efficiency within national parks. The adoption of monitoring techniques is recommended for any comprehensive park analysis and management plan. Through the vehicle study at Yosemite, an average number of visitors per car and the number of cars entering the park have been derived to estimate the amount of visitors entering the park (NPS, 2014). Vehicular use at Yosemite is counted using automated vehicle counters 24 hours a day, 7 days a week (NPS, 2010). Management believes that although the exact number of visitors is not controlled, these estimates create a range limit using parking restrictions in areas of the park (NPS, 2014). This infrastructure based use limit is common within the literature and is becoming more frequent in 'front-country' parks (Eagles et al., 2002). Maintaining a certain number of parking spaces or campsites is an easy way to control how many people are permitted at a site; however, this method of control can create problems for staff that have to turn frustrated visitors away (Eagles et al., 2002).

Bruce Peninsula National Park is currently using this capacity control method of limited parking spaces to control potential for crowding at key nodes but has not designed the parking lots to cater to a certain number of cars. More research should be done as to how many visitors this actually equates to if all parking lots are full. If this number is higher or lower than management deems acceptable, changes should be made to accommodate the visitor node. If a limit to how many people at an attraction are determined to be acceptable by park staff, they could adequately estimate how many cars should be allowed at trail heads, and how many people should be allowed entry by shuttle bus. A pilot project of a shuttle bus type service was offered during the 2013 season through local tour companies and was very popular and used heavily, however no empirical data could be found relating to how many visitors to the park used this type of transportation (Haselmayer, 2014, pers. comm). Table 2 summarizes the management goals and actions needed to meet the park management objectives at Yosemite as discussed earlier and can be emulated at

Bruce Peninsula National Park to determine carrying capacities, justify changes to infrastructure, and use adaptive management techniques to meet Agency wide goals of increasing visitation without increasing ecological footprint.

Table 2- Summary of Goals & Management Actions from Yosemite National Park (Meldrum & DeGroot, 2012)

Park Management Goals	Actions
1. Preserve high quality natural resources	- Continued monitoring & use of indicators, modeling, and thresholds. - Apply use limits through infrastructure and management techniques.
2. Retain high visitation trends	- Encourage low impact activities and build infrastructure to suit the amount of visitation. - Develop new methods of transportation to increase visitation without altering current infrastructure i.e. shuttle busses.
3. Reduce negative visitor experiences	- Provide a variety of experiences for different visitor types and in different areas of the park. - Improve infrastructure to accommodate new visitor types & numbers.

Ultimately, the goal of park managers at Yosemite is to preserve high quality natural resources and experiences while encouraging low impact but frequent visitation (Meldrum & DeGroot, 2012). Yosemite's goals of increasing visitation without impacting visitor experiences align with those of BPNP and are met through continued monitoring and adaptive management techniques. Although significant and restrictive use limits are not realistic or desired by BPNP or the Parks Canada Agency for this location, specifically Head of Trails, Yosemite's example of infrastructure based use limits may be more useful for management at BPNP to implement. If these considerations such as shuttle busses were permanently implemented at BPNP to improve transportation through the park and promote redistribution, negative visitor experiences associated with instances of visitors being turned away because of parking limitations could be reduced.

2.2.3. Case Study of partnerships and use limits at Gwaii Haanas National Park (CAN)

Gwaii Haanas National Park and Haida Heritage Preserve (GHNP) is a park co-governed by the Parks Canada Agency and the Haida First Nations located in the southern portion of the Haida Gwaii Islands. The islands are located 130 kilometres west of mainland British Columbia north of Vancouver Island and cover 1,470 sq. kilometres across an archipelago of 138 islands (Archipelago Management Board, p.2). Gwaii Haanas is a comparable case study to FFNMP and Bruce Peninsula National Park because it covers both terrestrial and aquatic area, has various points of entry, and has implemented restrictions and procedures to control visitor day use. This park is also a comparable case study because of the relationship Parks Canada shares with the Haida first nations in comparison to the relationship forged with the Saugeen Ojibway Nation at BPNP. This case study also provides a good example for BPNP to reference when considering use limits and how these were developed, managed and enforced at GHNP. Their method of controlling visitation despite various points of entry is essential to the success of their enforcement program. Gwaii Haanas is co-managed by the Haida First Nations and Parks Canada, and this arrangement enables the park to remain faithful to its cultural history and instil important ecological values into management practices. Parks Canada's partnership with the Haida Nation is also influential to this case study, because the relationship Bruce Peninsula National Park has with the Cape Croker First Nations is dismal and embarrassing to the Agency. The relationship between park and first nation at BPNP has been neglected and has fallen apart since the park's conception, and Gwaii Haanas can illustrate to BPNP how successful a partnership of this nature can be.

The majority of visitors coming to Gwaii Haanas have a few key visitor nodes they wish to visit but also voice an interest in learning about the Haida culture (Archipelago Management Board, p.23). Because of the types of tourist this area attracts, unofficial trails have been formed resulting in trampling, erosion and new species along visitor node areas (Archipelago Management Board, p.23).

Much like Bruce Peninsula National Park, Gwaii Haanas wishes to preserve the wilderness state of the area with minimal ecological disturbance, but know that construction of facilities is inevitable and trail systems may need to be legitimized to reduce broad span impacts on the area. The Archipelago Management Board has specified that new trails are anticipated because efforts of cultural heritage protection and public safety are of key importance (p.23-24).

Providing appropriate tourism opportunities at Gwaii Haanas is top priority for park management (Archipelago Management Board, p.26). Park management has outlined strategies for controlling activities conducted within the park to reduce environmental impact but that also highlight discovery and learning of marine and terrestrial wilderness, culture and traditions (Archipelago Management Board, p.26-27). Gwaii Haanas has been explicit in its management, stating that, "visitors must accept Gwaii Haanas as a natural area, not expecting it to be changed or modified for their convenience" (Archipelago Management Board, p.27). Other visitors wishing to use the park for activities conflicting with those specified in the values of the park will be discouraged (Archipelago Management Board, p.27). This "take-it-or-leave-it" attitude is common for small or niche parks in Canada, but has shown to have significant effects on user-ship (Eagles & McCool, 2002a). This lack of inclusivity in management may be unrealistic for BPNP because they receive many more urban and day use visitors than Gwaii Haanas. However, more specificity on what Bruce Peninsula National Park wishes to provide, whether that is a wilderness experience or simply a day use nature experience, needs to be explicit and supported by infrastructure, management, and advertising.

One important goal at Gwaii Haanas is to manage visitor activities so they do not conflict with each other and maintain the visitors' ability to seek and experience remoteness and solitude (Archipelago Management Board, p.24). Gwaii Haanas has decided to impose a restriction of visitor groups to a maximum of 12 people on the shore at a time to reduce congestion and preserve solitude on shorelines (Archipelago Management Board, p.24). Group size limits are most common in 'back-country' parks but are acknowledged as a legitimate way of reducing potential for crowding and promoting sustainable tourism (Eagles et al., 2002). Cons associated with limiting group size include the exclusivity of large groups potentially creating a lack of revenue, the need for enforcement, and potential for tour companies to not conform to the restrictions causing tension within a partnership (Eagles et al., 2002). A management move as drastic as this may be unachievable and unrealistic for BPNP, especially during the peak season, but limiting visitor numbers more than current levels in certain areas may improve visitor experience for those seeking solitude on the Georgian Bay shoreline. Although the majority of visitors coming to BPNP may not have the main goal to seek solitude, this demographic of visitor is definitely apparent in visitors with older baselines and longer standing relationships with BPNP and should still be offered if the Agency hopes to retain this demographic as clientele (Haselmayer, 2014, pers. comm).

Bruce Peninsula National Park could also embrace the surrounding Anishinabe culture into more of its programming and image to educate visitors about the partnerships the park has with surrounding First Nations. Implementation of this strategy may also help dispel incorrect stigmas of First Nations culture. Gwaii Hanaas is a stellar example of co-management with surrounding First Nations communities, and infuses natural heritage education into all aspects of the visitor experience. Park management recognises the stained past of their partnership with the Saugeen Ojibway Nation but since 2010 has made a defined effort to increase communication and inclusion when it comes to exhibits, natural heritage education programming, and resource use (Parks Canada, 2010). Management at BPNP and the Saugeen Ojibway Nation negotiated a Memorandum of Understanding in 2010 to help formalize the partnership between the two entities and vow to increase the presence of first nation culture, opinion, and values into management planning and advisory (Parks Canada, 2010). Although slow, these steps are essential to

improving relationships with the land and increasing visitor awareness and respect of the heritage and culture of the area.

In regards to supporting the surrounding communities, Gwaii Haanas wishes to keep relationships with tour operators and the tourism industry in positive standing, but the rules and regulations put in place for the visitors also apply to these operators (Archipelago Management Board, p.28). They state that they have no leniency for tour companies who wish to abuse the area or have development ideas that are not within the scope of the park's management goals (Archipelago Management Board, p.28). Bruce Peninsula National Park could use some of this guidance when defining relationships with private tour operators that benefit from the park including cruise boat operators, dive charters, and rental companies. By creating firm limits and expectations both from the park and from the companies, agreements can be made based on how many visitors the park deems acceptable in certain areas of the park to retain ecological integrity while providing a high quality visitor experience.

Table 3 summarizes the management goals of Gwaii Haanas and management actions that can be adopted by Bruce Peninsula National Park to reduce ecological impact, provide high quality visitor experiences, infuse first nations culture into the visit, and create realistic partnership expectations for management.

Table 3 - Summary of Goals & Management Actions from GHNPHHP (Archipelago Management Board, n.d.; Parks Canada, 2010)

Park Management Goals	Actions
1. Preserve wilderness areas with little ecological disturbance	- Restrict visitor types to those that will conform to strict ecological regulations. - Discourage recreation that does not align with the Park's management strategy. - Maintain high ecological integrity to adhere to park management goals.
2. Provide high quality visitor experiences	- Apply use limits through management using people-at-one-time strategies. - Group size limits in effect to 12 people or less to ensure solitude.
3. Embrace First Nations culture	- Bring first nations ecological strategies and values to forefront of management using co-management. - Infuse visitor services with natural and cultural heritage education and area history.
4. Realistic partnership expectations	- Outline the parameters of partnership agreements explicitly and ensure partnering companies share the park's goals. - Improve communication and transparency in partnerships with tour companies using park property.

2.2. Defining & Measuring Crowding

There is resounding agreement within the literature that monitoring trends in visitation and environmental impacts form the basis for management decisions (Monz & Leung, 2006). This suggests that monitoring programs such as visitor information programs and environmental indicators are the major informative players within the scope of carrying capacity decisions and adaptive management practices to ensure ecological integrity is maintained while visitation is allowed to continue (Monz & Leung, 2006). The issue of increased visitor numbers and how this affects visitor experience was tackled by the United States

"National Park Service in the mid-1990's as the agency embarked on using the Visitor Experience and Resource Protection framework"(Monz & Leung, 2006) due to increasing visitor numbers in parks but has not been tackled in depth by the Parks Canada Agency (Manning, 2011). Crowding in parks is most commonly identified with congested roads or trails, accelerated detrimental effects to environment, and a reduction in visitor satisfaction (Janiskee, 2008). Deconstructing what visitor's motivations for visiting are, what their expectations for crowding are, and what they hope to get from their visit are all question management at BPNP needs answered to determine if perceptions of crowding are apparent, and at what concentrations at visitor nodes. These answers will assist managers in formulating courses of action to reduce perceptions of crowding at primary visitor nodes to retain high visitor numbers and foster high quality visitor experiences. Whether or not crowding is perceived as an issue at BPNP is further emphasised by the lack of carrying capacity limits set by management, which was discussed in Section 2.1 of this thesis. Therefore, even if results from visitors come back showing low levels of perceived crowding in specific visitor types, whether social and ecological carrying capacities have been exceeded is the common denominator to determine whether an area at BPNP is crowded.

Although the social phenomenon of crowding is typically a product of high visitation, perceptions of crowding vary from visitor to visitor (Vaske et al., 1980; Stewart, 2001). Also, potential for crowding in areas is highly dependent on the geography and topography of the area, which in some cases causes congestion and higher ecological impacts on soft soils or sensitive vegetation (Hendee et al., 1978). Other known variables to this question include length of season and proportion of area comprising visitor nodes to area protected within the park (Hendee et al., 1978). The most challenging factor when determining levels of crowding is the perception of the visitor. Visitors to parks have crowding perceptions that are founded on their 'baseline', which is developed by how much crowding the visitor experienced on their first wilderness trip (Vaske et al., 1980; Booth et al., 2011). Once this baseline has been established, the visitor will compare future trips to their first trip (their baseline) and will have expectations about the level of crowding they will see on future trips (Vaske et al., 1980; Booth et al., 2011). The literature suggests that a visitor's sense of crowding is decided not only by how many people they see but that they see more than they expect (Vaske et al., 1980). A visitor's attachment to an area concerns the emotional connection formed to a place and is typically developed with longer relationships to areas (Manning, 2011a). Literature has suggested that visitors that have more attachment to an area, and usually an older baseline, will have higher sensitivity to crowding than those with little to no attachment to a place (Manning, 2011a). Molinaro provides a great example of a visitor with an older baseline becoming upset at the drastic change to visitor experience at Yosemite National Park;

"'It's just not the same,' Claudy Joseph, 23, from Sunrise, Fla. Stated somberly. Joseph has been visiting Northern California's Yosemite National Park with his family every year for the past 20 years. 'The lines, the trampled trails the trash, that is now how it used to be,' Joseph explained. During the past 17 years, visitor attendance in the US national parks has increased by 10 percent each year" (Molinaro, 2010).

This theory on baselines and attachment may play a role in explaining why park staff, local residents, and patrons with longer histories at the park have lower baselines than first time visitors. Park staff at Bruce Peninsula National Park definitely mirror this theory in that the majority of staff feel like current levels of visitation are higher than they believe appropriate (LaCroix, 2014, pers. comm; Gibbons, 2014, pers. comm; Haselmayer, 2014, pers. comm).

Some literature has noted that crowding isn't fully to blame for negative visitor experiences and should be treated equal to other factors that could reduce a visitor's satisfaction (Booth et al., 2011). However, this thesis will dissect the issue of crowding further to determine what role it plays in dictating visitor experience and influencing carrying capacities at Bruce Peninsula National Park.

Visitors heavily use primary and secondary visitor nodes at Bruce Peninsula National Park during peak season. On long weekends, full parking lots and out-dated infrastructure cause visitors to be turned away. For example, the parking lot at head of trails can only accommodate 160 cars and this limit is

exceeded even on weekdays in the summer (Kettle, 1998; LaCroix, 2014, pers. comm). Consequently, by turning visitors away, the park reduces the number of people physically able to enter the park, thereby reducing fiscal income, all due to insufficient parking facilities. The uneven temporal distribution of visitors from weekends to weekdays, and throughout the year cause facilities including parking areas to be underutilized in off-season, and have an increased potential for crowding and visitor conflict issues during peak times (Manning, 2011a). Although most of the visitation occurs in short bursts throughout May-August on weekends, restricting visitor use prevents the park from meeting agency objectives of increasing visitation nation-wide and their mandate of providing parks for the enjoyment of Canadians (Parks Canada, 2011). Park studies from the past two decades have indicated that visitors to Bruce Peninsula National Park range from day users, backpackers, campers, and organized groups (Bruce Peninsula National Park, 1998). These different visitor types interacting present a challenge for park management to prioritize recreation types or face the daunting task of catering to them all. Catering to all recreation types and recreationists is recognized in the literature as somewhat improbable, and suggestions regarding this are outlined in Manning's 2011 book, *Studies in Outdoor Recreation* (2011):

"As demand for outdoor recreation has grown, it has become more evident that there are inherent trade-offs associated with resource management. For example, visitors may prefer to see little environmental impact at recreation areas, experience some degree of solitude, and enjoy unfettered access to recreation areas. But under conditions of high demand, it may not be possible to provide for all of these preferences simultaneously. Unlimited access to recreation areas may lead to visitor-caused environmental impacts and to high levels of perceived crowding; maintaining high levels of environmental quality and solitude may require managers to impose limits on the level and types of recreation opportunities provided" (Manning, 2011a, p.72).

Management's main goal at Bruce Peninsula National Park is to preserve ecological integrity and provide an opportunity for high quality recreational experiences. The level of quality relies on whether the opportunities for recreation meet the visitors' needs, and whether the type of recreation is impacting the environment (Stewart, 2001). Typically, as the number of visitors increase, the satisfaction of visitors with their recreation experience will decrease, especially in visitors seeking solitude in nature (Stewart, 2001). Studies from Arches National Park in Utah, United States observed that visitors would sacrifice the ability to visit the arches if they could be ensured they would not feel crowded at the Arch and put priority to solitude above access (Manning, 2011a). This suggests that certain visitor groups visiting Bruce Peninsula National Park may have similar feelings about certain attractions such as the Flowerpots on Flowerpot Island or the inside of the Grotto. This concept could be studied in more depth by management at BPNP and posed as a question in VIP studies.

The concept of crowding is much more complex than simply the amount of visitors. Relatively, the visitors sharing or not sharing behavioural norms and values will determine whether an area is perceived to be crowded (Kettle, 1998). Related to the topic of motivations, researchers have found that younger generations may be more driven by social factors, compared to older generations that typically seek solitude (Vaske et al., 1980). In a study from the USA, visitors who said their experience was hindered by crowding reported their motivation was to seek solitude in nature, whereas visitors who said their experience wasn't hindered by crowding said their motivation was to be social and have excitement (Manning et al., 2000). In 1998, visitors to Bruce Peninsula National Park claimed they thought the behavioural norms and values of others were similar to their own, which translated to lower perceptions of crowding (Kettle, 1998). Although only 33% of visitors in 1998 claimed they felt crowded, park management has voiced the concern that actual crowding levels are higher than studies are showing, and use limits may need to be put in place to reduce the amount of – or prevent crowding (Kettle, 1998; Haselmayer, 2014, pers. comm). Rising use levels in parks have also seen to passively cause higher tolerance to environmental

impacts such as litter, and increased contact with other visitors; visitors that dislike these factors will change their expectations of the place to the new norm, or will seek other areas that conform to their old expectations (Vaske et al., 1980). Although reported feelings of crowding were low in 1998 at BPNP, the real issue park management needs to tackle is whether visitors expect crowding and therefore tolerate it, or whether perceptions of crowding is causing certain demographics of visitors to not return because tolerance is wearing thin. Uncovering motivations for visiting Bruce Peninsula National Park is essential in articulating if crowding is an issue and whether sensitivities towards crowding are negatively impacting demographics of visitors causing them to go elsewhere. Determining whether sensitivities towards crowding are prominent in visitors, potential solutions to reducing impacts of crowding, and examples from other national parks will be reviewed in this section to provide BPNP with suggestions to answering their questions surrounding crowding at the park.

2.1.1. Measuring Crowding

Determining how many visitors are being affected by sensitivities to higher visitor numbers is essential for management to reduce potential for negative visitor experiences and ensure visitors want to come back again. Two methods of measuring crowding have become evident within the literature, these being use level and crowding perception. Use level is physically based and objectively quantifies how many people can fit per unit of space available which includes no psychological considerations for personal space (Manning et al., 2000). Crowding perception is a subjective psychologically based way an individual evaluates an experience, which applies if a use level is perceived to alter or affect that individuals' activities negatively (Manning et al., 2000). The psychological opinion of crowding stems from how an individual's activities are being influenced by other visitors and may vary depending on the background of an individual, making crowding perceptions hard to quantify (Manning et al., 2000).

The Bruce Peninsula National Park Management Plan (1997) outlined objectives they aimed to achieve by 2010. One if these included having visitor management techniques and programs in place to, "ensure that impacts arising from providing public opportunities to experience the park remain within acceptable and sustainable limits" (Parks Canada, 1997, p.12; Kettle, 1998, p.33). Another goal outlined in the park management plan is to grow visitation in shoulder seasons (Parks Canada, 1997; Kettle, 1998). Management at Bruce Peninsula National Park had goals to establish a visitor experience and feedback database to track how visitors' experiences change with new infrastructure but whether this has been accomplished on a park scale is yet to be determined. Park Management wishes to continue to deliver visitor opportunities that yield high quality educational aspects and natural experiences (Kettle, 1998).

Where studies about crowding have been issued, 5 or 9-point Likert scale type questions were used in order to give visitors a range of responses (Bosley, 2005). The perception of crowding by visitors in 1998 at Bruce Peninsula National Park included;

- 4.9% visitors felt extremely crowded,
- 27.5% visitors felt moderately crowded,
- 26.3 visitors felt slightly crowded, and
- 40.2% visitors' felt not at all crowded (Kettle, 1998, p.90).

Although only 4.9% of visitors felt extremely crowded, the goal of management should be that the majority of visitors feel not at all crowded (Kettle, 1998). According to this study, the majority of visitors (58.7%), felt some gradient of crowding which could contribute to a negative experience leading to the visitor not returning which counter-acts the goals of the agency to foster potential for return visitation (Manning, 2011a; Parks Canada, 2014; Kettle, 1998). This study also revealed that visitors coming on high use level and low use level days had one thing in common, which was their crowding expectation. 40% of visitors said their crowding expectations were the same as the actual amount of crowding they experienced, 16% said there was more crowding, and 30% said there was fewer people than they expected

(Kettle, 1998, p.92). A potential reason for these expectations including higher numbers of visitors may be that today's generation of visitors have adjusted their crowding expectations to expect more people on long weekends, matching up closely to the actual result of crowding they experience. This could be due to returning visitors knowing what level of crowding to expect in this park (Kettle, 1998, p.92). Judging by the numbers acquired in 1998, the majority of visitors do not seem to be overly affected by perceptions of crowding to the point where they may not return. This may give the impression that management's concern with perceptions of crowding affecting visitor experience is not supported by empirical evidence and therefore a bias view of visitation at Bruce Peninsula National Park. However, this study was done almost 20 years ago, and demographics and opinions of visitors coming to the park may have changed within that time. Just within the short timeframe of 2004 to 2013 park visitation increased at Bruce Peninsula National Park from 167,391 visitors per year to 392,149 in 2013 (Parks Canada, 2014d; Parks Canada, 2010). Therefore, it is crucial to re-evaluate visitor perceptions of crowding at Bruce Peninsula National Park regularly to ensure that similar results are being gleaned by these studies such as the VIP study.

There is speculation as to whether surveys of crowding at Bruce Peninsula National Park are biased because visitors filling them out may be used to a higher level of crowding as the majority of them are from urban centres (Gibbons, 2014, pers. comm). Since most of these visitors are experiencing the park for the first time, they may not know the area to be anything other than crowded (Gibbons, 2014, pers. comm). This phenomenon, called the, 'floating baseline' is similar to a visitor's baseline, where first time visitors have different and commonly higher expectations of crowding conditions so they evaluate the level of crowding as 'normal' and future visits are compared to this experience (Booth et al., 2011). Visitors that had visited under less crowded conditions and established a lower baseline would feel more crowded with fewer visitors around (Booth et al., 2011). At Bruce Peninsula National Park, older traditionalist visitors that have a lower baseline may feel very crowded under current conditions; whereas first or second time visitors to the park will have a higher baseline translating into a lower sense of crowding. Unfortunately, this floating baseline may cause a skew in survey results because visitors with an older or smaller baseline may not be visiting the park anymore because of negative visitor experiences due to crowding.

An individual's crowding tolerance is separated into one of three categories; situational variables; characteristics of visitors; and characteristics of those encountered (Manning et al., 2000). For the sake of Bruce Peninsula National Park, a visitor characteristic would include their expectation of how their activities at a park *should be* experienced or their motivation to do the activity. Characteristics of those encountered include everyone else's reason for being at the park, which could range from bouldering to swimming. Situational variables may be time of year, location, or weather. One of the most challenging facets of visitor management is that individuals all have different perceptions of the environment and what may be a high quality experience to one person may not be to another. This begs the question; which perception is most important to management? (Kettle, 1998). In Kettle's 1998 study at Bruce Peninsula National Park visitors were surveyed and;

"When asked to suggest a maximum number of people acceptable to see along the shoreline without feeling crowded, the numbers given were lower than the actual recorded encounters in all categories… even though 93.4% of respondents' trips met their overall expectations, if given the opportunity respondents would prefer fewer encounters with other visitors… as the number of people encountered increases, so does the acceptable number of encounters… therefore, as visitors perception of crowding increases so does the number of people encountered and people's expectations of crowding" (Kettle, 1998, p.93).

Most visitor based standards of quality surveys use 3 factors to determine visitor experience, including people at one time at an attraction; people per view-scape on trails, and visitor use level photographs, such as the ones done by Manning (2000), and the 2013 unpublished study done at Bruce Peninsula National Park (Parks Canada, 2013a). The people at one time number can be gathered through

trail camera photographs taken every hour, or through group tour ticket sales (Vezeau et al., 2010). These three factors are the most widely accepted and easy to process, and could be used at Bruce Peninsula National Park alongside the 2013 photo-monitoring work. Although asking whether a visitor feels crowded or has enjoyed their visit is important, it does not capture the whole picture. Literature in crowding specifies that motivations, expectations, and types of coping behaviors employed by the visitor need to be analyzed to create a succinct explanation why visitors do or do not feel crowded at the park (Booth et al., 2011).

There is potential for a study to be done at Bruce Peninsula National Park to determine what perceptions of crowding are affecting visitor experience. The floating baseline of the clientele and focus groups or the general public could complete the Manning photographic monitoring study using pictures Bruce Peninsula National Park captured in 2013. Bias within this survey may occur because people who already find it crowded may not be returning to the park, meaning they are not there to complete the survey in person. To reduce this bias, the survey could be online and advertised to the public. Advertising a survey online and targeting campground reservations made in past years may help reduce bias and capture visitors that may not be returning to the park. Return visitation is not being addressed in the Visitor Information Program (VIP) survey, but may be captured over time as the study matures. Giving better access to online surveys for past, present, and future visitors may give more insight to why people are or aren't returning. Ensuring bias reduction when writing surveys such as the VIP and asking crowding questions is imperative to the success and accuracy of a crowding study.

2.1.2. Example of Visitor Perceptions at Sequoia National Park (USA)

Sequoia National Park in the United States has done capacity studies for one of their heaviest visited attractions, Crystal Cave, and much like Bruce Peninsula National Park has found that responses to questions related to crowding do not add up to the actual number of people there. Crystal Cave is similar in situation to the Grotto at Bruce Peninsula National Park where it is a heavily visited, confined and dangerous attraction. Attendance on tours through Crystal Cave typically ranges from 6 – 55 people averaging 39 per group in the cave at one time (Vezeau et al., 2010). Although these numbers seem high, it was shown that a visitors' perception of how many people were on the tour were rarely accurate (Vezeau et al., 2010). In addition to these findings, the study at Sequoia National Park also found that;

- *"61% of visitors felt 'slightly crowded' to 'not crowded at all' on their tour.*
- *35% said group size had no effect on their enjoyment; 31% said it added to their enjoyment; and 34% said it reduced their enjoyment.*
- *36 were the maximum acceptable number of people in Crystal Cave at one time.*
- *29 people were the maximum respondents felt SNP should allow in Crystal Cave at any one time.*
- *20 were the maximum number of people visitors would prefer to see.*
- *53 were the number that would cause them to never return"* (Vezeau et al., 2010, p.380).

The amount of people on the Crystal Cave tours sometimes exceeded the number of people visitors stated would cause them to never return yet they still responded that they enjoyed their visit and would return. This proves that a visitors' opinion of what constitutes crowding in any one area is variable due to environmental conditions and perception. Along with this research, it has been shown in supporting literature that because crowding perceptions change from visitor to visitor, use levels are not consistently related to visitor satisfaction, and a high visitor experience can be had even with high crowding conditions (Booth et al., 2011). Positive or negative experiences cannot totally be attributed to crowding as shown through the Sequoia National Park example. However, we can extract that crowding has various impacts on people and affects some visitors more than others.

Suggestions given in the study at Sequoia for visitor management at BPNP include having smaller group sizes to give an intimate and potentially higher-quality experience, which may also have fewer

environmental impacts. This study concurrently found that visitors are more tolerant of crowding than previously believed (Vezeau et al., 2010). Other insights this case study provides management at BPNP include the indecisiveness and inaccurate estimates visitors produce when asked to set use limits. This may provide as a further example for the necessity and use of Manning type visual research surveys, which will be discussed in section 2.3.3 of this thesis. Overall, what we can glean from this case study is that asking visitors for a specific number may not provide accurate results that will translate into higher quality visitor experiences. Therefore, park management must use other methods of surveying including setting social and ecological carrying capacity limits and staying true to providing the experience park management wants to provide.

2.1.3. Potential Solutions to Crowding

Use limits are a common solution in recreation literature, but are not a widely embraced method of crowding reduction. Use limits are deemed appropriate when there is a reduction of experience quality due to feelings of crowding by the visitors, but these limits reduce visitor numbers and revenue (Stewart, 2001). Use limits are levels of visitation a park uses to determine when to cut off visitation to certain areas usually due to sensitive ecosystems or quality control parameters. Literature on the topic of use limits suggests that visitors typically favour use limitations, specifically limits to party size to reduce overuse of backcountry areas (Manning, 2011a).

Bruce Peninsula National Park must establish what type of visitor they wish to cater towards the most, what level of crowding they deem as acceptable based on carrying capacities and visitor perception, and what approach to use limits or redistribution they see as the most viable to work with agency demands for more visitation. Depending on what type of recreation experience Bruce Peninsula National Park now wishes to provide to its wide assortment of visitors, the increase in visitation may not affect the majority of visitors, or it may be leading to inter-site displacement as discussed in the spatial redistribution section of this thesis. It is understood that one park cannot provide all the opportunities everyone wants, but must choose the best option for that area given the geographic location and recreation possibilities. As a result, providing a wide variety of appropriate opportunities at certain locations will be essential for park management and visitor experience (Parks Canada 1997; Kettle, 1998). Management must decide what level of crowding accurately coincides with the quality of experience they wish to provide and what level of crowding reflects their goals as an organization to increase visitation. The park's ideal and capped crowding levels can be determined using the photographic monitoring data collected in 2013 (Parks Canada, 2013) and will develop into more detailed social carrying capacity numbers in the future. The end result of this determination will uncover the parks ideal level and cap of crowding that can be monitored throughout the season, as well as used in threshold monitoring and as ecological integrity and visitor experience indicators.

2.3. Visitor Studies at Bruce Peninsula National Park

There are three main methods of visitor studies that have been done at Bruce Peninsula National Park that are tools to gain information about visitors to the park. Only one of these is required from an Agency level, and one is misused and does not actually collect visitor data. The three visitor studies employed by Parks Canada include the Explorer Quotient Survey, the Visitor Information Program (VIP), and the photo-monitoring study of 2013.

2.3.1. Explorer Quotient Survey for Parks Canada

In 2007, the Parks Canada Agency partnered up with the Canadian Tourism Council and Environics to develop a method of matching the wants and needs of a visitor with areas, products, and services that cater to the visitors' desired experiences (CTC, p.3). The partners developed an online survey that asked visitor to answer 20 Likert scale based questions to match their values and motivations to a visitor type and what experiences the Parks Canada Agency can provide (CTC, p.4). The Explorer Quotient study reveals that

a person can experience an area or an activity differently than another visitor experiencing the same area at the same time (CTC, p.4). Upon answering the survey questions, the visitor is placed into a broad classification group including familiarity seekers, escapists, enthusiastic indulgers, and learners (CTC, p. 6; Appendix I). Within these 4 categories there are 9 sub-segments including personal history explorers, no-hassle traveler, cultural history buff, gentle explorer, virtual traveler, cultural explorer, free spirits, rejuvenators, and authentic experiencers. These sub-segments help potential travelers recognize what type of visit they truly want and help them prioritize expectations. This survey is quick, visually appealing, and evokes thought and emotion from users, causing visitors to consider aspects of themselves they may have ignored before. This survey is available at, www.canada.travel/eq.

Although this questionnaire is user friendly and provides an exciting outcome for visitors, it is not easily accessible. The Explorer Quotient survey is available on Parks Canada's webpage but not easy find. This makes it highly unlikely that a first time user of the website will access the study and take the questionnaire. The Parks Canada webpage has been identified as insufficient for today's technologically inclined visitor and will be redone in 2015 (Parks Canada, 2013b). If the EQ survey was made obvious on the website and properly advertised and promoted, visitors to Bruce Peninsula National Park may determine what their true motivations and expectations of their visit are and cater their visit to different areas of the park other than the primary visitor nodes. A digital touch screen kiosk similar in stature to an automated movie ticket booth placed at the Visitor Centre and Cyprus Lake Office may help visitors access the survey and provide a personal learning experience to these visitors. A kiosk could have park specific area prescriptions as well as agency wide suggestions. This way, if the EQ test diagnoses a visitor as being an authentic experiencer, they can be suggested an area popular for birding, geology, or area-specific culture, whereas a free spirit can be suggested a more popular visitor node such as the Grotto. Providing access to this technology could help the visitor discover new areas of the park or change the season during which they visit.

Surveys such as Explorer Quotient are initiatives Parks Canada has invested large sums of time and money into and are being underutilized. Improving the access to results of these surveys for park use and access to the surveys for visitor education is a basic business decision and would not only allow the Agency to use their investment, but they could also collect valuable data about their visitor base that would also have significant benefits to visitors and improve the visitor experience. Therefore, the EQ survey should be made more readily available on the Parks Canada webpage, retrofitted with site-specific suggestions alongside agency wide suggestions, and implemented at visitor centers and gate houses in park facilities.

2.3.2. Visitor Information Program at Bruce Peninsula National Park

In the early 1990's, the National Park Service in the USA created the Visitor Experience and Resource Protection program (VERP) to get visitor opinions on a suite of indicators and standards to be upheld at national parks (Manning, 2002, p.309). The 1998 Park Management Plan specified that VAMP (visitor activity management program) was being used to gather visitor data and information and since the mid 2000's adopted a similar study standardized Agency wide to monitor visitor demographics and satisfaction called the Visitor Information Program (Parks Canada, 2010). The Visitor Information Program (VIP) began at Bruce Peninsula National Park in 2007 and is conducted every five years to gain insight into what type of visitor is most common at the park and what their experiences and motivations are. There have only been 2 fully analyzed VIP studies for Bruce Peninsula National Park, completed in 2007 and 2013. The 2007 and 2013 surveys showed that most visitors find their overall expectations exceeded (Parks Canada, 2010; Parks Canada, 2013). Since 2007, there has been a dramatic increase in visitors, and the demographic of these visitors has changed. Bruce Peninsula National Park realizes the challenge of exponentially growing visitation given that their main goal is to provide, "outstanding visitor experiences with improved information and infrastructure that contribute to improving the ecological integrity of the park" (Parks Canada, 2010).

Participants in the VIP are selected using simple random sampling where every visitor and group has an equal probability of being chosen but there may be a bias present due to visitor personalities (LaCroix, 2014, pers. comm). Once a group is selected and agrees to take the survey, the person who has the birthday closest to the current date and who is over 17 becomes the person who can complete the survey, called 'the birthday method' (LaCroix, 2014, pers. comm). If that individual does not want to do the survey, no one else in the group may do the survey causing that group to be considered a refusal (LaCroix, 2014, pers. comm). This survey takes one or two minutes to fill out. The first ever VIP for FFNMP was conducted in 2014 and its data will be interpreted before the start of the 2015 season. Park staff distributed the survey at the Visitor Center, Flowerpot Island, the boat charter company docks, the dive shops, and at Thorncrest Outfitters (LaCroix, 2014, pers. comm). The survey sheets are designed to go through a scan-tron machine but are also looked at by a staff member to document the short answer questions. Data gathered regarding Flowerpot Island in the Bruce Peninsula National Park study will be removed, as it will be covered in future FFNMP VIP's. Whether this segregation of information will benefit Bruce Peninsula National Park in its analysis of visitor satisfaction is yet to be determined. However, it may be interesting to see if FFNMP survives on its own merit as a park, or if it 'piggybacks' off the success of Bruce Peninsula National Park.

The total annual visitor days at Bruce Peninsula National Park in 2007 were 260,015 and have grown to 392,149 in 2013, an increase of approximately 50% over 7 years (Parks Canada, 2013b). This visitation grown the number of day users to 86%, where the numbers of overnight campers hovers around 14% (Parks Canada, 2013b). The Parks Canada Agency has national standards to meet with regards to visitor experience but there are no cross-agency standards or criteria to assess visitor experience indicators (Parks Canada, 2010). As a result, there is no method or best practice to analyze the effects of crowding on the visitor experience. Best practices may be adopted as more years of VIP study are processed and their results compared to indicate the effects of crowding on visitor numbers and visitor types. The most recent VIP study had 1 Likert Scale style question focused on crowding at six visitor nodes. The Parks Canada Agency has strict guidelines when surveying visitors and is stringent on the number of questionnaires conducted in the park annually. The best way to study how crowding affects visitors would be to amalgamate crowding questions into the next VIP study. The 2013 VIP study asked a few questions related to crowding in the form of a Likert scale question asking visitors to rate from 1-5 how crowded they felt at certain locations listed (Parks Canada, 2013). However, simply asking whether or not a visitor felt crowded does not answer the whole question. Asking what their expectation of crowding at the site was, whether they chose a specific time to come to avoid crowding and what their ideal level of crowding is may help paint a more detailed picture into whether visitors actually felt crowded. The question of this research is strongly based around whether the increase and change in visitor motivations and the general increase in visitation affected the visitor's experience and the ability of Parks Canada to provide a high quality visitor experience to visitors. With the data gained through the last two VIP studies, these questions about motivation cannot be answered. Once more information is gathered regarding crowding and expectations, a social carrying capacity level could be discerned for the primary nodes at Bruce Peninsula National Park. A study like this could help capture answers focusing on return visitation (LaCroix, 2014, pers. comm). Getting return business is one of the most important aspects of any business, and is especially important to Parks Canada which has experienced declining visitation in the majority of its parks across the country. A future study that determines what Bruce Peninsula National Park visitors believe is acceptable and ideal levels of crowding at the main attractions.

2.3.3. Visual Research and Photo Monitoring at Bruce Peninsula National Park

Visual research has become an accepted and popular technique used by social scientists and park managers in determining visitor perceptions of crowding (Manning, 2007; Manning, 2011). This method of survey is especially effective in situations where visitor numbers in a park are high, because the visual

representations are able to more accurately depict to visitors the number of other visitors were at the location and allow them to vocalize preferred levels more accurately (Manning, 2007). Visual research studies like this are most effective in front country applications and main visitor nodes with high visitation because it allows visitors to offer more accurate estimates of visitor numbers and minimum and maximum preferences (Manning, 2007). Visual studies such as this,

"Can provide additional pertinent information to respondents that would be difficult or awkward to communicate through conventional narrative/ numerical approaches… all respondents see not only the same number of visitors encountered, but also potentially important characteristics of those encountered, including recreation activity engaged in, mode of travel, and group size. This is potentially important because perceived crowding has been found to be mediated by such variables" (Manning, 2007, p.57).

An example of a panel of this survey is illustrated in Figure 5. The changes in visitors shown in each panel is meant to be incremental and provide a visual reminder to respondents of how many visitors they saw at the location and how many they would prefer (Manning, 2007).

Bruce Peninsula National Park has undergone a preliminary visual study at two of the main attractions in the park to see what visitor levels physically look like during different times of the day and throughout the season. Canadian National Parks have rarely done carrying capacity studies at main attractions, and the ones that have been conducted require more analysis and need to be supported with more research. Those studies that have been analysed still do not know how to apply their findings (Abbe & Manning, 2007). There is a knowledge gap at Bruce Peninsula National Park regarding how to acquire and use carrying capacity information, and whether visitor experiences are being compromised due to crowding. Carrying capacity research and threshold monitoring is integral to park management planning regarding visitor experience and ecological integrity (Manning, 2011). Once accomplished, carrying capacity studies will give park management insight concerning how to reduce impacts of crowding without compromising visitor experience quality or limiting entrance numbers (Cole & Manning, 2005).

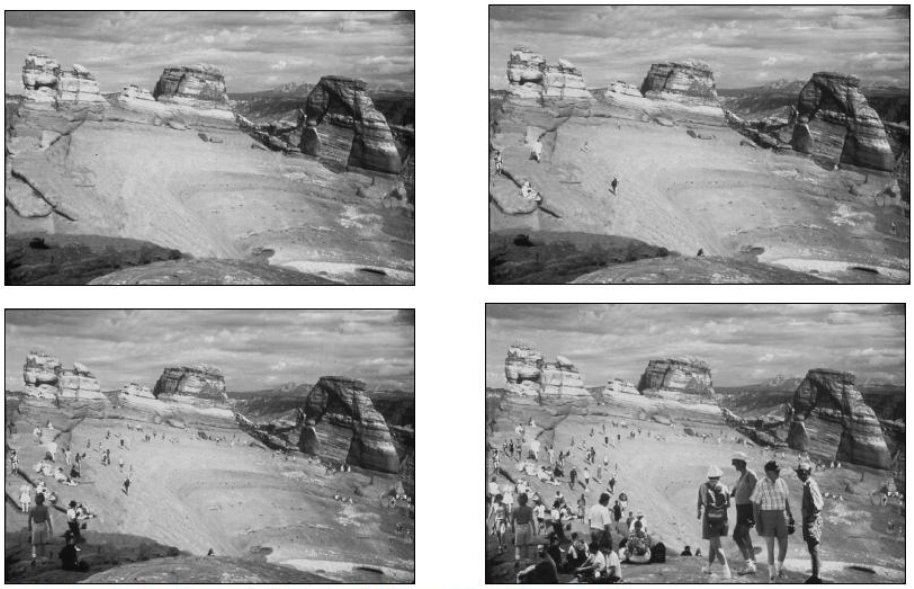


Figure 3. Representative Photographs of Delicate Arch Showing a Range of Visitor Use Levels

Figure 5 - Example of Visual Research Method (Manning, 2002).

The preliminary photo monitoring study conducted by the Resource Conservation team at Bruce Peninsula National Park occurred during May - August of 2013 (Parks Canada, 2013a). The study used trail counters, vehicle counters, and trail cameras to capture visitor levels both statistically and visually throughout the peak season at BPNP (Parks Canada, 2013a). Similar to Robert Manning's body of work, (Manning et al, 2000; Hallo & Manning, 2010); this study took a series of photographs using trail cameras

which showed visitor levels that ranged in increments from 25-50 people all the way to >150 people (Parks Canada, 2013a). An example of this imagery is shown in Appendix II, which illustrates Indian Head Cove on June 29, 2013. This style of image sequence is commonly used to visually stimulate visitor's opinions of what image they think shows an acceptable level of crowding and their preferred level of crowding at destinations (Manning et al, 2000; Hallo & Manning, 2010). "The advantage of the visual over the verbal method is that images provide a more realistic representation of particular levels of activity" (Kalisch & Klaphake, 2007, p.110). Pairing these images with questions such as those used in Kalisch & Klaphake's study would enable an analysis into motivations, expectations, and actual results. Questions in this study included;

- *Which picture best matches the approximate number of visitors you observed?*
- *Which picture best indicates your preferred number of fellow visitors?*
- *Which picture contains the maximum number of visitors that you would feel to be acceptable?*
- *Which picture most closely represents the number of visitors you expected to meet?*
- *Which visitor density would be a reason for you to decide not to return? (Kalisch & Klaphake, 2007, p.117).*

A visual research method style survey using the captured images from the 2013 photo-monitoring study to provoke responses from visitors has not been done at Bruce Peninsula National Park, but could be done during the off-season to get a more accurate summary of crowding perception. Similar studies were done in Arches National Park in Utah USA, Acadia National Park, Maine, USA, and Yosemite National Park, California, USA, and others, and these studies were distributed in person, through mail, and over computer networks. In today's highly technical society, management at BPNP with the support of the Parks Canada Agency, distribute a similar study over email lists that could be a quick online survey using this method to gather visitor perception (Manning, 2007). The Visitor Information Program (VIP) that occurs every 5 years at the park, which may save the park and agency time and resources, could employ a smaller version of this research method. In order for this study to remain unbiased, potential visitors must be chosen from a variety of backgrounds, recreation experience levels, and times visited. Manning specifies that the largest challenge in beginning a visual research study of this kind is acquiring or creating the comparative imagery to use in the study (Manning, 2007). Luckily management at BPNP already has a large selection of these images already compiled and sorted specifically for this purpose, and are currently being un-utilized for the purpose they were intended for. Using these images would allow the park to use this investment for its intended purpose and gain some significant social research in the process. More detailed methods for these studies can be referenced in Robert Manning's body of work and have proven successful in determining visitor opinion, preference, and the visitors perception of what type of recreation experience they had (Manning et al., 2000; Manning, 2007; Hallo & Manning, 2010; Kalisch & Klaphake, 2007).

2.4. Summary of Crowding Perceptions and Management Implications

Ultimately, it is the visitor's personal opinion, motivations, and expectations that determine whether a place is crowded. This is a challenge for managers because there are no easy overarching answers and there is no 'magic number' of visitors that will make everyone happy and feel un-crowded. Managers must determine what experience they wish to provide and what visitor type they wish to cater towards, and try to determine an ideal range of visitor numbers that fit within these parameters. Unfortunately not every visitor will be happy with the decision, but being able to provide a diversity of services during shoulder seasons or in different areas may help retain visitors that hesitate to visit crowded areas. Table 4 summarizes four management targets and action items that can be applied to help reduce feelings of crowding in national parks. Some of these actions are currently being applied at Bruce Peninsula National Park and some of these changes will need to happen on an agency scale. However, the action items will improve the ability of management to meet their fiscal targets, ensure high quality visitor experiences, and retain ecological integrity.

For future VIP studies at the two parks, more questions pertaining to motivations, expectations and types of coping behaviors employed may allow the park to delve deeper into this challenge of determining a social carrying capacity and assigning a 'magic number' of visitors per day. Another study capturing visitors no longer using the park should be done to reduce bias of the VIP study. A study of this sort may allow for some insight as to why the visitor will not return, and how the park could recapture these visitors in the future. Explorer Quotient should be more utilized to allow visitors to become more aware of their desires in their trip, and will also provide a great outlet for the park to collect statistics of their visitors. Considering the huge investment from the Parks Canada Agency in this product, it should be better utilized.

Strategically, agency wide collaboration, transparency in projects, and knowledge sharing should be used more frequently in decision making at the managerial level when it comes to tackling the issues of visitor experience, VIP study questions, using tactics such as Explorer Quotient, and installing new infrastructure to save time and resources. The Parks Canada Agency and Bruce Peninsula National Park need to open more avenues of communication between the agency and parks, and between parks themselves. If the Parks Canada Agency opens more avenues for information networking by sharing their internal libraries, protocols and best management practices could be considered across the agency.

Table 4 - Summary of Management Implications to Combat Crowding (Manning et al., 2000; Hallo & Manning, 2010; Kalisch & Klaphake, 2007)

Park Management Goals	Action
1. Retain ecological integrity and support healthy ecosystems	- Monitor changes using indicators and thresholds & manage accordingly. - Apply use limits during sensitive or overly demanding times of year and provide alternative areas or times for people to go. - Encourage use limits using infrastructure. - Discourage recreation that doesn't align with management strategies.
2. Retain high visitor numbers and support changing visitor demographics	- Encourage low impact activities and build infrastructure to suit increased visitation. - Develop new methods of transportation to increase visitation without altering current infrastructure such as shuttle busses. - Understand visitor demographics, motivations and expectations and what these mean for the future of recreation at the park.
3. Improve visitor experiences	- Listen to visitor feedback regularly and make changes to suit changing recreation trends using adaptive management. - Create more avenues for visitor opinion to be shared including online surveys. - Adopt the Explorer Quotient study at park locations to increase visitor awareness about their preferences and true motivations. - Provide a variety of experiences catering to different visitor types across primary, secondary, and tertiary visitors nodes within the park. - Improve infrastructure to properly cater to visitor types and numbers.
4. Better communication agency wide	- More knowledge sharing and project updates across parks to aid management decisions. - Showcasing learning moments and successes to help share experiences between parks to increase knowledge sharing. - Build better partnerships with first nations groups and tour operators. Set boundaries and commitments.

Chapter 3 – Coping Methods & Redistribution

If visitors experience more crowding than expected, coping methods are often employed to counteract the dissatisfaction they may feel. Visitors have many coping strategies to deal with negative situations including crowding, behaviour of other visitors, physical capability, and access to facilities (Booth et al., 2011). Three of the most common coping methods are described in the literature – rationalization, product shift, and displacement (Manning & Valliere, 2001; Gramann, 2002; Manning, 2011a).

Rationalizing reasons for why there was dissatisfaction with the experience helps visitors justify costs of finances, time, and resources. This coping method can also account for high satisfaction levels reported even when visitor numbers increase (Manning & Valliere, 2001; Manning, 2011a). Visitors do not want to feel that their investment equated to a less than desirable experience, so rationalization and positivity help them justify the best parts of their visit (Manning, 2011a). Unfortunately the literature on rationalization is limited and very context dependent on the park and their specific visitor pool (Manning, 2011a). Product shift coping methods occur when the visitor's expectations of how the activity should or will be experienced at the area changes to better suit current conditions. Product shift coping methods occur when visitors do different activities in an area to avoid conflicts of other recreationists doing different activities or too many visitors doing the same activity in a limited area (Manning & Valliere, 2001; Manning, 2011a). Lastly, displacement occurs when visitors are so dissatisfied that they move to a different area of the park, or a new park to avoid crowding and negative visitor experiences; they are typically replaced with visitors that have higher tolerance levels for crowding (Manning & Valliere, 2001; Manning, 2011a). The literature outlines four common forms of displacement at a park level; absolute, spatial, temporal, and activity (Gramann, 2002; Booth et al., 2011).

- Absolute displacement: visitors never return or never do that activity at the park again.
- Spatial displacement: visitors come back, but to a different area of park.
- Temporal displacement: visitors come back during a different season or time of day.
- Activity displacement: visitors do different activities at the park to avoid conflict.

Displacement is often done by visitors looking to escape a variety of conditions at busy areas or to experience new areas and is not typically enforced by park regulations or redistribution management (Gramann, 2002). In studies regarding displacement, visitors with different sensitivity levels to crowding have different reactions to it. Listed below are the typical reactions of visitors who experience crowding, as discussed in Manning's 2011 book, *Studies in Outdoor Recreation*;

- Low sensitivity: Visitors try to reduce encounters with other visitors by altering pace of visit.
- Medium sensitivity: Visitors change their route of travel.
- High sensitivity: Visitors terminate their visit and sometimes do not return.

Displacement can be controlled or assisted using management decisions that foster a culture retain visitation from a wide variety of recreationists. Using redistribution techniques to persuade visitors to visit other areas of the park during different times may group visitors with similar recreation goals together which will reduce perceptions of crowding.

Park management has confirmed that there are currently no studies that reveal coping strategies used by visitors at Bruce Peninsula National Park or whether redistribution is necessary for some visitors. Unfortunately this lack of research means this thesis cannot confirm that visitors to Bruce Peninsula National Park are employing coping strategies and displacement tactics. Therefore, the Parks Canada Agency should conduct such a displacement and coping strategy survey as part of their adaptive management efforts to determine whether visitors are using coping strategies and displacement to avoid negative visitor experiences. If Parks Canada Agency discovers that visitors are using coping strategies

during their visit to Bruce Peninsula National Park, possible solutions within their adaptive management strategy could be implemented to retain visitation.

Redistribution is a management tool that is utilized when visitors are reacting to a negative experience or when management is trying to prevent negative experiences. Redistribution simply means moving visitors from busy places and times to less busy places and times (Gramann, 2002). If managed correctly, redistribution can encourage visitors to stay within the park and keep visitor numbers and satisfaction levels high. Four widely accepted methods used to reduce impacts of high visitation in national parks include; (1) increasing the space and time available to accommodate higher visitor numbers; (2) restricting length of stay, visitor numbers, and type of use; (3) hardening sites using infrastructure and facilities to accommodate higher visitation; and (4) modifying the type of usage to less impactful activities (Eagles et al., 2002). Redistribution relates mainly with the first method and can eliminate the need to harden sites, restrict stays, or alter recreational usage in the park. Redistribution is typically more cost effective than building new infrastructure or restricting usage. Respectively, redistribution by increasing the space and time available to visitors will be the focus of this thesis.

When discussing redistribution at Bruce Peninsula National Park, obvious concerns arise with effects to environmental and cultural aspects of the park. The Parks Canada Agency has specified that when opening areas to public, an environmental assessment for ecological integrity and areas of concern must be done along with projections for restoration requirements, economic gains and maintenance needs (Parks Canada, 2008). In Bruce Peninsula National Park, the amount of land used for trails, attractions, and recreation areas is minute compared to the total park area (Fig.1). There is potential for more of this area to be opened to visitors by developing and promoting underutilized areas as a way of redistributing visitors during busy times. Redistribution will allow more people to enter the park during peak periods and potentially reduce perceptions of crowding in more sensitive visitor types at key visitor nodes. The focus of this redistribution should be towards visitors with lower tolerances for crowding and niche activity desires.

While restoring parklands, spatial, temporal, and activity based redistribution can be implemented hand in hand within Action on the Ground projects such as the Johnstone's Fields Project. Redistribution and restoration will improve the ecological integrity of disturbed areas and allow visitors to experience a wider variety of ecosystems Parks Canada wish to represent. Redistribution of tourists throughout the park by opening and promoting new attractions, trails, and areas would allow more people to visit the park; providing additional areas to send visitors during busy times will reduce turn-away and will reduce crowding and potential negative visitor experiences due to crowding; will diversify activities offered in the park (kayaking, biking, snow shoeing, picnicking etc.); and potentially allow for a greater range of ecosystems visitors can experience at BPNP. Extending the timeframes the park is open to absorb shoulder and off seasons may also improve visitation during off-peak times and increase profits for the park. Infrastructure and yurts have already been built to accommodate fall to spring visitation but are under-utilized during shoulder seasons because of agency level bureaucracies regarding park operating seasons. If Bruce Peninsula National Park was able to remain fully operational, for visitors during shoulder seasons, it may relieve some visitation during peak summer months and recapture those not visiting during peak season if this service was promoted properly.

3.1. Temporal Redistribution

Temporal redistribution- or temporal displacement- is the act of redistributing visitors throughout the year from busy times to slower weekdays and 'off season' months. Temporal displacement is a common coping measure visitors use to deal with busy seasonal trends, but is rarely promoted by national park managers in Ontario (Gramann, 2002). Persuading visitors to change visiting habits from peak season to shoulder seasons may help alleviate crowding pressures during the summer months and provide visitors with a diverse natural and social experience in the park. Seasonality at Bruce Peninsula National Park is drastic where July and August are peak season and spring and fall months have less visitation but cater to

those seeking solitude and viewing specific things such as orchids and birds (Parks Canada 2013b; Fig. 2). The State of the Park Report (Parks Canada, 2010) suggests teaming up with local partners to conduct special events geared towards shoulder seasons including the Orchid Festival with The Friends of Bruce District Parks; the Outdoor Festival in autumn with the Bruce Trail Conservancy; and Dark Sky Celebrations with the International Dark-Sky Association. Autumn and spring could provide a new experience for visitors wishing to appreciate wildlife and seasonal changes. Temporal redistribution tactics that could be used by Bruce Peninsula National Park include longer operating seasons, promoting and supporting seasonal activities, and using existing infrastructure more effectively.

Temporal redistribution can be assisted and popularized in parks by providing longer operating seasons, cheaper park fees during off-peak seasons, promoting natural and cultural events during the shoulder seasons, and investing in infrastructure that properly caters to these times of year such as yurts and ski trails. Less expensive park fees during shoulder seasons, also called differential pricing involves raising prices during peak season and lowering prices during off-peak seasons. This fee system is commonly used to redistribute use levels and maximize profits during the peak season (Eagles et al., 2002). This method of management is known to be very complicated for an agency to execute and may cause confusion among visitors and staff. Differential pricing has been known to cause resentment amongst visitors (Eagles et al., 2002). However, with an upcoming change to park fees in the Parks Canada Agency system, perhaps another form of discount or incentive could be implemented to deter some visitors from visiting during peak season.

Tourism marketing using websites and social media to conduct 'target-marketing' to recreationists that do less common activities in parks such as bouldering, snowmobiling and biking, can be successful especially for shoulder seasons (Eagles et al., 2002). Tourism marketing although successful may come with associated costs such as staff or advertising fees (Eagles et al., 2002). However, marketing in today's technologically advanced culture of social media and insta-news is a very effective way of educating and informing a potential visitor about the recreational opportunities within a park (Eagles et al., 2002). Some of the parks in the National Park Service in the USA have started to add visitation statistics on their web pages to include graphs and tables to visually express to potential visitors how many people visit the park during each month (NPS, 2014a; Appendix III). Visual reminders about crowding, like this example from the NPS, helps in the planning stage of a visitors 'visitation cycle' and can help solitude seekers better plan what time of year best suits their ideal visitation experience. Appendix III is a direct screen capture from Yellowstone National Park's web page and illustrates the bar graphs that are used to show visitation numbers (NPS, 2014a). Using this technique on Bruce Peninsula National Park's web page and even extending this to social media may enable potential visitors to plan what time of year to visit the park to cater to their crowding preference. Yellowstone's website also has a section dedicated to winter visitation and describes to visitors the possibilities for shoulder season visitation. Bruce Peninsula National Park may not be open during winter seasons, but could begin promoting winter activities at the park to increase knowledge of shoulder season visitation.

3.1.1. Longer Operating Seasons

It is common knowledge to locals and to people who have visited the park that Bruce Peninsula National Park's busiest season is from May-September every year where 70% of annual visitation takes place (Scott & Jones, 2010). During the short 5 months of peak season, there is an onslaught of visitors infiltrating Tobermory and surrounding area to stay at cottages, take the Chicheemaun to Manitoulin, or to visit the parks. Seasonal trends are common in outdoor recreation nation-wide and are dictating operating seasons for the park and businesses in the local economy (Scott & Jones, 2005). Seasonality not only affects locals, but park staff and visitors to the park as well. Nonetheless, to meet increased visitation goals given by the Parks Canada Agency, extending the operating season to cater to visitors that don't come to the park during the peak season could alleviate some crowding pressures in the summer (Parks Canada, 1998). The

Parks Canada Agency is currently taking the complete opposite approach to this, by continuing to shorten park operating seasons, which may create some long-term effects on visitor habits. Although the Agency is feeling the fiscal pinch forcing operating seasons to shrink, increasing visitation in shoulder seasons was one of the six key issues identified by park management in the State of the Park Report and the 1998 Park Management Plan (Parks Canada, 2010; Parks Canada, 1998). This may identify a lack of continuity in the Agency and Parks' goals for management.

The *2010 State of the Park Report* (Parks Canada, 2010) identifies the need and importance of enhancing and expanding shoulder seasons from April to June and September to November. This report also specifies renewing the primary visitor node of the Cyprus Lake Access Point to enhance shoulder season visitor experience opportunities (Parks Canada, 2010). Bruce Peninsula National Park technically still has self-pay registration systems available to visitors after Thanksgiving. Staff members are not on hand to answer questions, and facilities are closed. During fall 2013, the head of trails parking lot remained open, facilities were kept running and staff retained to assist visitors during the 'shoulder seasons' would allow park staff to stay employed to avoid having to rely on Employment Insurance. Keeping the park open longer would enable more maintenance during the off-season months to keep up infrastructure quality. Longer operating seasons would bring new opportunities for different recreation types that cannot be offered during the current park operating season such as cross country skiing, snowshoeing, winter photography opportunities, winter bird watching, etc.

Bruce Peninsula National Park's main hurdle to expansion of operating seasons is from an Agency level which focuses solely on revenue generation and retention. Although there are many restrictions for open seasons governed by the Parks Canada Agency, Bruce Peninsula National Park received special permission to keep the park open longer during the 2014 season as a pilot project to see whether an extension would benefit the park and its visitors. The extended season of 2013 was a pilot spring offer meaning the park opened on the first Friday in May- 2 weeks early, and was open 7 days a week. From this, the estimated revenue growth was $80,000, minus worker salaries of $50,000; projecting an overall increase of $30,000 (Parks Canada, 2014). Results for this opportunity will be available in 2015. If Bruce Peninsula National Park is permitted to operate longer into their shoulder seasons or year round, infrastructure that is already in place and meant to be used year round (such as the yurts) will be better utilized. Staff would also have the opportunity to engage in more preventative maintenance and make improvements to run down infrastructure. This would help to keep existing infrastructure updated and make the park more welcoming to visitors.

3.1.1.1. Examples of Successful Winter Programs

There are many provincial and national parks that have successful winter and off-peak operations. Below are some examples from across Canada that exemplify successful winter programs offered by parks.

Pinery Provincial Park has 38 kilometres of winter trails and advertises weekend visitation and yurts at the campground (Ontario Parks, 2014; Appendix IV). Trail hours run from 8am to dusk and are regularly groomed by park staff (Ontario Parks, 2014). The Pinery's campground is open year round but operates on fewer staff during the winter months because of work shortage and to reduce costs (Ontario Parks, 2014). Visitation at Pinery exceeds 543,000 visitors and is high because of its beautiful winter scenery, accessible trails, proximity to urban centres, and offer of accommodation (Ontario Parks, 2013). No specific numbers for winter programs alone have been extrapolated for Pinery by Ontario Parks to date.

Arrowhead Provincial Park also offers an exceptional winter experience at a protected area. Arrowhead maintains 33 kilometres of cross-country ski trails, 8 kilometres of snowshoe and hiking trails, a skating rink and a 1.1 km skating trail, and a tubing hill throughout all winter months (Ontario Parks, 2014a). Arrowhead receives approximately 132,000 visitors every year, most of these occurring in winter to enjoy the winter programming (Ontario Parks, 2013). Arrowhead does not rely solely on Ontario Parks for funding and visitation. They also rely on partners such as the Arrowhead Nordic Ski Club. This club helps

advertise the winter activities, brings people to the park, conducts adult and children ski programs, and hosts races and events at Arrowhead (ANSC, 2014). The partnership between the provincial park and the local ski group would be a great example for Bruce Peninsula National Park to follow with regards to extending their operating season.

Banff National Park has a multitude of opportunities for winter activities. This park has almost 85kilometres of track set cross-country ski trails, 8 kilometres of snowshoeing trails, plus 21 kilometres of winter walking trails (Parks Canada, 2014b). These trails range from easy to difficult and span distances of 1 km to 19km in length (Parks Canada, 2014b). Although it is hard to compare an area that has the bulk of its visitation in the winter such as Banff to BPNP that currently doesn't offer winter services, BPNP could learn from the successes and issues experienced at Banff. Also, it is understood that Tobermory is somewhat challenging to access in the winter. However, if a niche opportunity was grown slowly and supported at BPNP, some niche recreationists could still benefit from access to Bruce Peninsula National Park. As stated in the Banff Ski Area Management Guidelines plan, the agency partners with ski recreation areas and local communities to support and promote winter programs of this nature. "Ski areas will contribute to a unique, memorable national park experience… [and] promote public appreciation and understanding of the heritage values of the park and world heritage site and local conservation initiatives" (Parks Canada, 2014c). For all of these reasons and more, BPNP should allow winter activities such as snowshoeing and cross-country skiing at the park and grow the program gradually with necessary infrastructure and trail maintenance.

These three examples of protected areas offering well established winter programs are only a few of many reasons that a winter program- developed gradually could increase visitation, improve the visitor experience, and keep staff employed for an extended period at Bruce Peninsula National Park. With the existing yurts, Bruce Peninsula National Park could provide an amazing opportunity for visitors to experience the escarpment under ice, and partner with local interest groups such as the snowmobilers association. Although there are obvious hurdles to building a program like this from scratch, including challenging transportation routes, and building a program in an area with low local populations, an offer like this could still be successful if marketed and managed towards the correct audiences similar to how BPNP implemented bouldering at Halfway Log Dump, as discussed later in this thesis. Promoting visitation in shoulder seasons and winter months may help regain or retain traditionalist visitor types not visiting the park during peak seasons due to feelings of crowding.

3.1.2. Seasonal Activities

Bruce Peninsula National Park has many seasonal festivals and events that bring specific user groups to the park during shoulder seasons. The Orchid Festival in June and the Fall Bruce Trail Festival in October are two events that draw naturalists, photographers and birders to the area. Targeting user groups such as snowshoers, cross country skiers and birders during the spring migration in the form of "The Big Day" on Victoria Day should be considered by BPNP. Separate interest groups could easily run these activities and festivals instead of having the park put them on. However, the park would be able to provide interpretive hikes and activities to offer a new experience to traditional visitors or locals that wish to learn more about the area. Offering this new service would allow the park to improve the visit quality and may increase visitation during shoulder seasons (Parks Canada, May 13, 2014). The Parks Canada annual pass is also a tool that could be used more effectively at an agency level. Analysing what type of visitor is buying an annual pass, when they are purchasing it, and when they are using the passes may shed light on the return customer base at the park and whether these return customers would be interested in curbing their visiting habits to the shoulder seasons (LaCroix, 2014, pers. comm). A lack of advertising, price, and the limitation of an annual pass being valid in only one park may affect the interest of some visitors to purchase these passes (LaCroix, 2014, pers. comm). A multi-year pass which could limit the visitor to 5 visits per year, over 3 years for the same price as an annual pass may be more appealing to visitors or cottagers who only visit

the park a few times a year, and like to plan their vacations a year or two ahead of time (LaCroix, 2014, pers. comm). The multi-year pass option may bring in more revenue for the park, and may encourage the visitor to visit more frequently, or during the shoulder seasons. A study questioning whether visitors who purchase a discovery pass would use this to visit during shoulder seasons when there are no facilities open to process payment may be an interesting endeavour.

3.1.3. Utilizing Infrastructure

Bruce Peninsula National Park has the advantage of having existing infrastructure that could be used in shoulder seasons such as yurts and snowmobile trails. Utilizing existing infrastructure means the park doesn't have the financial burden of building new facilities. The park could open the yurts in the spring and fall to start, and build up to winter operations after a few seasons. The yurts were built on a special donation within the past 5 years and were implemented, "in response to trends in outdoor travel related to demographic changes in Canada… As the Canadian population ages, many of our visitors are seeking a more comfortable alternative to traditional tent camping. First time visitors are interested in the convenience and comfort of yurts for their introductory experience to a national park" (Meleg, 2011). The yurts and the snowmobile trails are already heavily used, so offering the yurts in the winter may cater to snowmobilers and visitors not able to stay in them during the peak season.

Thorncrest Outfitters put on snowshoe romps and cross country ski courses during winter months from of Southampton, but with the support from the park they could expand these opportunities to their location in Tobermory as well as within Bruce Peninsula National Park. This type of opportunity may have to be grown over multiple seasons to advertise and determine whether it is economically feasible for the company, however, the potential is there to team up with the park to provide an excellent winter experience. Having these activities as a seasonal draw to the tip of the Peninsula would enable the park to offer additional services and would expand the use of the trails to year-round status.

Utilizing existing programs and interpretive activities throughout the shoulder seasons would improve the visitor experience and allow for a greater number of programs offered by the park. Birding, fall colours, and early spring botany excursions could all take place during the shoulder seasons. Advertising these types of regular interpretive activities may help increase seasonal visitation at the park. More focus, advertising, and funding should go towards interpretive programs because park visitors are interested and keen to learn, but the schedules of interpretive hikes and events may not work well with the visitor's schedule (LaCroix, 2014, pers. comm). An interpretive desk at the Visitor Centre may be helpful to impart information and answer questions, with quick info sessions that are 5 minutes long that happen every half hour or so that people can interact with staff (LaCroix, 2014, pers. comm). Visitors may not want to reschedule their evenings to go on owl prowls; they want to learn about it while they are there '*now*' (LaCroix, 2014, pers. comm).

3.2. Activity Redistribution

There are many activities that can be done within Bruce Peninsula National Park but very few are advertised or acted upon in great capacity. Like most National Parks, hiking and swimming are the most popular activities at Bruce Peninsula National Park. Activities that have been deemed appropriate but are unsupported at the park include art activities, backpacking, bicycling, bird watching, bus tours, rock climbing, cross-country skiing, dog-sledding, picnicking, and pleasure-driving (Parks Canada, 1998). Many of these activities are increasing in popularity but are not adequately advertised and are only done by naturalists, locals, or return visitors to the park. In today's rapidly changing society most national parks suffer from decreasing visitation. Some of the staff at the park believe that adapting recreational services offered by the park would help keep national parks relevant to Canadians and changing demographics (Meleg, 2011). Activities that have been deemed appropriate and could also be supported by park documentation and infrastructure include kayaking, canoeing, snowshoeing, and picnicking (Parks Canada,

1998). Some of these activities are gaining popularity, but are also not being advertised in any magnitude by the park, which is a missed opportunity and disconnects local recreation businesses such as tour and rental companies, recreation groups, and the park. If more of these activities were supported and advertised, more people would be aware of the diverse recreation possibilities at the park and not think their visit restricted to hiking, sightseeing at the Grotto, and climbing the tower at the Visitor's Centre.

3.2.1. Bouldering

One activity that is now supported at Bruce Peninsula National Park is bouldering. Bouldering was chosen by the Parks Canada Agency as the first nationally accepted activity to assess the feasibility of new activities in Canadian national parks (OAC, 2011). Bouldering is a form rock climbing on large boulders and is usually done without harness or ropes. Bouldering is a medium impact activity because there is no permanent infrastructure installed; climbers bring their own equipment. Bouldering is a niche activity done by extreme recreationists and is gaining popularity worldwide. There are designated locations and protocols in place to protect the landscape within the park, where climbing rocks without vegetation are permitted, and those with vegetation are not permitted (Parks Canada, 2009; OAC, 2011; Fig.6). The process of approving bouldering in the park was quickly pushed through because recreationists' were bouldering on parklands but the activity was neither supported nor approved by the park (Haselmayer, 2014, pers. comm). Ecologists conducted an environmental assessment to determine impacts and sensitivities and to help protect the ecological integrity of the area by removing moss and lichens from the rocks. Although this activity is now supported in the park, there are some ground rules participants must follow:

"No trace bouldering means all materials are packed out and also no chalk is left on the rocks. Also since all plants and natural items are protected in the park, it is important to be careful and not damage or remove these items. The rules and regulations of the Bruce Peninsula National Park are dictated by many parties to ensure sustainable tourism, keeping the park as natural as possible while achieving modern activities to attract visitors" (Noordegraf et al., 2011, p.19).

An increase in bouldering could mean creating partnerships with climbing clubs to bring climbers to the park on regular trips to increase park visitation. The footprint of the bouldering area was designed large enough to cater to many climbers including clubs (Haselmayer, 2014, pers. comm). Bouldering is a great example where recreationists had a demand for an activity, partnered up with the park to come to a mutually beneficial agreement to use the park for their activity, while also following best practices to protect the sensitive species and ecosystems in the area. Proactive management like this could be implemented for other activities that are currently under-supported to a great degree by the park, to reduce damages to ecological integrity while promoting use and appreciation of the area.

Figure 6 - Illustrations of Sensitive Bouldering Areas at Halfway Log Dump (OAC, 2011)

3.2.2. Kayaking

Kayaking has long been an activity done within Bruce Peninsula National Park on inland lakes, and in FFNMP on Lake Huron and Georgian Bay. With the success of the kayak and canoe rental business in Tobermory, day use on the water is now seeing high use especially in the wireless bay area just outside the Tobermory harbour. Kayaking is a great activity to do at Bruce Peninsula National Park because of its low-impact on ecosystems and accessibility to many demographics (Curry, 1998; Thorncrest Outfitters, 2014). Some Provincial Parks in Ontario have embraced kayakers and designed 'water trails' to cater to those wishing to explore the area for a few hours, or a few days, and have designated these trails by skill levels to prevent accidents:

"Water trails are one means of managing paddlers to inform them of risk, minimize user conflict, prevent environmental degradation and ensure park policies are followed. In addition, water trails provide a self-guided interpretive opportunity for individuals to experience the natural and cultural features of an area. This learning experience can be enhanced through published materials such as guidebooks and brochures. As the numbers of sea kayakers are expected to continue to increase, [BPNP & FFNMP] staff should prepare a management strategy which allows the greatest possible degree of resource protection, environmental education and enjoyment..." (Curry, 1998, p.ii).

Thorncrest Outfitters in Tobermory provide descriptions of water trails on their website for sea kayak circumnavigations and coastline trips (Thorncrest Outfitters, 2014). Over the past 15 years, the park has seen the popularity of kayaking increase (Currie & Uunila, 1999, p.48). In order to be proactive towards meeting agency goals of increasing visitation, management must act to support safety by creating a standardized route map including awareness of the unpredictability of lake waters and self-help tips (Currie & Uunila, 1999).

Kayakers have different motivations including social adventure to seeking solitude, and much like hiking; users with differing levels of experience seek different levels of difficulty and duration. Beginner kayakers may be content in large groups or guided tours, but as they become more skilled, they may seek more solitude or difficulty (Currie & Uunila, 1999). Bruce Peninsula National Park has excellent potential for creating a water trail network due to its various environments, ranging from safe secluded inland lakes to treacherous island hopping trips. The park has a network of users including patrons to Thorncrest Outfitters, willing to use the water trails already in place. Requiring a park pass when using water trails would help legitimize the activity in the park, increase user safety by standardizing route difficulties, and increase entrance fees paid to the park.

"A water trail which extends beyond park boundaries would be a true regional planning initiative. Such an initiative would incorporate resource management and increase the tourism potential of the area... water trails can help minimize visitor impacts, through clearly identified sites, policies and regulations for users... with proper management and interpretation, this marine experience can result in a high quality recreation and education opportunity, in addition to promoting environmental stewardship" (Currie & Uunila, 1999, p.48 &50).

A water trail through FFNMP could be established with support from the Parks Canada Agency, local rental companies, and paddling clubs. This would increase the governance structure and provide a product that would benefit all parties. There is compatibility between the amount of kayakers using the park and Bruce Peninsula National Park and FFNMP's zoning and planning policies (Currie & Uunila, 1999). Since the rental provider has experience with navigating trips in the park, FFNMP and the rental company could team up to create a document showing the established water trails, and this document could be provided by the Parks Canada Agency. Literature on the subject states explicitly that visitors prefer to have

maps and brochures for activities specifically and most importantly when entering backcountry or interior areas (Manning, 2011a). Bruce Peninsula National Park has a multitude of access points for kayakers and canoers but there is no document visitors can conveniently use to discover these areas (Currie & Uunila, 1999). "A clear indication of access points for kayakers, in terms of a brochure or guidebook, would provide consistent information to all paddlers and avoid the possible accidental use of private property to access the water" (Currie & Uunila, 1999, p.42). Access within the national park for novices could be gained through Singing Sands, Little Cove, Emmett Lake and Burnt Point. Access points outside of the national park include Dunks Bay, Little Tub Harbour, Cabot head, Johnston's Harbour, Pine Tree Harbour, and the Big Tub Lighthouse (Currie & Uunila, 1999). For the more experienced paddler, Cove Island is a popular location with many coves and inlets to seek shelter in and explore (Currie & Uunila, 1999). For these more experienced paddlers, an agreement should be drafted for a picnic area and washroom facility for those who wish to have a shore lunch on the island.

Park management must remember that offering kayaking to visitors, especially amateurs will increase the need for first response preparedness. Preventative action towards keeping recreationists informed of the risks is a key consideration (Currie & Uunila, 1999, p.48). Much like the difficulty ratings in place for the park trails, water trails could be classified by difficulty and users could self-diagnose their abilities to reduce accidents and keep visitors in an environment that promotes an enjoyable visitor experience (Currie & Uunila, 1999; Fig. 7). There are safety issues surrounding unaccompanied novice kayakers who usually end up floundering in Wireless Bay and requiring assistance from the Coast Guard. The Coast Guard now have strong opinions on training beginner kayakers before they are able to rent a kayak and embark on Georgian Bay (LaCroix, 2014, pers. comm). Although the waters of Georgian Bay are rough - not ideal for an amateur, there are many inland lakes not as well known, and not as easily accessible that are great locations for beginners and experts alike. Emmett Lake, Cyprus Lake, Cameron Lake, and Miller Lake are all safe areas that beginner kayakers could learn and leave the island circumnavigations to the more experienced boaters. Provision of difficulty graded water trails will help users self-diagnose their abilities and help limit the number of unsafe situations they expose themselves to.

Figure 7 - Group of Kayakers in Wireless Bay (LaCroix, H. 2014)

Thorncrest Outfitters offers guided kayaking tours, including kayaking and canoeing courses for all ages. They are the primary kayak and canoe rental-company in Tobermory, and have been open since 2003. Their location in Tobermory offers kayak rentals and a shuttle service to deliver kayaks to locations across the peninsula (Thorncrest Outfitters, 2014). Although this service is available to all, most intermediate to expert kayakers own their own kayak and do not go to outfitters to find information on new paddling routes or events (Currie & Uunila, 1999). This makes availability of up-to-date water trail maps and information necessary throughout the park. Forming a stronger partnership with Thorncrest Outfitters would also give the park a wider reaching governance structure, would not impact the tightly restrained budgets to which the park must adhere, and would bring more visitors to the area during the off season.

3.2.3. Snowmobiling

Snowmobiling is a prominent activity on the Bruce Peninsula and is supported with groomed trails and clubs. Snowmobile trails span the peninsula and run through the park which is unconventional

compared to most national parks. The existing snowmobile trail spans the entire length of the park including the Fathom Five land base, and has been in existence since before the park's conception (Tobermory Snowmobile Club, 2014). Parks Canada and the Tobermory Snowmobile Club have had a partnership in the past, which actively managed the impacts of snowmobiles such as soil compaction and animal movement (Wilkinson, 2000). The Tobermory Snowmobile Club promotes nature appreciation of the area giving riders the opportunity to appreciate many scenic lookouts and areas in the park, use restroom facilities and camp (Tobermory Snowmobile Club, 2014). To use the snowmobile trails, you must purchase a trail permit ranging from $75 for 3 days, to $260 for a seasonal pass (Tobermory Snowmobile Club, 2014). A partnership focused on increasing the off-season use of the park could lead to more park visitation during the off-season and could attract business for the yurts at Cyprus Lake. Charging park entrance fees to snowmobilers entering parklands would help supplement Bruce Peninsula National Park's maintenance costs, including keeping gates in working order and minor amenities such as washroom facilities. Although some recreationists may object to the added cost of the $11.70 daily park entrance fee, the park must be strict in its application regarding the use of parklands for recreation. Strengthening partnerships with the Tobermory Snowmobile Club and bringing more visitors to the park during the off-season could help the park meet its agency driven targets of increasing visitation without increasing crowding during the peak season. Fostering the winter culture and gaining popularity as a winter destination could help the park increase revenue and enable staff to remain employed in a part time capacity during the winter.

3.2.4. Birding

Birding is a popular activity in North America and is growing in popularity, mainly in more mature generations, but is beginning to target a younger audience in Ontario as well (Maple et al., 2009). Bird watching is an inclusive activity because beginners and experts alike can access the same areas and birding can be done in a multitude of areas and geographic terrains. Birding is one of the fastest growing outdoor activities in Canada, which makes it a developing niche market that the park could support and target for visitation during shoulder seasons (Parks Canada, 2010b). A beginner birder is not always a younger person, the same age group can possess various levels of expertise, which is another way birding demonstrates being a non-age-discriminatory activity. It is no secret that the Bruce Peninsula is an excellent area for birders to see the spring migrations of hundreds of bird species. Although there is a lot of competition for birders from other birding hot spots including Point Pelee National Park (Maple et al., 2009), the Bruce Peninsula could become a great birding location for birders of demographics that are unable to travel as far, or wish to see birds from their local area. Although the potential is there, the park does not adequately promote certain areas or experiences to birders, especially beginners. Management has decided that marketing birding in the park will include,

- *"Branding the Bruce Peninsula as a birding region;*
- *Developing a website and social media with birding highlights and referral to sources of detailed information;*
- *Links from tourism websites such as relevant Ontario birding websites;*
- *Regular postings on Ontbirds listserv of good sightings;*
- *Editorial media coverage;*
- *Printed materials"* (Parks Canada, 2007a, p.2).

Along with other activities supported by national parks, amateur and expert birders new to the area would need guide materials such as maps, birder's guides, signage, tours and festivals to support and draw people to the area, specifically during the spring months (Parks Canada, 2007a). Programs offered for birding at Point Pelee National Park are conducted by park staff and volunteers of birding associations (Maple et al., 2009). Partnerships could be built between Bruce Peninsula National Park and birding

associations to raise awareness of this activity within the Bruce and thus bring more birders to the area during the spring migration. Areas of the park that would cater well to birders include Wyonch Field and Little Cove, Warder Ranch, Johnstone's Fields, and Singing Sands. Three of these areas are currently tertiary visitor nodes and could therefore stand greater visitation numbers during spring seasons. Considerations for birding within the park have been outlined and identified. These include; caution about species at risk, partnerships, respecting private property and developing a series of birding products to support the Ontario birding strategy (Parks Canada, 2007a). Promoting birding would increase visitation during the spring shoulder season, increase local business, and provide an amazing recreational opportunity for people of all ages and levels of fitness. Birders visiting in the spring would be great candidates to use the yurts – especially for the older generation of birders who wish to stay in a bed versus a tent or hotel. This would enable visitors to use the park for a new purpose. Increasing visitation during the spring months could potentially offset some of the traditionalist visitors from the summer, help the park meet agency targets to increase visitation, and could recapture a demographic that may not be visiting the park as much as in past operating seasons.

3.2.5. Biking

Mountain or touring biking is currently not supported by Bruce Peninsula National Park or most other national parks in Canada. Touring bicycle trails are in increasing demand by many visitors to the park but they are currently asked to take the activity elsewhere. Figure 8, retrieved from IMBA Canada, illustrates how mountain biking compares to hiking, backpacking and birding in popularity in North America. This graph shows paved road biking being almost equal in popularity to hiking, garnering the assumption that not catering to this recreation type is a missed opportunity for BPNP.

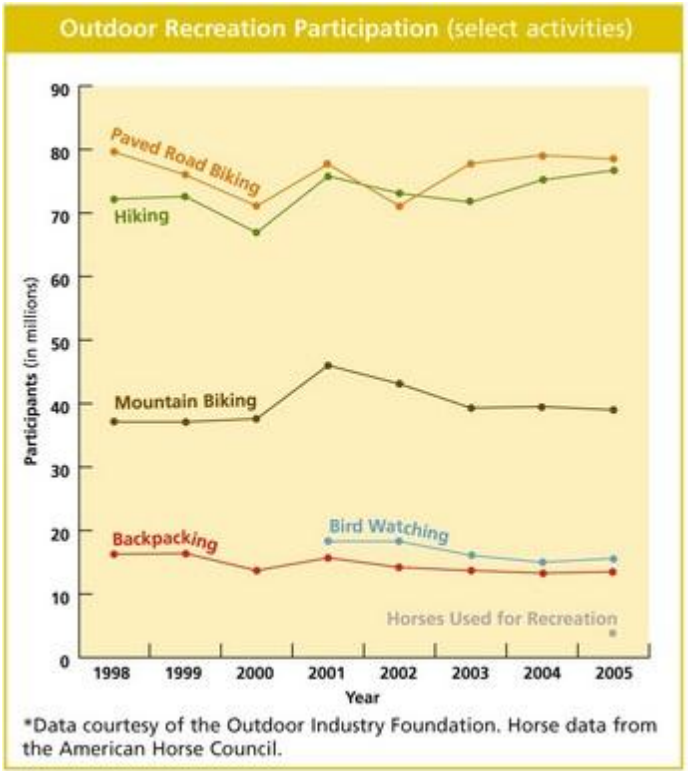


Figure 8 - Recreation Popularities in North America 1998-2005 (IMBA, 2014)

Biking is typically unsupported in protected areas because of the history of potential conflicts with hikers and the reputation for having more impacts on trail systems (IMBA Canada, 2014). Although past experience with biking trails has led to introduction of invasive species, erosion, and compacting, new sustainable bike trail design formulated by the International Mountain Biking Association could be implemented on trails that are less heavily used by foot traffic and more rustically maintenanced (IMBA Canada, 2014). Trails that have already had significant disturbance such as the historical trails at Johnstone's Fields could be designed not as mountain biking trails but as touring trails for family groups and gentle experiences. For example, allowing biking down the main trail to Indian Head Cove is unrealistic but multi-use trails that could cater to hikers and bikers such as the proposed trails at Johnstone's Fields would be a more realistic endeavor. Since there has been a vocalized desire by visitors for mountain biking and touring biking trails at Bruce Peninsula National Park, some tips to develop mountain bike trails are provided by IMBA Canada (2014):

- *"Create superior detailed trail maps including elevations, distances, descriptions of trail features, and ride difficulty.*
- *Include historical and cultural influences in the trail design for the rider to appreciate.*
- *Use local knowledge including people's opinions that already use the area for biking, as to what would be the best route, with the best features.*
- *Create a series of trails that cater to a variety of abilities, these could include wide paths to single track runs, which will help cater to a multitude of skill levels*
- *Produce clear and concise trail signs to ensure riders know if they must share the trail, to illustrate which trail they are on, and make sure these signs coincide with the maps".*

These five tips, along with Parks Canada's rigorous trail design standards would help develop an exquisite touring biking opportunity that would allow guests to experience the park in a different way. More about the possibilities of bike trails designed for Johnstone's Fields will be covered in the area planning section of this thesis. Although the Johnstone's Fields area would be catering more towards gentle riding, visitors looking for a challenging mountain biking experience could be redirected as is currently done to the Lindsay Tract Trails just north Miller Lake.

3.3. Spatial Redistribution

Most national parks in North America understand that concentrating visitor distribution to a few primary visitor nodes can protect the rest of the park area from impacts from tourism. However, this method of management is notorious for causing social pressures such as overcrowding (Goodwin et al., 1998). In related literature, an uneven distribution throughout visitor nodes is described as undesirable and creates a volatile system when visitor use exceeds capacities in fewer areas (Hendee et al., 1978). These authors supporting spatial redistribution claim that there are no hard-and-fast rules for optimum distribution, but that redistribution will help even out extremes in visitor nodes while still catering to variations of solitude to ensure visitor satisfaction remains high (Hendee et al., 1978). Therefore, new adaptive management techniques, and understanding the importance of primary, secondary, and tertiary visitor node levels may enable parks to continue to grow their visitor numbers, while still controlling the areas visitors are diverted to during peak times (Goodwin et al., 1998). Improving visitor awareness and increasing the infrastructure of secondary and tertiary nodes has proven in other case studies to enhance the visitor's satisfaction and protect the environment simultaneously (Goodwin et al., 1998). Spatial redistribution is the act of moving visitors to different areas of the park that are not currently 'main attractions'. Visitor monitoring and most importantly, distribution, are the most essential forms of measurement in park management (Monz & Leung, 2006). Two types of spatial redistribution have been outlined in the literature; intra-site displacement, where people move to different areas within the park; and inter-site displacement, where people leave the park in search of a similar experience elsewhere (Gramann, 2002, p.1). Intra-site displacement is preferred so visitation is not lost. However, reasons for inter-site displacement should be examined in future studies to determine why visitors may not be returning to Bruce Peninsula National Park. Bruce Peninsula National Park has adopted spatial redistribution tactics including the promotion of backcountry camping and educational site points geared towards visitors seeking solitude or more 'adventure recreation' (LaCroix, pers. comm). Although efforts in this area have been made, advertisement has been sparse and mostly unreliable. Management at the park level could use its visitor services team to promote under-utilized areas such as the Crane River picnic area, Emmett Lake picnic area, and Cyprus Lake Road restoration plot.

Although spatial redistribution seems like an easy alternative, a report from 1988 noted that the main nucleus of visitation in the park would be restricted to the developed area of Cyprus Lake. The Cyprus Lake campground area was planned to remain the primary visitor node in the park with the Georgian Bay Trail acting as the main artery towards the shoreline from the campground (Parks Canada Agency, 1988,

p.4). The remaining network of trails would function for other recreation opportunities including interpretation, solitude seeking, and more difficult hiking routes (Parks Canada, 1988, p.4). The remaining trail system also hopes to,

"Provide a route in the park which allows the visitor to experience the park's setting, atmosphere, character, moods, and views in a natural way; to provide the recreational challenge of less facility developed and/or longer routes for those who are physically capable; to provide a convenient, evident and compatible route for the Bruce Trail from the north to the south where it crosses park lands" (Parks Canada, 1988, p.4-7).

Other problems identified with trail development in the park include keeping up with trail maintenance, installing adequate signage and interpretation, reducing the number of unofficial trails, and building enough viewpoints to experience all educational aspects of the park (Parks Canada, 1988, p.8).

In a draft management plan of the Death Valley National Monument in the USA, similar limitations for management to expand primary visitor nodes were occurring, but were managed in a way that benefitted visitors without putting more strain on park resources. Figure 9 is a screen capture from the 1988 Draft General Management Plan and Draft Environmental Impact Statement of the Death Valley National Monument and clearly articulates how the National Park Service decided to combat the issue of crowding at the monument.

IMPACT ON VISITOR DISTRIBUTION

Overview

The visitor experience is currently focused in the core area of the monument, basically along the major north-south roadway on the desert floor. Existing use patterns create crowding in the Furnace Creek developed area and at Scotty's Castle during certain spring and winter holiday periods. Road conditions and a lack of information in necessary places limit the numbers of visitors who explore and enjoy remote areas and resources.

Proposed Plan

Analysis. The proposed plan would retain the core visitor experience on the floor of Death Valley, but use would be distributed to points of interest throughout the monument by improving access to outlying key features and providing more information about remote areas. The diversity of roads would be retained; where feasible, roads would be maintained for a higher standard of vehicle use. This would give visitors more opportunities to see remote areas.

The proposed plan would not add new roads except for minor access roads in new or expanded developed areas. The emphasis of the proposed plan would be on ensuring that roads were maintained to the standards in park literature and maps. Approximately 180 miles of roads would be reclassified and maintenance standards revised (see table 20).

Retaining the road in Wildrose Canyon as a gravel road under the proposed plan would inconvenience repeat visitors accustomed to using this route into the monument when it was paved. Reducing the standard of the road through Wildrose Canyon would restrict or eliminate oversize vehicles from the Wildrose/Emigrant road. Emphasis of this road corridor as an interpretive corridor rather than a through-route would allow visitors to have a more leisurely and interesting experience.

Figure 9 - Screen Capture of DVNM Management Plan (p.188)

Within the overview, it is clear that management hoped to focus visitation within a core area, but since crowding impacts are occurring to the frequency of affecting visitation, the choice to increase the number of visitor nodes was made to retain visitor numbers (NPS, 1988, p.188). The clarifications that road infrastructure would be maintained and more information would be given to visitors about remote areas and would also increase the number of opportunities available at this location. Similar language to that in the overview was used in the original park management plan for BPNP, however, amendments such as the one made at Death Valley National Monument can be made to help improve visitor experience and satisfaction within the park. Yosemite National Park in the USA has also begun utilizing, "more of the parks land and distribute the guests so that they are not all condensed in a few areas. Urging the visitors to

spread out from the central attractions and venture to other areas proves to be a successful method of crowd dispersion" (Molinaro, 2010). Since conception, a management goal at BPNP has been to restrict development to areas already impacted before the park was acquired by the Parks Canada Agency. However, there are recently acquired and disturbed areas that could be used for visitor displacement during busy times or that could be developed to provide outlets for low impact, year round activities currently not supported by the park. Some activities that could be supported include kayaking, snowshoeing, cross-country skiing, wheelchair accessible trail systems, birding, and biking. Area plans that could support spatial redistribution are discussed in the next section of this thesis.

With regards to crowding as it relates to inter-site displacement, in 1998, 59% of visitors said they had no negative impacts caused by other visitors during their trip to Bruce Peninsula National Park, but 10.5% said large groups negatively affected their trip with 27% surveyed feeling very crowded (Kettle, 1998, p.87; Appendix V). This 1998 study also found that crowding was felt most at the Grotto (61%) and least at the Visitor Centre (67%). Despite 61% of visitors feeling crowded at the Grotto, they were most satisfied with their visit to this node and to Flowerpot Island among all other nodes in the park (Parks Canada, 2013, p. i). The visitors that were a part of this study suggested some management actions be taken to combat crowding including building more trails (53%); designate specific areas for activities (62%); limit group sizes (47%); limit the number of visitors (44%), and 32% suggested limiting the amount of parking available (Kettle, 1998, p.96). Some of these management actions have been fulfilled since 1998, including areas for bouldering, and building more trails. Obviously 1/3 of the visitor population feeling crowded yet having a great visitor experience does not strike panic into the minds of park managers, but more could be done to cater towards visitors with lower tolerance levels for crowding that no longer wish to visit the crowded Grotto but still want to come to the park.

Bruce Peninsula National Park has invested hundreds of thousands of dollars to rehabilitate lands they acquire to 'pre-development' conditions. The Parks Canada Agency has developed a program called Action on the Ground (AoG) to channel funding directly towards projects that will restore ecological integrity to parks. Currently, there are 36 AoG projects happening across the country (Parks Canada, 2015). These actions are publically promoted to 'set the bar' for environmental stewardship (Parks Canada, 2013, p.1). For ecological restoration to be considered successful, The Parks Canada Agency has established three minimum standards including; re-establishing and maintaining natural areas, maximizing efficiencies in costs, time and resources, and fostering collaboration with partners to enhance visitor experiences and recreation opportunities (Parks Canada, 2013, p.2). Parks Canada Agency has begun promoting and conducting ecological restoration within the past 5 years using special funding projects such as the Action on the Ground projects (Parks Canada, 2015).

The Parks Canada Agency believes restoration activities should not only be ecologically effective, but also provide socio-culturally and educationally engaging facets to visitors (Parks Canada, 2008). Although there are many benefits to ecological restoration when done correctly, the debate over novel ecosystem restoration is contentious at Bruce Peninsula National Park in large part because of the Peninsula's history of logging and the fire that wiped out most of the trees on the Peninsula. Novel ecosystems are places that have been altered from their original composition due to anthropogenic efforts including land conversion and species invasions (Hallett et al., 2013, p.17). There has been some debate as to what stage they should be restoring to pre-logging conditions, pre-fire conditions, or just to how it was before the most recent development. On newly acquired lands within the park consideration is placed on whether the current novel ecosystems should be considered preferable due to previous impacts on the landscape, "either because they provide functions that would be lost in the attempt at traditional restoration or because emergent assemblages are better able to respond to on-going environmental change" (Hallett et al., 2013, p. 25). Aside from all of these debates on restoration tactics, this study believes there are 8 areas that have suffered anthropocentric disturbances that could be 'developed' while

being restored to improve the ecological integrity of the area, reduce fragmentation of the peninsula's forests, and provide new areas for visitors to diversify their experience at Bruce Peninsula National Park.

Chapter 4 – Area Planning

A visitors' experience does not start at the destination. The visitor goes through a psychological cycle that includes wishing, planning, travelling, arriving, visiting, departing, and remembering their trip (CTC, n.d). The experience cycle repeats from here, and a quality visitor experience must be present through all steps. (Parks Canada, 2012a). Determining what type of visitor the park attracts is a very important factor in park management and influences what services the park provides.

Visitors have diverse needs and wants when it comes to how they recreate, no different than tastes in film or music. This diversity is linked to visitor satisfaction and plays a large role in the visitor's sensitivity to crowding, the services and facilities offered at the park, and the variance in difficulty ratings of facilities (Manning 2011a). "Research points out that not only are there differences in taste among people, but that people's tastes change over time as well" (Manning, 2011a, p.16). Visitor demographic and Canadian age structure are changing, meaning that providing a diverse set of areas and opportunities for recreation would play to a park's best interest to capture the largest amount of potential customers as possible.

Due to the Park Canada Agency's desire for increased visitation to ensure adequate fiscal margins, BPNP needs to continue to provide the park for current and increasing visitor numbers. As discussed throughout this thesis, the areas currently used by visitors quickly reach capacity during peak season months, thereby causing visitors to overflow from primary areas into secondary and tertiary visitor nodes. This section of area planning's purpose is to look at the potential for these areas using the researcher's participatory action research during her time employed at the park, and using other studies conducted on these areas to determine best options for the 'development' of these areas to suit current and future levels of visitation and the needs of these visitors.

The 1998 Park Management Plan for Bruce Peninsula National Park explicitly states that the trails and campground at Cyprus Lake, including a buffer zone, would be the primary visitor node and withstand the greatest density of visitors and infrastructure; no other area in the park would be developed to that intensity (Parks Canada, 1998; Kettle, 1998). Although this area is primary, there are other sites at the park that are currently serving or could become secondary and tertiary visitor nodes to cater to different recreation types, fewer visitors, and be used at different times of year. The 1998 Park Management Plan also specified interest in establishing a variety of new day-hiking trails, including more shoreline access and an expansion of the spring and autumn use of park property for educational use and services (Parks Canada, 1998). The 1998 Park Management Plan also stated that a strong objective of management was to supplement the long rugged trails currently in place with, very short trails along Highway 6 around interesting features, and options for day users including, "a range of short loop trails that provide a variety of experiences and are suitable for visitors with a wide range of physical ability" (Parks Canada, 1998). None of these trails have been developed in BPNP to date, excluding the series of trails built on the Fathom Five land base adjacent to the visitor centre. Engaging new areas of the park would help management diversify their recreation profile allowing opportunity for recreationists currently shunned from primary nodes at BPNP such as kayakers, boulderers, and bikers. Although some types of recreation can be considered 'a fad', managers must be diligent in recognizing a great opportunity to provide a recreation destination that isn't offered in the park, but also in the surrounding area (Manning, 2011a). Not all recreation types can be satiated in one park, but having a diverse portfolio of opportunities that highlight the unique attributes of the park can play to management's advantage (Manning, 2011a).

In 2013, the VIP indicated that visitors felt the park should implement strategies including better infrastructure to manage congestion on roads and trails during peak season (Parks Canada, 2013b). These issues are recognized and echoed by Bruce Peninsula National Park as important infrastructure updates and

will be met through the development of a new front gate, entranceway, and office at Cyprus Lake, updated trails, and better signage. Although there are concerns that increased use in secondary and tertiary visitor nodes will compromise ecological integrity in these areas, these considerations must be made. Firstly, the secondary and tertiary areas included in this thesis are already being used above the use intended for these areas as directed since the last Park Management Plan. Therefore, the purpose of suggestions made for these areas are to stop threats to ecological integrity currently happening in these areas, and to prevent more damage from occurring. As outlined in the literature (Manning, 2011; Monz & Leung, 2006; Nepal, 2015, pers. comm), impacts from environmental use are curvilinear meaning that the highest impact to ecological integrity occurs during and directly after first contact and then become consistent from that point forward. This impact and its severity are typically described as inconsistent due to the type of activities done and the resilience of the ecosystem (Monz & Leung, 2006). The authors Monz & Leung (2006) suggest to this predicament that managers should prescribe a visitor monitoring protocol focusing on the use and impacts of visitors to these ecosystems and define in a plan actions for recreation ecologists and the park's visitor services team to combat negative effects. The best defence for the following area plans and 'development' of these areas is that the initial degradation to ecological integrity and the biggest impact to the virginity of these places has already occurred, and further management actions will repair and prevent further threats towards ecological integrity from happening in the future.

One specific approach to determining what recreation offers should be provided in protected areas and most specifically visitor nodes is the Recreation Opportunity Spectrum (ROS). "The ROS provides a framework for planning and managing recreation for experience objectives, aids in clarifying agency and private sector roles, and is a means of informing the recreating public what to expect from given resource settings" (Buist, 1982, p.84). This visitor management framework addresses tourism related impacts on visitor nodes and creates guidelines management can consider when determining whether an area is suitable for tourism, and what level of tourism is appropriate (Boyd & Butler, 1996). The concept of the Recreation Opportunity Spectrum recognises that solutions to ensuring ecological integrity and visitor experience are maintained are not as easily solved as determining a carrying capacity limit, but in fact the way these ecosystems and visitor nodes are managed are of equal significance as use limits (Boyd & Butler, 1996). Restricting use in an area that requires more infrastructure or more hands on monitoring and management is a 'Band-Aid' fix to a larger problem. In Boyd & Butler (1996) article, they stress that management objectives need to be formed about each specific area and the purpose it serves to visitors and park management *before* visitor numbers will mean anything tangible about use limits. The Boyd & Butler (1996) article also stresses that visitor tolerances and user satisfaction will vary with each visitor node and the purpose each serves and results found for one location may not be applicable to all. The ROS, "*uses six specific attributes to define the nature of the opportunities for recreation which are deemed possible within each setting:*

- *Access*
- *Management*
- *Social interaction with other users*
- *Non-recreational resource uses*
- *Acceptability of impacts from visitor use*
- *Acceptable levels of control of users"* (Boyd & Butler, 1996, p. 559)

These factors can be incorporated into management plans and paired with monitoring and implementation of indicators and thresholds. The ROS also classifies areas into six classes similar to the zoning method used by Parks Canada; these include: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban (Buist & Hoots, 1982). These classifications have helped park management set which opportunities would be appropriate for each area and how areas could contribute to recreation offers for each node. The ROS is very similar to that of the zoning methods

currently used by the Parks Canada Agency as seen in Figure 4, therefore, a more detailed framework is needed for BPNP to use when determining what recreation is appropriate at each visitor node. Although the ROS is a well-developed framework with a great basis, the Ecotourism Opportunity Spectrum (ECOS) may be more applicable to a National Park that mainly relies on ecotourism. The ECOS uses eight attributes important to ecotourism to define which opportunities for recreation are most appropriate for visitor nodes. These include:

- *Accessibility [including location and distance from main nodes]*
- *Relationship between ecotourism and other resource uses [i.e. forestry]*
- *Attractions in a region [i.e. natural features, historical areas]*
- *Presence of existing tourism infrastructure*
- *Level of user skill and knowledge required [i.e. climbing or kayaking experience]*
- *Level of social interaction [desired by visitors & management]*
- *Degree of acceptance of impacts and control over level of use [ecological carrying capacity]*
- *Type of management needed to ensure the viability of areas on a long-term basis* (Boyd & Butler, 1996, p. 560).

The ECOS provides a much more detailed account of factors that each area can analyse when considering recreation potentials for visitor nodes at BPNP. Analysing these factors will help ensure visitor recreation types are not in competition with one another, and behavioural norms are shared, which is known to cause increased conflict and therefore more feelings of crowding at locations (Kettle, 1998). With the framework of ECOS and all historical documentation found in the park library regarding potential for visitor nodes at BPNP, eight sites have been chosen to have their purpose analyzed, reevaluated, and redesigned to cater to more visitors and different visitor activities that occur year round. Table 5 illustrates the eight visitor nodes that have been chosen for this analysis:

Table 5 - Area Planning for Visitor Nodes at Bruce Peninsula National Park

Location	Level of Use	Visitation	Potential	Citation
Johnstone's Fields	Secondary	No data	Trails, towers, picnicking, nature appreciation	Parks Canada, 2014, p.04
Little Cove / Wyonch Field	Secondary	5,000	Kayaking, picnicking, trails, xc-skiing, birding	Parks Canada, 2013, p.25
Warder Ranch	Tertiary	1,500	Birding, picnicking, nature appreciation	Parks Canada, 2013, p.27
Cove & Flowerpot Island	Primary (FPI) Tertiary (Cove)	31,860	Boardwalks, picnicking, swimming, hiking, photography	Parks Canada, 2013, p.06
Emmett Lake & Ranger Camp	Tertiary	2,500	Niche activities (dark sky viewing, First Nations demonstrations)	Parks Canada, 2013, p.26
Indian Head Cove/ Grotto	Primary	125,000	Spelunking, nature appreciation	Parks Canada, 2013, p.22
Singing Sands	Primary	70,000	Boardwalks, picnicking, swimming, photography	Parks Canada, 2013, p.23
Halfway Log Dump	Primary	40,000	Boardwalks, picnicking, swimming, photography	Parks Canada, 2013, p.24

The 8 attributes considered in the ECOS framework will be applied and analysed for each of these visitor nodes at BPNP to attempt to determine recreation potential and ability for BPNP to meet its mandate and commitments to the Parks Canada Agency to increase visitation while providing a high quality visitor experience and preserving the landscape for future generations.

4.1. Johnstone's Fields

Johnstone's Fields is a 350-acre parcel of land located at the East end of the park. This property has ecological and cultural significance for the park, as it was the town of McVicar, a settlement established by the logging industry in the 1800's. The fields were cleared of pine and hemlock for milling and tanning purposes, and then hayed and harvested to feed the horse teams used by the foresters. The previous owners, the Johnstone family, used these fields for cattle pasture and for hay harvest. Johnstone's Fields are relatively flat and abruptly change to mixed forest (Daigle & Havinga, 1996, p.40). Bruce Peninsula National Park acquired the property to improve forest connectivity, protect and restore watershed function, and to create new habitats for mega fauna (Daigle & Havinga, 1996, p.57-59). Bruce Peninsula National Park acquired the property in 2011 and since then has met strong opposition by local residents in restoring it to its original forested state. This field runs parallel to Highway 6 and is a commonly known area to view bear, deer, and turkey. This field is also a potential breeding area for grassland birds including Bobolink and Sandhill Cranes.

After completing public consultation and an environmental assessment of the field, the park was able to secure funding through the Parks Canada Agency to begin restoration and reforestation at Johnstone's Fields starting in spring 2014 and continuing for 4 years to 2018. This area will be developed as a niche offer, with a learning and conservation basis for traditionalist visitors and for locals specifically geared towards restoration, wildlife viewing, and to enjoy the park without having to cope with crowds of people. Johnstone's Fields could give visitors that get turned away from primary nodes an opportunity to experience a different part of the park (Parks Canada, 2014, p.4). The trail system will provide an outlet for low impact activities such as hiking, biking, snowshoeing, cross country skiing, photography and birding, some of which are not currently offered in the park (Parks Canada, 2014). The Parks Canada Agency hopes that this project will be an example for future restoration projects and increase knowledge sharing within the organization.

Restoration of Johnstone's Fields is supported in the literature stating that the area should be restored as a hardwood forest because of deep soils and the rare species habitat potential (Suffling et al., 2008, p.55). In contradiction to these restoration plans, some ecologists have suggested that the restoration of these types of open fields contributes to the loss of ecological diversity because the fields provide critical habitat for certain flora and fauna that do not colonize in forest habitats; ergo, some of these fields should be left in their current state to cater to these niche species (Suffling et al., 2008, p.48). Campbell, Harpur, Haselmayer, and LaCroix (Parks Canada, 2014) chose the restoration techniques used for this project. Primary successional trees were planted in 46 'nuclei' throughout the fields and were meant to "kick-start successional processes and speed up the 'fill-in' of the field by surrounding vegetation" (Parks Canada, 2014, p.4). Follow-up plantings of secondary successional species will occur in year 3 of the project. A strong thread within the restoration plan is to involve locals and volunteers in the project to use this project as a teaching/ learning opportunity and to increase public acceptance of the project. The park has specified in the most recent management plan that volunteerism is a crucial part of governance and the park hopes to increase volunteerism by 10% by 2018 (Parks Canada, 2014, p.4). For more detailed information about the specificities of the restoration project, please refer to Parks Canada, 2014 in the reference list.

Within the action plan, a short loop trail and viewing platform were planned for the back field to allow visitors to experience different stages of the restoration process. Daigle & Havinga (1996) suggest that bridges, boardwalks, sun shelters, and rest stops would make great additions to a future trail system. Installing this infrastructure will cater to a broader visitor group with less hiking experience, people with physical disabilities, and seniors (Daigle & Havinga, 1996, p.75). Aside from the current trail planned, a longer trail system could be created through the front field and up kept throughout the winter months as a cross-country ski trail, none of which currently exist at the park. Areas of large, open, flat land are scarce within the parks boundaries, and these fields are a great opportunity for alternative recreation types.

Opening up this area for temporal redistribution could be a draw for some visitors, and would allow maintenance staff to remain employed during the winter months. Otherwise, if the park does not have interest in maintaining these trails, an external interest group of skiers could develop a partnership agreement with the park to use Johnstone's fields for cross country skiing, similar to the agreement developed with the Bruce Peninsula Snowmobiler's Association.

4.1.1. Visitor Experience Offer

The offer planned for Johnstone's Fields was designed as a tertiary visitor node, which is not expected to see levels of visitation' equivalent to that of primary sites in the park (Parks Canada, 2014). This offer is meant to improve the cultural and ecological focus of the visit, not just to increase visitor numbers. (Parks Canada, 2014). Another goal of the new park management plan is to provide visitors access to parts of the park that have historically been difficult to access on sites that highlight Parks Canada's restoration activities and cultural sites (Parks Canada, 2014, p.4). In order to meet the target of a 4,000 visitor increase in park usage through the Johnstone's Fields access point, a trail system and viewing platform will be built with the hope of highlighting Parks Canada's restoration activities and the local cultural heritage. Johnstone's Fields may become popular during shoulder seasons in the fall and winter, as it is a place to enjoy fall colours and wildlife viewing. The flat topography of this area and development of a trail system would enable the park to broaden the current hiking opportunities to one that may cater towards activities not currently supported in the park and use during shoulder seasons. Since the 1990's Parks Canada Agency has aimed to provide areas for new activities other than traditional hiking (Parks Canada, 1996, p.4). Johnstone's Fields has the potential to cater towards other recreation groups such as cyclists, photographers, snowshoers, and cross-country skiers. Individuals there to hike, botanize, photograph, ATV, and bike are already using this area. During the 2014 field season, park staff encountered many of these individuals who vocalized their appreciation of the area and desire for more trails.

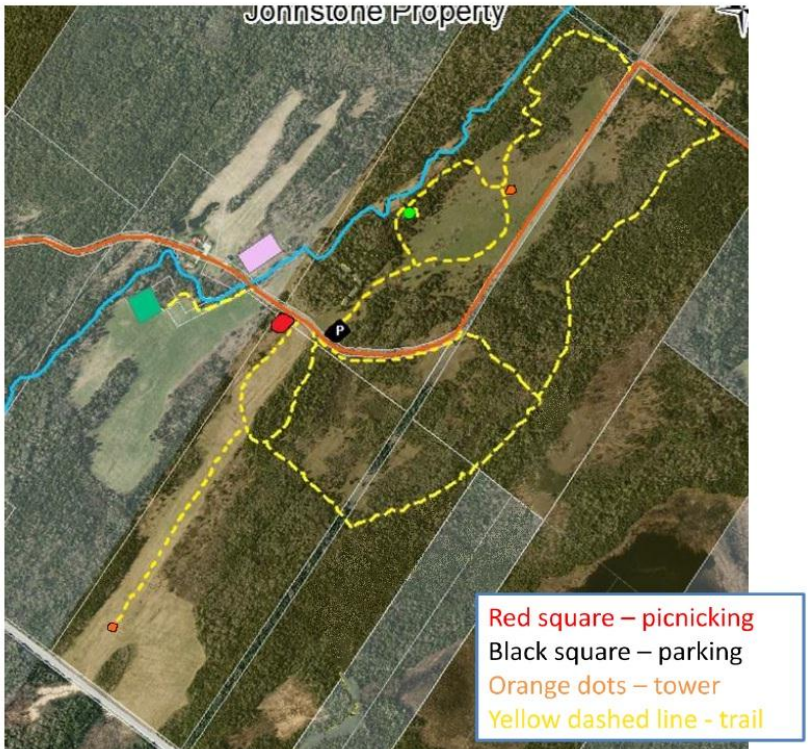


Figure 10 - Potential Trail Map of Johnstone's Fields Visitor Node (LaCroix, H. 2014) scale unknown

4.1.2. The Trail

There are three factors that interplay in a park trail system: trails, infrastructure and interpretation. Trails at Johnstone's Fields will only require a class 2 or class 5 trail designation because of the lower forecasted visitor numbers. Class 2 trails are minor trails signed and improved to accommodate foot traffic. Tread widths should be 50cm to 150cm. Class 5 trails are special purpose trails including biking, cross-country ski and accessible trails for disabled persons and range from 150cm to 300cm (Parks Canada, 1985; Figure 11). There is a wide array of old trails already cut through area that was historically used for forestry. Some of these trails can be refurbished resulting in lessened construction costs, rehabilitation time, and completion time.

In a preliminary search of the historical trail systems at Johnstone's Fields (Fig. 10), there are multiple loops and connections that weave through the forest that could link up to a new trail system. A stacked loop arrangement offers opportunities for a variety of travel distances and terrain conditions that could cater to year round use and multiple recreation types (Parks Canada, 1985). Ideally, trails designed for summer use should provide a balance of sun and shade and trails for winter use should provide protection from strong winds (Parks Canada, 1985). The majority of the existing trail runs through interior forest type which would cater to year round use. A stacked loop trail system will allow visitors to see a variety of ecosystems and would create approximately 5.5 km of trail. A multi-use trail could potentially draw a wider variety of visitors into the area. Currently, there is only one designated bike trail in the park running through the Cyprus Lake Campground. If Johnstone's Fields becomes accessible to cyclists, mainly casual family groups, a wider audience could benefit from the addition of this trail system. Many visitors come to the park with bikes, looking for somewhere safe to take their families, and since this spot has already endured heavy disturbance, this site could withstand a more intensive activity such as biking (Parks Canada, 1985, p.170).

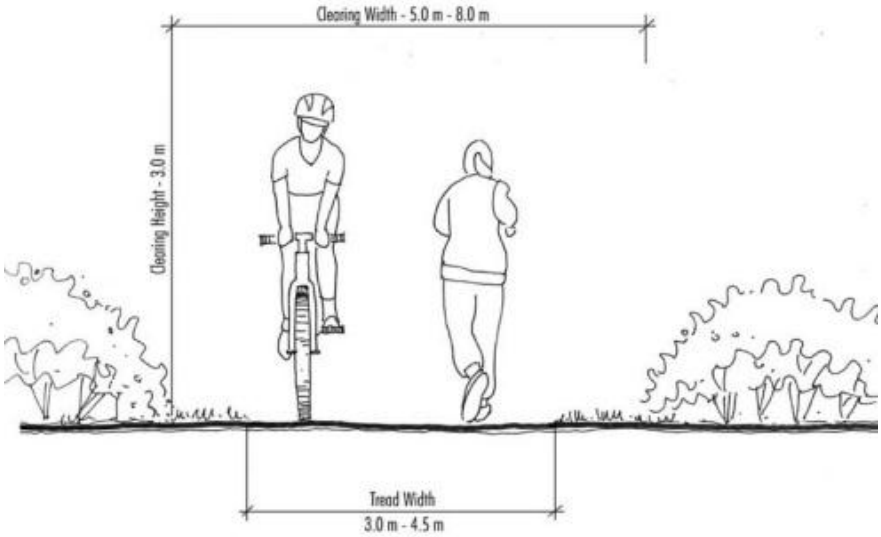


Figure 11 - Trail Width Diagram (City of Kawartha Lakes, n.d.)

Another draw that may increase visitation would be the development of towers, creating the opportunity to see bears and birds. Many families want to see mega-fauna in their natural environment, and Johnstone's Fields already has the reputation of being a bear and turkey 'hot spot'. The presence of these towers may be a compromise for locals that are worried that their wildlife sightings will be negatively impacted by the Parks' decision to reforest this area. Establishing tower sites will also allow visitors to get a better viewpoint of the restoration process and the wildlife. These sites can also be improved upon through the addition of interpretive signs, which educate visitors about wildlife in the area and the rehabilitation process.

Utilizing existing historical trails and cutting new trails through the fields will save the park time, money, and effort, and will also decrease the amount of ecological impact and disturbance (Fig. 12). The major sources of disturbance will be, "the initial clearing of the trail route, increased human contact with wildlife, soil erosion, trail-side trampling (shortcutting), and improper disposal of wastes" (Parks Canada, 1985). Locating trails where soils are already compacted will limit the amount of ecological impact at this site. Ensuring adequate litterbins at the parking lot will limit amounts of litter on the trail, and blocking off

old side trails will reduce the amount of trailside trampling along the old trail systems.

Figure 12 - Historical Trail Conditions at Johnstone's Fields (LaCroix, H. 2014)

Wood chips or crushed stone surfacing may reduce the amount of disturbance to the ecosystem. These options are attractive, quiet and comfortable to walk on, absorb water quickly, are easy to repair, and can be walked upon on top of snow while snowshoeing or skiing (Parks Canada, 1985). Although these two options are the most common, this trail system could remain bare ground, especially if it will be used for biking, which is rough on trail surfacing. The annual maintenance associated with these trails includes clearing of windfalls and removal of encroaching plant growth. Both of these operations already occur on existing park trails, and can be done relatively quickly in the shoulder seasons before the majority of visitors are present. The largest portion of this maintenance will have to occur before the trail opens due to the neglect of these trails over the past few decades.

4.1.3. Interpretation

The interpretation at this site can be 100% self-guided through maps, signs, and interpretive educational boards. Trails could be named after cultural or ecological aspects of the area and brief sections of interpretive information can be included in trail brochures or on information signs at trail access points (Parks Canada, 1985). The Johnstone's Fields restoration project will have strong roots in interpretation through the cultural history of the McVicar area, and with the ecological benefits of restoration. Both of these aspects can be translated to the visitor through trailside signage, brochures, and interpretive boards along the trail. New forms advertisement may be incorporated at these sites including picture pedestals for social media created by visitors.

4.1.4. Infrastructure

Necessary infrastructure required at any trailhead includes; parking, washroom facilities, picnic opportunities, litterbins, and benches. A connection trail through the Johnstone's private land to the parking area at Crane Lake could minimize development of the area. However, this would require agreement on the landowners' part and additional trail blazing through privately owned forest. Washroom facilities could be small, understated, and located off of the parking lot to minimize disturbance and to give ease of access for cleaning. A picnic area should also be provided to day users and could be placed where a picnic table currently exists. This would provide an area for visitors to relax and overlook the field. Benches should be provided. The trails at Johnstone's are low in difficulty for the most part, making one bench per every 500 meters up to every 1000 meters sufficient. If this trail system can be linked with the Crane River area, picnic areas and parking may not be necessary on the property, and the Crane Lake picnic area can become the "gateway to the park". As discussed earlier, this largely depends on purchasing the Crane Lake area, and creating an MOU with the Johnstone's.

4.1.5 Conclusions for Johnstone's Fields

Johnstone's Fields has great potential as a multi-use area, and this may be the only way for this area to become popular. Table 6 summarizes the goals and actions that can be applied within this area. These suggestions can be applied within existing development parameters and have been designed to retain the ecological integrity of the area while also providing opportunity for a great visitor experience.

Table 6 - Goals & Management Actions for Johnstone's Fields (Parks Canada, 2014a)

Park Management Goals	Actions
1. Visitor Experience Offer	- Provide an offer surrounding Parks Canada's restoration efforts and the cultural heritage of the logging industry on the Peninsula. - Increase Park visitor capacity by 4000 people per year. - Install self-guided interpretation including interpretive boards, displays and signage.
2. Infrastructure	- Build a multi-use trail that can be used in shoulder seasons and for many different recreation types including birding, biking, and mega fauna viewing - Use existing trails to reduce impact and footprint. - Parking and washroom facilities can be installed in areas with previous disturbance to reduce intrusion on interior forest or restored areas.
3. ECOS Implications	- Accessibility: Medium to high, catering to multi-use users. - Relationship to other uses: Low, only used for recreation. - Attractions: Wildlife viewing, cold water stream, restoration, and historical education, picnicking, biking. - Presence of existing tourism infrastructure: Medium, will need to update trails and basic amenities such as picnic areas and parking. Will require a new comfort station. - Level of user skill required: Low, trail maps will be needed and hiking skill will be low due to highly developed trail system. Addition of interpretive panels will assist in gaining knowledge and navigation. - Level of social interaction: Low to medium as a secondary node, depending on time of year and time of day. - Degree of acceptance of impacts: High tolerance for use levels, area already disturbed and undergoing restoration. - Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

Infrastructure can be designed using a sustainable methodology that reduces erosion, trail maintenance demands and maintenance costs due to re-surfacing. New infrastructure for parking, picnicking and washroom facilities could be installed in areas that will have minimal impact and are already being used by park staff for these purposes. Johnstone's Fields has amazing potential to become a popular destination for recreation activities that are not currently provided by the primary visitor nodes at Bruce Peninsula National Park.

4.2. Wyonch Field & Little Cove

Wyonch Field and Little Cove are close in proximity to one another and could be combined and linked through the Bruce Trail to provide one slightly larger visitor offer. Wyonch Field is a 50-acre property located at the North Eastern end of the park near the Fathom Five land base down Little Cove Road (Fig. 3; Fig. 13). This area was subject to a massive restoration project in 2013 where the entire field was planted with pine and deciduous pioneer species. The field is bordered by deciduous hardwood forest, a vehicle access road, and the Bruce Trail. This forest has an ample bird population due to surrounding berry bushes that fruit in the fall. There is a cave system in the surrounding forest that used to be penetrable but has since been decommissioned due to concerns of public safety. Although restoration has already begun, the size and flat topography of the field would make it an excellent area for wheelchair accessible trails, cross-country skiing, cave viewing, and birding. These low impact activities would retain the ecological integrity of the area, and would promote activities not currently supported at the park. The potential for this site to be used for activities such as an accessible trail and cross country skiing is great, since the majority of trails at BPNP are not accessible or have the flat topography. The trail system here would be best served as an easy trail less than three kilometres and with stacked loops to allow people of varying capabilities to use the system with ease (Parks Canada, 1978; Drew et al., 2003). The Wyonch Field trail system would also need a pathway that has a heavy trail surfacing such as crushed stone to allow wheelchair use and a tread width of 1.2 to 2 meters to accommodate two skiers side-by-side or a wheelchair and a person walking side-by-side (Parks Canada, 1978). Wyonch Field's proximity to Little Cove and its access to the Bruce Trail and snowmobile trails make it a great extension to the area's offer. Wyonch Field would also provide an opportunity for BPNP to showcase their restoration efforts and providing a teachable moment for visitors to learn about ecological integrity, forest connectivity, and the area's forest history (Haselmayer, 2014, pers. comm). This can be done through the use of interpretive signs depicting restoration stages, bird habitat within the forests, and a historical panel about the peninsulas history of forestry and agriculture.

Figure 13 - Map of Wyonch Field (Google Maps, 2014) scale unknown

Little Cove is a 155-acre property on a small inlet on the Georgian Bay side of the peninsula not far outside the town of Tobermory (Fig. 3). The beach at Little Cove is a boulder beach with a little picnic area and a parking area removed from direct beach access. Most visitors coming to the park don't know about Little Cove or are not persuaded to go there because there are no obvious geological oddities or floral spectaculars and because parking is very limited (Haselmayer, 2014, pers. comm). Little Cove is a perfect location for day users due to its location relative to the town of Tobermory and its sheltered and gentle waters, but new infrastructure must be put in place to cater to the current and future visitor numbers (Noordegraf et al., 2011). Little Cove currently attracts visitors wishing to dive, canoe/kayak, hike, and picnic (Noordegraf et al., 2011). Little Cove is popular for divers to do check dives at the beginning of the season because of its proximity to town; it's impeccably clear water, and natural shelter of the inlet (Noordegraf et al., 2011). Although there are no 'special features' in Little Cove other than astonishingly

beautiful shoreline vistas, during the peak days of the summer the parking lot overflows down Little Cove road and onto adjacent private property (Noordegraf et al., 2011; Haselmayer, 2014, pers. comm). The current parking area at Little Cove has long been inadequate for the volume of visitors and, "there have been situations where EMS was unable to get down to the shoreline because of the congested roadside" (Noordegraf et al., 2011, p.20). By increasing or improving the parking lot at Little Cove, the park could prevent some of the destruction of the bordering forested areas, including impacts made on the shore by people struggling to park their cars on washed out access roads and into sensitive forest areas (Allensen et al., 1999). In a previous study done surrounding this topic, some suggestions about parking have been made:

> *"In order to limit environmental impacts, potential parking lot designs should have consideration for all surrounding topography and vegetation [and] the steep topography near the shoreline would need to be substantially re-graded to accommodate any alteration to the existing parking area, disturbing the soil significantly… The area should be adequately signed, and parking spaces should be delineated to permit proper use of the facility. There should be a small number of parking spaces capable of accommodating larger vehicles… The lower parking lot should remain relatively untouched and will be used as a drop-off point equipped with handicapped parking" (Allensen et al., 1999, p.41-42).*

One of the main complaints about existing infrastructure at Little Cove is the lack of proper washroom facilities and garbage receptacles. The visitor node has one small, non-wheelchair accessible portable toilet which gets cleaned regularly, but does not cater to larger crowds, causing people to make use of the surrounding environment and contaminate the forest and shore with sewage (Noordegraf et al., 2011). "A sanitation facility would be beneficial to the park as a control mechanism to contain [sewage]. It would be ideal to locate the sanitation facility closer to the shoreline, off to the northeast of the lower parking lot, to accommodate the needs of all visitors" (Allensen et al., 1999, p.41-42). New infrastructure designs adopted by Bruce Peninsula National Park for composting toilet facilities could be applied to this area making Little Cove a modern, civilized area for changing clothes, using the restroom, and refilling reusable water bottles. Park management has begun to assess the immediate need for appropriate washroom facilities in the park and has begun retrofitting this infrastructure in other areas of the park (Haselmayer, 2014, pers. comm). Management should not hesitate to update the inadequate washroom facilities and parking lot situation at Little Cove.

Another pressing issue at Little Cove is the lack of accessible hiking, given its proximity to Wyonch Field, the FFNMP visitor centre, Tobermory, and other inlets on the Georgian Bay side. The Bruce Trail and snowmobile trail intersect this property but another loop system could be adopted here to help visitors plan for a day hike and use the area to its full potential. The first of many suggestions is to include satellite loops to provide visitors with a better 'day user' hike experience and to discourage people from treading off the path to form their own loops (Noordegraf et al., 2011; Parks Canada, 1978). The second suggestion is to enhance trail signage and interpretive signage at Little Cove to improve the visitor experience and to reduce the potential for people to get confused or lost when using the trail system (Noordegraf et al., 2011). The third suggestion for management is to restore blazed trails that have been blazed by visitors to help increase the ecological integrity of the site and to encourage visitors to stay on designated trails (Noordegraf et al., 2011). A study done in 2011 by the University of Waterloo devised a trail system that respects ecological integrity along with accessibility for visitors with different needs and recreational preferences. An example of the trail system proposed by Noordegraf et al (2011) is given in Figure 14, which shows the creation of an additional trail in yellow to link the Bruce Trail and Snowmobile trail to create a loop. This trail could be constructed as a front-country hiking trail, meaning that it would be designed for hikers with limited experience using gentle grades, even trail surfacing such as wood chips, and tread widths of around 45-60 cm (Parks Canada, 1978). A trail of this nature could cater to a wide

audience of visitors while providing a great link from the shoreline back to the parking area without travelling the roadway. The Noordegraf et al plan also includes the development of four picnic areas and two washroom facilities to improve the offer for visitors coming to Little Cove. There is obvious potential for Little Cove as a secondary visitor node to improve the visitor offer here, and to link it through the Bruce Trail system to Wyonch Field to absorb higher visitation numbers to the park during peak season. However, more reconnaissance towards the proposed trail here would need to occur to ensure ecological integrity would be improved by avoiding areas of concern such as species at risk – as this area has been host to a salamander monitoring project for the past 11 years. This longstanding data set would enable park management to gauge impacts the new trail has on sensitive species such as salamanders to gauge impacts to ecological integrity.

Figure 14 - Proposed Development of Little Cove Trail System (Noordegraf et al., 2011)

More of the proposed area development plans for Little Cove can be accessed and referenced in Noordegraf et al., (2011). Table 7 summarizes management goals for Wyonch field and Little Cove area including actions management can take to improve the area to deal with increasing visitor numbers and park connectivity. If park management was to act upon these suggested improvements for trail routes and infrastructure adjustments, Little Cove and Wyonch field could become a sustainable visitor node that could withstand current and future visitation numbers with ease. Improving the parking area, washroom facilities, trail signage and creating loops that link up to the proposed trails at Wyonch Field would make

Little Cove an established secondary visitor node, and discourage visitors from participating in unsustainable visitor practices such as trail blazing, littering, and inappropriate parking.

Table 7 - Goals & Management Actions for Wyonch Field & Little Cove (Noordegraf et al., 2011)

Park Management Goals	Actions
1. Visitor Experience Offer	- Provide an offer showcasing Parks Canada's restoration efforts and link this trail system to Little Cove. - Increase the area's popularity for birding and cross-country skiing. - Improve the Little Cove area to cater to divers, kayakers, and swimmers. - Install interpretive panels to educate visitors on the cave systems, restoration efforts, and endangered species in the area.
2. Infrastructure	- Build an accessible trail that can be used in shoulder seasons and for many different recreation types including birding, cross-country skiing. - Equip the trail system with plenty of rest stops and benches to improve accessibility for visitors that require low difficulty surfacing. - Parking and washrooms need to be expanded and updated in existing areas.
3. ECOS Implications	- Accessibility: Medium to high, catering to persons of varying physical ability and with accessible trail networks. - Relationship to other uses: Low, only used for recreation. - Attractions: Birding, shoreline use including swimming and diving, restoration education, cross country skiing, picnicking, and hiking. - Presence of existing tourism infrastructure: Medium, will need to update trails and basic amenities such as picnic areas, parking lots, and comfort station. New trails will be blazed in Wyonch field. - Level of user skill required: Low, trail maps will be needed and hiking skill will be low due to highly developed trail system. Addition of interpretive panels will assist in gaining knowledge and navigation. - Level of social interaction: Medium to high as a secondary node, depending on time of year and time of day. - Degree of acceptance of impacts: High tolerance for use levels, area already disturbed and undergoing restoration. Infrastructure will assist in reducing impacts. - Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

4.3. Warder Ranch

Warder Ranch is 400 acres of recently acquired land in the far-east reaches of the park boundaries and was previously a home farm with agriculture and grazing pasture for cows and horses (Fig. 3). This site has a deep history, rich in cultural significance regarding agricultural innovations on the Bruce Peninsula and which represents a challenge in maintaining cultural significance in its restoration. This site has deep soils and was home to innovative and experimental agricultural practices that landed Walter Warder in the

Agricultural Hall of Fame. Due to its location away from the primary nodes of the park, Warder Ranch is not well known by visitors and even some local residents. Warder Ranch is known for being a great place to view grassland birds such as Sandhill Cranes, Loggerhead Shrikes, hawks and falcons. The presence of Sandhill Cranes at this site could complicate restoration efforts because their nesting sites require open fields and access to the adjacent marsh making this area critical habitat for the Sandhill Crane as other similar areas fill in because of succession (Suffling et al., 2008, p.50). The large and open nature of this property would allow for a 'blank slate' when creating a restoration plan and devising trail systems and viewing platforms. The snowmobile trail and the Bruce Trail run through part of this property making it a good linkage for bikers and hikers who wish to have a picnic and enjoy a rare meadow site within the park.

With foresight into future restoration possibilities, ecologists believe that Warder Ranch will eventually become a beach-maple deciduous forest type with hints of white birch, aspen, and ironwood (Suffling et al., 2008). Ecologists also suggest that if restoration is pursued by planting trees in 'peninsulas' from the bordering forest, this would allow for less impact to bird nesting sites (Suffling et al., 2008, p.50). Planting in strategic peninsulas could also help create a bird blind for birding near the marsh which would facilitate another recreation opportunity at Warder. Building a structured trail system with viewing platforms and boardwalks would provide one of the best opportunities for birders to appreciate this unique ecosystem without impacting the ecological integrity of the meadow and lower potential impacts on nesting sites. A trail system through Warder Ranch could be an interpretive foot trail using a satellite loop layout to provide variety in scenery and length, using trail lengths of 1- 10 km combinations (Parks Canada, 1978). The trail could also be wide enough for two people to walk abreast at 180cm trail width, down to sections where the trail could deviate to 90cms (Parks Canada, 1978). This trail could have a rugged trail surfacing with wood chips and sections of boardwalk towards the bird blinds (Parks Canada, 1978). This trail would be best utilized with benches along the path at regular intervals to accommodate hikers and birders of various skill levels, and railings used if the trail passes along steeper grades (Parks Canada, 1978).

Either linking a parking lot from the Bruce Trail access point or building a small parking lot near the historical Warder homestead should be considered. Currently, visitors to the area park along the narrow, single car lane road and often have trouble pulling over far enough to allow other vehicles to pass. Building a boardwalk or other structured trail system would also reduce impact on potential Massassauga rattlesnake habitat, prevent visitors from wandering to close to the historical buildings, yet still allow for an, 'up-close and personal' experience. A boardwalk or structured trail system would also cater to those with mobility restraints and could provide an accessible experience to those in wheelchairs or with crutches. Birding is gaining popularity but it is an activity mainly engaged in by older demographics, suggesting that an accessible trail would play to the advantage of the park by encouraging visitation by this growing segment of our society.

Table 8 provides a summary of management actions for the Warder Ranch visitor node. These actions will help link this disconnected area with the main visitor nodes of the park and will provide service to visitors already using the area for birding and wildlife appreciation. Warder Ranch has great potential as a tertiary visitor node if these management actions are implemented and could provide an excellent cultural basis for showcasing the Peninsula's agricultural history.

Table 8 - Goals & Management Actions for Warder Ranch (Suffling et al., 2008)

Park Management Goals	Action
1. Visitor Experience Offer	- Provide an offer showcasing endangered species such as the Massassauga Rattlesnake and the Loggerhead Shrike - Increase the area's popularity for birding and cross-country skiing. - Improve the Linkage of the Bruce trail to a new boardwalk trail system through the field. - Install interpretive panels to educate visitors on the sensitive ecosystem, flora and fauna of the area and the cultural significance of the property.
2. Infrastructure	- Restore peninsulas of the field into forest. - Install trails and/ or boardwalks to assist in keeping visitors from trampling vegetation - Install accessible viewing platforms for birding and wildlife appreciation and a picnic shelter. - Build a parking area and washroom facilities to cater to growing visitor numbers
3. ECOS Implications	- Accessibility: Medium, catering to persons of varying physical ability and including less accessible infrastructure including bird blinds and viewing towers. - Relationship to other uses: Low, only used for recreation. - Attractions: Birding, wildlife viewing, historical education, picnicking, and hiking. - Presence of existing tourism infrastructure: Medium, will need to create trails and basic amenities such as picnic areas, parking lots, and comfort station. Links to Bruce trail and snowmobile trail may be useful. - Level of user skill required: Low to medium, trail maps will be needed and hiking skill will be low due to highly developed trail system and flat terrain. Addition of interpretive panels will assist in gaining knowledge and navigation. - Level of social interaction: Low to medium as a tertiary node, depending on time of year and time of day. - Degree of acceptance of impacts: Low to medium tolerance for use levels, area in protected park zone and meant for low impact recreation. Infrastructure will assist in reducing impacts. - Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

4.4. Cove Island & Flowerpot Island

Cove Island and Flowerpot Island are two of the biggest islands within the Fathom Five National Marine Park (FFNMP) boundaries (Fig. 3). FFNMP was the first Canadian National Marine Park, formed in 1988, and shares infrastructure and staff with Bruce Peninsula National Park. FFNMP spans 135 km^2 and reaches depths of 90m with average depths being 30m (Wilkes, 2001, p.15). Within FFNMP's boundaries lie 20 islands of various sizes, the largest ones being Cove, Flowerpot, Russell, and Bears Rump (Wilkes, 2001, p.15). Flowerpot Island has long been a main attraction for visitors to the Bruce Peninsula. Its history as a lighthouse station and the stunningly unique features of the area brings thousands of visitors to Flowerpot Island every weekend. (Parks Canada, 2013, p.6). Like Bruce Peninsula National Park, FFNMP (mainly Flowerpot Island) experiences its highest visitation during long weekends and weekends during the summer months. Visitation is higher for FFNMP than it is for Bruce Peninsula National Park at this time (Parks Canada, 2013, p.6). From 2008 to 2011, visitation to Flowerpot Island increased from 19,998 people to 31,867 visitors annually (Parks Canada, 2012). This is an increase in daily visitation from 187 people per day to 428 visitors per day (Parks Canada, 2012). Most visitors come to the island to hike, enjoy the scenery, photograph nature, swim and picnic (Parks Canada, 2007).

Of the 20 islands within FFNMP, Flowerpot Island is the only one with established visitor infrastructure (Parks Canada, 2013, p.11; Fig. 15). Flowerpot Island has a long established trail system that was resurfaced in 2013-2014 and has extensive infrastructure including composting washrooms, 6 campsites, a light station, boardwalks and picnic shelters (Parks Canada, 2013, p.11; Parks Canada, 2007). The island is accessed by 2 tour boat companies in Tobermory that have a commercial vessel operator's permit which allows them to collect park entrance fees for Parks Canada within their partnership agreement (Parks Canada, 2007). The key issues surrounding visitor satisfaction on the island within the past 5 years include updates to the trails and toilets on the island and more diligence in keeping trails and picnic areas clean (Parks Canada, 2007).

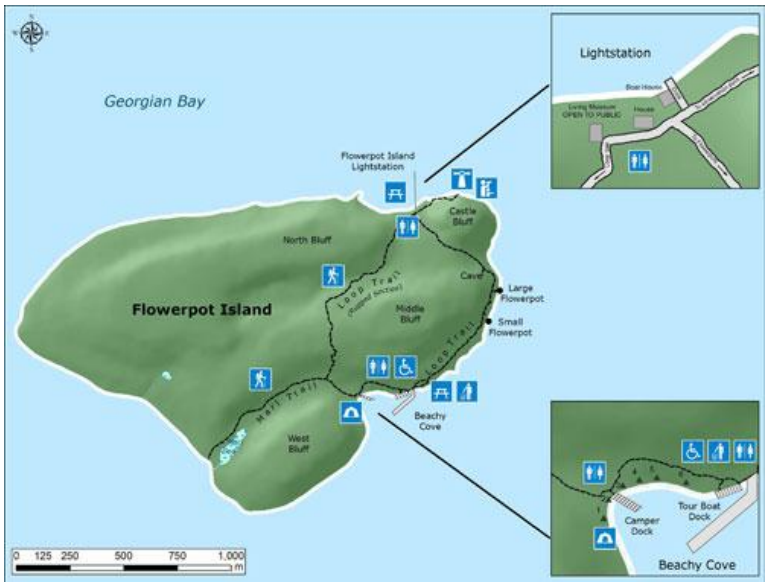


Figure 15 - Trail Map of Flowerpot Island (Parks Canada, 2014)

Bruce Peninsula National Park acknowledges that high visitor numbers that potentially exceed social carrying capacities that would provide a good visitor experience occur frequently if not constantly during long weekends on Flowerpot Island because of the islands geography and trail system. This creates its own myriad of visitor safety challenges along with concerns for ecological integrity due to trampling, litter, and disturbance (Parks Canada, 2007). Park management treats Flowerpot Island as the 'sacrificial lamb' for all the other islands within FFNMP's boundaries to keep the sensitive and unique ecology on the other islands safe and intact (Haselmayer, 2014, pers. comm). This is not an ideal situation, and the Parks Canada Agency has recognized that a social science study needs to be done to measure visitor satisfaction and concerns in regards to their visit to Flowerpot Island; A visitor safety assessment must be done for the island in regards to visitor safety challenges and solutions; visitation capacity limits need to be established to protect quality of experience and ecological integrity; and tour boat companies need to coordinate drop off and pick up times to alleviate peaks and valleys in visitor congestion, and also allow less people on the island during the busiest hours of the day (Parks Canada, 2007). In respect to park zoning, (Fig. 4), "All but

one island [Flowerpot] are designated Zone 1 and public use of them is limited. However, recognizing that casual shore use has existed a long time and has little impact, such shore use of islands is continuing to be allowed (with monitoring)" (Wilkes, 2001, p.23).

Cove Island is the largest island within the FFNMP archipelago. Like many of the other islands in this area, it is home to a historical lighthouse. Cove Island Light station, being one of the most impressive in FFNMP would make a fantastic tertiary visitor node as a picnic area and would allow visitors to learn about the nautical history of this region. Some downfalls and obvious hurtles to opening other islands to the onslaught of visitors would be invasive species, land degradation, and the inherent necessity of maintenance and garbage removal. Islands have the unfortunate tendency to be immune to invasive species until human interaction where they become extremely susceptible to species replacement (Ewel et al., 2013, p.32). Visitation already occurs to the Cove Island Light station, but goes unrecorded by park management and Coast Guard due to lack of monitoring. To combat issues of ecological integrity and to officially allow visitors on Cove Island, preventative actions and restrictions can be put in place to mitigate effects. The property surrounding the light station can be opened to visitors, but access should remain restricted to visitors and special interest groups that understand and follow a strict set of rules and guidelines. An example of rules and guidelines can be referenced in the example from Gwaii Haanas earlier in this thesis. Table 9 summarizes some ways to improve the visitor experience offer at Flowerpot Island (FPI) and other actions that could be taken if Cove Island was open to the public.

Flowerpot Island's increasing visitor numbers and potentially exceeded carrying capacity is causing management to voice concerns regarding use limits. Opening other islands to visitors may reduce impacts to Flowerpot Island but may increase impacts to the other islands. However, if Cove Island could be opened up to special interest groups and certain visitor demographics seeking solitude during peak seasons, it may allow traditionalists to experience the islands of FFNMP in relative peace. With regard to potential issues of exceeded carrying capacities on Flowerpot Island, social and ecological carrying capacities should be put in place by determining what number of visitors per day is sustainable from visitor safety, visitor experience, and ecological integrity. This decision is ultimately at the discretion of park management, and their analysis of the visitor offer they hope the island provides to its visitors.

Table 9 - Goals & Management Actions for Cove Island and Flowerpot Island (Wilkes, 2001; Parks Canada, 1998)

Park Management Goals	Action
1. Visitor Experience Offer	- Complete more frequent visitor studies on FPI to ensure negative impacts of crowding are not influencing the visitor experience. - Develop a monitoring plan to ensure ecological integrity is being maintained. - More intensively monitor FPI for ecological integrity indicators. - Complete an EA to determine feasibility of opening the Cove Island Light station to certain visitor groups to offset demand on FPI. - Better educate visitors on pack in – pack out strategies on FPI to reduce visitor impact. - Develop use limits for FPI to reduce crowding and other negative environmental impacts.
2. Cove Island	- Conduct EA's on old trails around the light station to determine what effects introduced species would have on the island. - Set up picnic area at light station to improve visitor experience at this point.
3. ECOS Implications	- Accessibility: Medium to high, catering to persons of varying physical ability and

more skilled hikers on separate trails.

- Relationship to other uses: Low, only used for recreation.
- Attractions: Birding, shoreline uses such as swimming and boating, historical education, picnicking, photography and hiking.
- Presence of existing tourism infrastructure: High on Flowerpot, Medium on Cove, infrastructure recently upgraded to accommodate higher accessibility and some trails on Cove may need to be updated and a picnic area created.
- Level of user skill required: Low to medium, trail maps will be needed and hiking skill will be low due to highly developed trail system and flat terrain. Addition of interpretive panels will assist in gaining knowledge and navigation. Partnerships with tour companies will assist with knowledge of visitors.
- Level of social interaction: Low for Cove, High for Flowerpot, depending on time of year and time of day.
- Degree of acceptance of impacts: Low to medium tolerance for use levels on Cove, High tolerance on Flowerpot due to previous impacts. Infrastructure will assist in reducing impacts.
- Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

4.5. Emmett Lake, Ranger Camp & Halfway Log Dump

The Emmett Lake day use area and the old ranger camp is located on Emmett Lake near the Halfway Log Dump access point and has previously been used as the site for the Parks Canada Ranger Program (Fig.3). The Emmett Lake day use area and Ranger Camp are located approximately half an hour east along the highway from the town of Tobermory. The current state of the ranger camp property is poor, with two condemned buildings, a water tower, and a large field. Occasional activities for park staff occur at this location, and it is an excellent spot to kayak, canoe, picnic, and star gaze in the Northern Bruce Peninsula Dark Sky Preserve. This site has basically been abandoned and management recognizes the need for these decrepit buildings to be removed and the area restored. However, since this area has already been disturbed, the former ranger camp would be a great addition to the existing picnic and boat launch area at Emmett Lake. This area could be partially restored by planting trees, removing the existing buildings and building a picnic shelter with small cook pits and a view of the lake. During the peak summer months, picnic areas are in high demand by visitors and although somewhat off the beaten track, this area could provide a great overflow area for the visitors that come to Halfway Log Dump and wish to picnic after their hike. Although there is already a boat launch at Emmett Lake, this picnic area could help draw people to this area and away from the nearby Halfway Log Dump parking lot during long weekends. Many people who visit Halfway Log Dump wish to stay and picnic at the parking lot after their hike, but this causes congestion in the parking lot. However, if given this alternative, picnickers could proceed to the Emmett Lake picnic area, and free up of the Halfway Log Dump area. Developing the Emmett Lake area would also create awareness of another inland lake with opportunities for fishing and kayaking. Emmett Lake has the potential to become a teaching area for niche recreation activities such as dark sky viewing, learn to camp demonstrations, First Nations presentations and ceremonies, and other park run interpretive presentations. Developing this area to be used more for these niche activities will improve the abilities of the interpretive program to deliver culturally specific programs, highlighting the Anishinabe culture that is so important to the area.

Emmett Lake is a calm inland lake that could become valuable space that local tour and outfitter companies could use partnering with the park to teach beginners to kayak and canoe in a safe environment. Partnering with local companies could allow the park to benefit from selling more park passes or multi-day passes to visitors coming to experience these aquatic recreation opportunities. Infrastructure including washroom facilities would need to be built at the Emmett Lake boat launch to cater to the increased visitation, however, this would deter people from taking this business into the forest and impacting the surrounding environment. Table 10 summarizes management actions that can be applied to Emmett Lake and the ranger camp to help improve the visitor experience offer of the Halfway Log Dump area. Management needed to ensure the viability of this area long term would include building partnerships with the Saugeen Ojibway Nation to put on first nations demonstrations and education outings here (or incorporating this into the ever-decreasing budget of the interpretation program through the PCA); and forming partnerships with the local outfitters and tour companies to use this area as a training point for beginner kayakers to remove these beginners from Wireless Bay and the Tobermory harbour and causing coast guard rescues and safety issues.

Table 10 - Goals & Management Actions for Emmett Lake

Park Management Goals	Action
1. Visitor Experience Offer	- Improve boat launch and picnic area to accommodate increased visitation. - Utilize area for interpretive demonstrations including dark sky viewing, fishing, learn to camp, kayaking, and first nations presentations. - Increase the amount of social media advertising of this area as a picnic and boating area to increase visitation.
2. Infrastructure	- Improve parking area and install washroom facilities at Emmett Lake boat launch and the old Ranger Camp. - Provide a picnic shelter and cook pits to cater to heightened demand for picnic areas at Halfway Log Dump visitor node. - Restore the old Ranger Camp by tearing down condemned buildings and plant native vegetation.
3. ECOS Implications	- Accessibility: Medium, catering to persons of varying physical ability and including less accessible infrastructure including boat launches. - Relationship to other uses: Low, only used for recreation. - Attractions: Dark sky viewing, historical education, picnicking, boating and niche activities including first nations demonstrations. - Presence of existing tourism infrastructure: Medium, will need to create basic amenities such as picnic areas, parking lots, and comfort station. Will restore area of Ranger camp and improve ecological integrity of area here. - Level of user skill required: Low to medium, small lake with few hazards for boaters, and directed education for niche activities. Addition of interpretive panels will assist in gaining knowledge and navigation. - Level of social interaction: Medium as a tertiary node, depending on time of year, activities being done, and time of day. - Degree of acceptance of impacts: Low to medium tolerance for use levels, area in protected park zone and meant for low impact recreation.

Infrastructure will assist in reducing impacts.

- Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

4.6. The Grotto & Singing Sands

The Grotto is located in Indian Head Cove accessed through the Cyprus Lake Campground access point (Fig. 3). The Grotto is the most widely known area in the park and has long been one of the 'crown jewels' of the park (LaCroix, 2014, pers. comm). Indian Head Cove and the Grotto receive the highest visitation in the entire park and are arguably very crowded. Its ease in accessibility with its 'highway-esque' trail, its stunning beauty, and its location just beyond the Cyprus Lake Campground easily make it the busiest place to go in the park on long weekends in the summer. The expectation of most visitors and locals is a high level of social interaction, and this factor is accepted by park management making it one of the 'sacrificial lambs' of the park. Park staff have worked very hard within the past few years to build clean and modern tourism infrastructure at this visitor node, mainly consisting of washroom facilities and emergency call stations. However, one piece of infrastructure that could improve the visitor experience and the safety of the visitors is a staircase into the Grotto. A staircase could improve the safety of those who will inventively enter the Grotto at their own risk and use the park's resources for first aid and rescue efforts. Staircases like this have been installed at other national parks including the Sequoia National Park example of Crystal Caves as discussed earlier, and have proven to be very successful from both a visitor experience and safety perspective. A staircase into the Grotto would be both costly and potentially an eyesore taking away from the natural beauty of the attraction. However, pros and cons must be weighed by the park to determine whether the increased safety for visitors and increased ability to access the cave outweigh the cons. This staircase would deter visitors from scaling the vertical cliff faces for the chance to enter the Grotto, which would prevent the majority of visitor safety incidents that occur there each year. Park management would have to sacrifice some of the natural majesty of the area to install a struture as large as this, but they would be preventing loss of life, and ensure positive visitor experiences can be had saftely at this location. The type of management needed in this area includes a high degree of acceptance of the ecological degradation that occurs here due to visitors, including litter, trampling, people entering the boardering forest and creating trails, and some vandalism. The main concern with this visitor node is ensuring the safety of visitors, which would be further met with a staircase structure. Ultimately, park management must decide what an acceptable level of visitors at this location would be appropriate and the deciding factor of this is safety logistics such as how many people per square foot of shoreline, and how visitors respond to increasing visitor numbers.

Singing Sands is located on the west side of the highway about 15 minutes south of the town of Tobermory (Fig. 3). Singing Sands is a desirable visitor node because it is one of the only sand beaches in the park and attracts many families with small children and beach goers. This visitor node also currently does not have a gatehouse or ticket station, allowing many visitors access to parklands for free. Allowing people to enter this visitor node of the park for free only hinders the reputation of the park and goes against the Agency's need to increase revenue. Therefore, parking pass stations must be installed to easily cater to visitors wishing to purchase their park pass from this node. With BPNP adopting remote electronic parking pass stations in other areas including Halfway Log Dump, management hopes to quickly end the reign of free parking at this location (Haselmayer, 2014, pers. comm).

Singing Sands, like the Grotto, receives tens of thousands of visitors each year, and due to this fact may require new infrastructure to reduce environmental impact and improve the visitor experience. However, unlike the Grotto, Singing Sands is home to some of the most rare and sensitive species within BPNP's boundaries. This causes the impacts of increased visitation to be much harder hitting to the

ecological integrity than they are at other visitor nodes. Park staff installed brand new changing rooms and updated the washroom facilities at the Singing Sands visitor node in 2014 to continue to provide a modern and appropriate amenity for the number of visitors that come here each year.

Figure 16 - Map of Singing Sands (Parks Canada, 2014)

Along with the existing boardwalk and trail system implemented at this visitor node, more boardwalks and a better-designed parking lot are ideas the park should- and are considering improving the delicate balance of ecological integrity and visitor experience at Singing Sands. Management at Bruce Peninsula National Park agree that these issues need to be addressed, but are waiting for direction regarding appropriate landscape design from the Agency. The current boardwalk in the bog section of the area is very successful at diverting visitors off the sensitive and rare plant species and the delicate riverbed (Fig. 16). However, more interpretive panels and signage along this boardwalk may benefit visitors wishing to learn more about the fragile and sensitive ecology of this area. More boardwalks going from the parking lot to the main beach area would help improve the area's ability to continue to form dunes, which is an integral aspect of this ecosystem that is currently not fostered, causing unknown levels of environmental degradation for the future of this area. Increasing the length and number of picnic areas and boardwalks going to the main area of the beach would help contain visitors and allow the ecological processes of the dune ecosystem to carry on with less hindrance from visitors. More picnic areas and garbage receptacles are essential to the management of this area, as park staff struggle to keep up to litter picking during long weekends, frequently having to come out more than once a day to remove dirty diapers and take out food containers from the beach. Not only does this create an unsightly mess, but it also poses a threat to wildlife including birds and fish that call the area home. Visitors frequently ask gate staff for areas they can take their family to picnic, and this area would serve as a great place to accommodate those requests, as long as the appropriate infrastructure is provided to make sure this area remains a beautiful place for everyone to enjoy and a sacred space for all the species at risk that inhabit the area.

Table 11 summarizes management actions that can be taken to improve the visitor experience and ecological integrity of The Grotto and Singing Sands. Some of these actions will also improve visitor safety and save the park money on rescue and first aid efforts in the Grotto. Some of these suggestions are already in consideration by park management, but mandatory environmental assessment protocol must first be followed before the park can take any action.

Table 11 - Goals & Management Actions for the Grotto & Singing Sands

Park Management Goals	Action
1. Visitor Experience Offer	- Monitor visitor opinion and use levels frequently at The Grotto to retain high visitor satisfaction. - Ensure litter is being properly and safely removed from the beach at Singing Sands and the cliffs at the Grotto to reduce impacts litter has to visitor experience.
2. Infrastructure	- Improve or move parking area to accommodate more visitors at Singing Sands while installing parking pay stations and adequate enforcement to ensure users are paying for park passes. - Provide a picnic shelter near the parking lot at Singing Sands to accommodate large numbers of beach goers with appropriate waste receptacles. - Partly restore the dunes and expand beach boardwalks to reduce environmental impact on sensitive dune ecosystem. - Install more interpretive boards throughout bog ecosystem at Singing Sands to increase visitor knowledge about the area. - Install a staircase down into the Grotto to reduce safety risks for visitors.
3. ECOS Implications	- Accessibility: Medium, to high, catering to persons of varying physical ability on trails and boardwalks, but including less accessible sections of shoreline including rock cliffs and sand beach. - Relationship to other uses: Low, only used for recreation. - Attractions: Birding, wildlife viewing, natural appreciation, picnicking, shoreline uses including swimming, spelunking, photography and hiking. - Presence of existing tourism infrastructure: High, will need to create picnic areas. Upgrade boardwalks at Singing Sands. - Level of user skill required: Low to medium, trail maps are available and hiking skill will be low due to highly developed trail system. Addition of interpretive panels will assist in gaining knowledge and navigation. - Level of social interaction: High, as primary nodes, depending on time of year and time of day. - Degree of acceptance of impacts: High tolerance for use levels, area in development zone. Infrastructure will assist in reducing impacts. - Type of management required long-term: Adaptive management needed in order to make adjustments to uses as necessary if carrying capacities are being approached.

Chapter 5 –SYNTHESIS & CONCLUSIONS

Bruce Peninsula National Park is still very young and has a long way to go in terms of developing sustainable visitor experiences at primary, secondary, and tertiary visitor nodes in the park. The eight areas discussed in this thesis that could have improvements made to accommodate the growing visitor numbers need to be evaluated in depth by park management. Focusing on the ecological, social, and economic carrying capacities of each area will be a key consideration in setting any sort of visitor cap or redistribution plan. Monitoring environmental and social changes will also be essential in developing thresholds and determining which indicators to use.

Looking back to the objectives set at the beginning of this thesis, many answers and suggestions have been developed for management at Bruce Peninsula National Park. The following is a synthesis of the findings to the research objectives outlined and will provide some answers park management hopes to learn to improve their ability to protect the park while providing it for the enjoyment of Canadians:

- What best practices are used to set social and ecological carrying capacities?
  - Use existing, and create new socially and ecologically based indicators and thresholds and conduct continuous monitoring on these to ensure they are not being surpassed. Emphasis must be placed on the knowledge that carrying capacities are not static and each area and visitor node will have different carrying capacities depending on time of year and the area's ecology.
  - Best practices for setting social and ecological carrying capacities include using widely accepted and proven frameworks such as limits of acceptable change, the recreation opportunity spectrum, and the visitor experience and resource protection programs (Eagles, 2001; Manning, 2011a).
- How can management use redistribution as a tool to increase visitor numbers without impacting ecological integrity negatively?
  - Redistribute visitors across primary, secondary, and tertiary visitor nodes depending on use levels at each location and the goals and expectations of individual visitors. Visitors can also be redistributed across seasons to target seasonal phenomenon such as bird migrations. Temporal redistribution can also be used to deter visitors from visiting certain areas during sensitive times of year such as breeding seasons for species at risk.
  - Redistribution to secondary and tertiary visitor nodes at the park will enable management to highlight ecological integrity success stories such as restoration and preservation using bird blinds, viewing towers, multi-use trails, and water trails. Redistribution will also allow recreationists to have an outlet for niche activities such as bouldering, kayaking, and biking.
- What methodologies are used most successfully to diagnose crowding?
  - The most successful methods used to diagnose feelings of crowding include using existing studies such as the VIP and EQ survey to glean information about visitor satisfaction and whether their experience matched their expectation. This will require management to know the visitor types they attract and may require more frequent studies due to the rapidly changing social trends within nature based tourism.
  - Management could incorporate Manning-type visual research studies into existing surveys to allow visitors to provide more accurate insight into their preferences for use limits.
  - Management should set social carrying capacities including information gained from surveys to determine a range of generally acceptable levels of crowding and to help set a limit to reduce visitor injuries and negative experiences.
- What adaptive management techniques can be used to control and prevent crowding?
  - Temporal, spatial, and activity redistribution are most commonly used and do not limit visitation. These forms of adaptive management techniques would be more accepted by the

Parks Canada Agency over use limits because they do not limit the amount of visitors and therefore fiscal income the park can make.
    - If use limits are chosen as a method to mediate carrying capacities, they must be enforced and can be supported with infrastructure.
    - Setting carrying capacity limits for social and ecological factors can help management determine a 'magic number' to reduce ecological impacts and negative visitor experiences.
    - Harden sites using infrastructure such as boardwalks to withstand higher visitor numbers while reducing ecological impacts.
- How can area planning and infrastructure reduce crowding at visitor nodes?
    - Area planning will enable park management to plan ahead to reduce potential for negative ecological impacts such as trampling, picking, or poaching of rare features.
    - Area planning will also provide park management the chance to properly develop the infrastructure needed to fulfil all requirements of the social and ecological carrying capacities decided upon for each site.
    - Infrastructure may limit non-compliance issues such as cliff jumping and bonfires. It will also help management determine how many people can fit in an area because they area they can expand into is more contained.

Regarding steps to follow when determining what upper visitation limits are acceptable for the park, management must first monitor and set indicators; as soon as these indicators are approached, action can be taken to avoid approaching the threshold in the future. This measure will help retain ecological integrity and maintain great visitor experiences (NPS, 2014, p, II-6). Bruce Peninsula National Park can accomplish this step by continuing their VIP study, possibly with higher frequency, to ensure visitor satisfaction and enjoyment at the park.

Bruce Peninsula National Park's ecological monitoring regarding the impacts visitors have on the ecosystem could be improved using indicators and monitoring protocols. Future research towards the topics of use limits and crowding ideals at Bruce Peninsula National Park should include a comprehensive study. Although studies from 1998 revealed certain statistics of crowding perception, the annual visitation at the Bruce has dramatically changed, and these statistics re-gathered to determine status in our current decade to ensure that crowding perception has not increased. Gathering primary empirical data specifying in depth how much crowding is being perceived in different demographics of visitors will also influence park management to determine where the biggest adjustments need to be made to ensure visitors of these more sensitive demographics have an outlet for recreation at BPNP. Obtaining more specific feedback from visitors using the Manning method of visual representation and comparison for visitors is highly recommended. Parks Canada Agency should conduct such a displacement and coping strategy survey as part of their adaptive management efforts to determine whether visitors are using coping strategies and displacement to avoid negative visitor experiences.

Determining a hard number of visitors that should be allowed in the park, or given access to certain areas of the park is impossible to pinpoint because of too many uncertain variables. Using infrastructure such as boardwalks, appropriate numbers of trashcans, and more comfort stations to reduce environmental impacts effectively increases the carrying capacity of a place (MacLeod & Cooper, 2005). If management employs appropriate infrastructure that caters to increasing levels of visitation without increasing impacts to the environment, negative effects on sensitive ecosystems will be reduced.

Discussions around setting use limits or daily caps of visitors to protect visitor experiences and the environment have been engaged in by the park. However, as a high use park, Bruce Peninsula National Park cannot afford to limit visitation because the profits gained help support other parks within the agency. Although the park may never adopt use limits, their current method of limiting visitation through infrastructure, mainly parking, has helped control the number of visitors coming to main attractions. Along

with restricting people through parking, some parks have also implemented a graduated fee structure to reflect more expensive fees during peak times, and reducing fees during shoulder seasons to persuade visitors to change their visitation habits. This is something the park must consider more thoroughly when deciding whether or not to allow tour busses and shuttle services.

Conclusions on the VIP study included the improvement of its motivations and expectations sections including more questions concerning feelings of crowding. Adding these questions will help the park pinpoint what the visitor expects, wants, and how this influences the experience of the visitor. Increasing the frequency of the study to help track short-term changes in visitor satisfaction may be more beneficial to Bruce Peninsula National Park. This will enable the park to be proactive in their approach rather than reactive, which could result in reduced visitation.

The Parks Canada Agency as a whole needs more transparency from park to park in order to facilitate information networking between managers and to learn from the experiences of others. This will enable managers to be more efficient with regards to time and money management and improve the efforts towards sustainability for everyone. Remembering that people visit an area to admire the amazing ecology and geology present should help influence priorities of visitor satisfaction to ecological integrity on an area specific basis.

The goals of this thesis were to determine whether redistributing visitors throughout the park would take pressure off primary visitor nodes, improve visitor experience, and retain ecological integrity; to determine best practices for defining visitor caps, discovering which methodologies produce the best results regarding crowding management; and providing guidance as to improving other secondary and tertiary visitor nodes at Bruce Peninsula National Park.

As this thesis has discussed, redistributing visitors temporally as well as spatially will have the greatest and most positive impact to visitation at the park. Although there are strong primary nodes that will never be replaced by other sights, educating visitors about other exceptional features of Bruce Peninsula National Park will help to naturally redistribute people with activity based preferences to other areas within the park. Allowing for temporal redistribution may capture some non-returning guests by giving them an opportunity for a different visitor experience at the park during fall and winter months when the park changes seasonally. By redistributing visitors, visitors at main attractions may feel less crowded thereby improving their overall visitor experience.

Although this thesis did not specifically address a numerical crowding limit for each of the main attractions at the park, the literature implies that these numbers rarely exist, are constantly in a state of flux, and also depend heavily on the infrastructure employed. Area plans for secondary and tertiary nodes were discussed in this thesis. These results included the expansion of the infrastructure offered at these locations, and an improvement of advertising these areas better to visitors.

This thesis discussed methodologies for carrying capacity studies that the park could use for social, ecological and economic applications, and the main commonalities amongst them included monitoring to determine what the ecological impacts on the areas were, the overall visitor experience, and how the park feels that these areas are being represented through thresholds and indicators. At any time, if these thresholds are exceeded, changes will need to be made using an adaptive management strategy. Reviewing case studies from other national and provincial parks show that knowledge sharing and transparency are extremely important factors in time management and effort efficiency, and to help parks communicate their successes and failures to each other. Although many factors may not be applicable or transferrable to Bruce Peninsula National Park, the lessons learned at other parks are important and useful to future park planning.

REFERENCES

Abbe, J. D., Manning, R. E. (2007). Wilderness Day Use: Patterns, Impacts and Management. *International Journal of Wilderness.* 13(2), 21–26.

Allensen, M., Boere, E., Bruinsma, S., Evans, A., Facin, A., Fleischmann, G… Verhoeven, F. (1999). Final Report - Bruce Peninsula National Park Survey, Little Cove Study Area. Prepared by Group One consulting for Geography 391 at University of Waterloo. Parks Canada Internal Document #256.

Anderson, L., Manning, R., Valliere, W., Hallo, J. (2010). Normative Standards for Wildlife viewing in Parks and Protected Areas. *Human Dimensions of Wildlife.* (15) 1. 1-15.

ANSC. (2014). Arrowhead Provincial Park Information. Arrowhead Nordic Ski Club. Retrieved from, www.arrowheadnordic.ca/blog/club-partners-and-sponsors/arrowhead-provincial-park-info/

Archipelago Management Board. (n.d.) Gwaii Haanas National Park Reserve and Haida Heritage Site: Management Plan for the Terrestrial Area. Government of Canada and the Council of the Haida Nation. 1-47. Retrieved from http://www.pc.gc.ca/eng/pn-np/bc/gwaiihaanas/plan/plan1.aspx

Buist, L.J., Hoots, T.A. (1982). Recreation Opportunity Spectrum Approach to Resource Planning. *Journal of Forestry*. Vol. 80. No. 2, pp.84-86

Booth, Kay L., Cessford, G. R., McCool. S.F., Espiner, S.R. (2011). Exploring visitor experiences, crowding perceptions and coping strategies on the Milford Track, New Zealand. *Science for Conservation*. 313. ISBN: 978-0-478-14914-2

Bosley, H.E. (2005). Techniques for Estimating Boating Carrying Capacity: A Literature Review. *Catawba-Wateree Relicensing Coalition.* Department of Parks, Recreation & Tourism Management. North Carolina State University.

Boyd, S.W., Butler, R.W. (1996). Managing ecotourism: an opportunity spectrum approach. *Tourism Management.* Vol. 17., No. 8., pp. 557-566.

Cole, D., Manning, R. (2005). Addressing Visitor Capacity of Parks and Rivers. Parks & Recreation. 8-10.

Curry, R. (1998). Phase 1 Summary Report for Analysis of Kayaker Needs Study. School of Outdoor Recreation, Parks and Tourism. Lakehead University. Thunder Bay. Parks Canada Internal Document. #311.

Canadian Tourism Commission [CTC] (n.d.) The Explorer Quotient: A deeper understanding of the modern traveller. Canadian Tourism Commission, Government of Canada. Retrieved from, http://www.ttracanada.ca/sites/default/files/uploads/ctc._the_explorer_quotient_-_a_deeper_understanding_of_the_m.pdf

City of Kawartha Lakes. (n.d.) Trails Master Plan for the City of Kawartha Lakes. Appendix A. Trail Development Standards. Retrieved from www.city.kawarthalakes.on.ca

Cundiff, Brad., Czok, Richard. (2005). Chapter 2: Human History – People and the Peninsula. Northern Bruce Peninsula Ecosystem Community Atlas. Canadian Parks and Wildnerness Society. *Wildlands League*. p. 38

Currie, R., Uunila, L. (1999). Phase II Summary of report for Analysis of Kayak needs study. School of Outdoor recreation, parks and tourism at Lakehead University. Conducted for Bruce Peninsula National Park and Fathom Five National Marine Park.

Davenport, M. A., Borrie, W. T., Freimund, W. A., & Manning, R. E. (2002). Assessing the Relationship Between Desired Experiences and Support for Management Actions at Yellowstone National Park Using Multiple Methods. *Journal of Park and Recreation Administration.* 20(3), 51–64.

Daigle, J., Havinga, D.J. (1996). Restoring Natures Place. Ecological Outlook Consulting & Ontario Parks.

Drew, G., Grocke, C., Cahalan, P. (2003). Guidelines for Producing Trail Signage. Direction Interpretation and Management. SA Tourism Commission and Recreation Trails Signage and Interpretation Working Group. Retrieved from, www.southaustraliantrails.com/pdf/Trail%20Signs%20-%20Draft%20Guideline1.pdf

Eagles, P.F.J. (2001). Evolution of the concept of visitor use management in parks. *Industry and Environment.* Vol 24, Iss 3, P.65-67.

Eagles, P.F.J., McCool, S.F., Haynes, C.D. (2002). Tools for visitor management. *Sustainable Tourism in Protected Areas.* DOI:10.2305/IUCN.CH.2002.PAG.8.en

Eagles, P.F.J., McCool, S.F. (2002a). Tourism in Parks and Protected Areas: Planning and Management. CABI. P.320.

Eagles, P.F.J. (2013, March 6). Research priorities in park tourism. *Journal of Sustainable Tourism*. DOI:10.1080/09669582.2013.785554

Environics. (2007). Canadian Tourism Commission: Explorer Quotient® Traveller Segmentation. Retrieved from http://www.environics.ca/canadian-tourism-commission

Ewel, J.J., Mascaro, J., Kueffer, C., Lugo, A.E., Lach, L., Gardener, M.R. (2013). Islands: Where novelty is the norm. Novel ecosystems: intervening in the new ecological world order. Wiley-Blackwell Publishing.

FFNMP. (2012). Flowerpot Island Visitation Trends. Draft for Backgrounder Parks Canada Internal Document. 1-2

Gibbons, K. (2014, June 10). Personal Communication. Bruce Peninsula National Park. Parks Canada.

Goodwin, H., Kent, I., Parker, K., Walpole, M. (1998). Tourism, Conservation and Sustainable Development: Case Studies from Asia and Africa. *IIED Wildlife and Development Series.* No. 12.

Gramann, J.H. (2002). The Role of Crowding in Visitor Displacement at Mont Rainer and Olympic National Parks. University of Idaho Subcontract No. GNK097.

Green, L.W., George, M.A., Daniel, M., Frankish, C.J., Herbert, C.P., Bowie, W.R., O'Neill, M., (2003). Community-Based Participatory Research for Health. Appendix C: Guidelines for Participatory Research in Health Promotion. In: M. Minkler & N. Wallerstein (Eds) *Community-Based Participatory Research for Health.* Jossey-Bass, San Francisco, California.

Hallo, J.C., Manning, R.E. (2010). Analysis of the Social Carrying Capacity of a National Park Scenic Road. International Journal of Sustainable Transportation. (4). 75-94.

Haselmayer, J. (2013). Personal Communication. Bruce Peninsula National Park. Parks Canada.

Hallett, L.M., Standish, R.J., Hulvey, K.B., Gardener, M.R., Suding, K.N., Starzomski, B.M., Murphy, S.D., Harris, J.A. (2013). Towards a conceptual framework for novel ecosystems. In: RJ Hobbs, ES Higgs and CM Hall (Eds.) *Novel ecosystems: intervening in the new ecological world order.* Wiley-Blackwell Publishing.

Hendee, J.C., Stankey, G.H., Lucas, R.C. (1978). Wilderness Management. *U.s. Department of Agriculture. Forest Service.* Miscellaneous Publication No. 1365. Cat No. 77-600-039

Holling, C.S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics.* (4):1-23.

IMBA Canada. (2014). Developing Mountain Biking Tourism. International Mountain Biking Association Canada. www.imbacanada.com/resources/research/economics/developing-mountain-biking-tourism

Janiskee, Bob. (2008). Does the National Park Service Need a Quota System for Peak Seasons? *National Parks Traveler.* Retrieved March 2015, from, http://www.nationalparkstraveler.com/2008/02/does-national-park-service-need-quota-system-peak-seasons

Jones, B., Jager, E., Campbell, A. (2010). Real. Inspiring. Parks Canada. Retrieved From http://www.ttracanada.ca/sites/default/files/uploads/real_inspiring_-_parks_canadas_new_brand_and_network_of_i.pdf

Kalisch, Dennis., Axel Klaphake. (2007). Visitors' satisfaction and perception of crowding in a German National Park: a case study on the island of Hallig Hooge. In *Snow Landscape Restoration.* 81, ½.: 109-122.

Kettle, A. (1998). The Integration of Visitor Use into National Park Ecosystem Management: Bruce Peninsula National Park. Major Paper Submission for Masters in Environmental Studies. York University, Toronto.

LaCroix, C. (2014, July 2). Personal Communication. Bruce Peninsula National Park. Parks Canada.

Lawson, S., Newman, P., Choi, J., Pettebone, D., Meldrum, B. (2009). Integrated Transportation and User Capacity Research in Yosemite National Park : The Numbers Game. Transportation Research Record: *Journal of the Transportation Research Board.* 2119, 83–91. DOI: 10.3141/2119-11

MacLeod, M., Cooper, J.A.G. (2005). Carrying capacity in coastal areas. *Encyclopedia of Coastal Science*. XXXV. 226.

Manning, R., Valliere, W., Minteer, B., Wang, B., Jacobi, C. (2000). Crowding in Parks and Outdoor Recreation: A Theoretical, Empirical, and Managerial Analysis. *Journal of Park and Recreation Administration.* 18(4), 57-72.

Manning, R. Valliere, W. (2001). Coping in Outdoor Recreation: Causes and Consequences of Crowding and Conflict Among Community Residents. *Journal of Leisure Research.* Vol.22, No.4, 410-426.

Manning, R. (2002). How much is too much? Carrying capacity of national parks and protected areas. Monitoring and Management of Visitor Flows in Recreational and Protected Areas. Conference Proceedings. 306-313

Manning, R.E. (2007). Parks and Carrying Capacity – Commons Without Tragedy. Island Press. Pp.312.

Manning, R. (2011). Indicators and Standards in Parks and Outdoor Recreation. Quality of LIfe and Community Indicators for Parks, *Recreation, and Tourism Management.* Netherlands: Springer. 11-22.

Manning, R.E. (2011a). Studies in Outdoor Recreation. Search and Research for Satisfaction. 3rd Edition. Oregon State University Press. Corvallis. ISBN 978-0-87071-590-7

Maple, L.C., Eagles, P.F.J., Rolfe, H. (2009). Birdwatchers' specialization characteristics and national park tourism planning. *Journal of Ecotourism.* Vol 9, No 3. November 2010, p.219-238. ISSN 1472-4049.

McCool, S.F., Lime, D.W. (2001). Tourism Carrying Capacity: Tempting Fantasy or Useful Reality? *Journal of Sustainable Tourism.* 9(5). 2001. P.372-387.

McFadyen, Trevor. (2010). Global Changes Affecting How We Work. Fact Sheet. Internal Parks Canada Agency Document. Date Created 2010/03/17.

Meleg, E. (2011). Yurt Complaint. Parks Canada. Parks Canada Internal Document.

Meldrum, B., DeGroot, H. (2012). Integrating Transportation and Recreation in Yosemite National Park. *The George Wright Forum.* 29(3). 302-307. ISSN 0732-4715

Molinaro, K. (2010). Parks suffer from their own popularity. *Our National* Parks. Retrieved March 2015 from, http://www.ournationalparks.us/park_issues/national_parks_often_suffer_from_their_own_popularity/

Monz, C.A., Leung, Y. (2006). Meaningful Measures: Developing Indicators of Visitor Impact in the National Park Service Inventory and Monitoring Program. *Visitor Impact Monitoring.* Vol. 23. No. 2. Retrieved from, http://www.georgewright.org/232monz.pdf

Moore, S., Weiler, B., Moyle, B.D., Eagles, P.F.J. (2013, August 7). Our national parks need visitors to survive. *The Conversation.* Article 15867.
Nepal, Sanjay K. (2015). Personal Communication. University of Waterloo.
National Park Service. (2010). Yosemite National Park Visitor Use and Impacts Monitoring. National Park Service. U.S. Department of the Interior. Retrieved from http://www.nps.gov/yose/naturescience/visitor-use-monitoring.htm
National Park Service. (2014). Yosemite. Yosemite National Park California. Retrieved from, http://www.nps.gov/yose/index.htm
NPS. (1988). Draft General Management Plan and Draft Environmental Impact Statement: Death Valley National Monument. U.S. Department of the Interior/ National Park Service. Retrieved from, https://books.google.ca/books?id=w07uAAAAMAAJ&pg=PA188&lpg=PA188&dq=Visitor+distribution+in+national+parks&source=bl&ots=ag5q-Wf8dj&sig=aSP6-06VNf9ZnoX56L8Un7FPTTw&hl=en&sa=X&ei=SbAdVfnVKMj6UqGBg_AI&ved=0CEYQ6AEwCQ#v=onepage&q&f=false
NPS. (2014). Chapter II: User Capacity Management Program. Merced Wild and Scenic River Final Comprehensive Management Plan and Environmental Impact Statement. National Park Service. p. (II-1)-(II-52).
NPS. (2014a). Visitation Statistics – Planning your visit. Yellowstone National Park. National Park Service. Retrieved from http://www.nps.gov/yell/planyourvisit/visitationstats.htm.
Noordegraf, B., Sinclair, A., Glover, M., Casselden, R., Sullivan, D. (2011). Little Cove. Geography 391: University of Waterloo. Parks Canada Internal Document.
OAC [Ontario Access Commission]. (2011). A Bouldering Guide to Halfway Log Dump. Ontario Access Commission. Retrieved from, http://www.ontarioaccesscoalition.com/downloads/HWLD_OAC_2011_Interpretive_Bouldering_Guide_v2.pdf
Ontario Parks. (2013). Park Statistics 2013. Ontario Provincial Parks Statistics 2013. ISSN 1918-9338
Ontario Parks. (2014). Highlights of things to do. Pinery Provincial Park. *Ontario Parks*. Retrieved from www.ontarioparks.com/park/pinery
Ontario Parks. (2014a). Highlights of things to do. Arrowhead Provincial Park. *Ontario Parks*. Retrieved from www.ontarioparks.com/par/arrowhead#winteractivities
Parks Canada and the Canadian Parks Council. (2008). Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas. Parks Canada Agency. ISBN 978-0-662-48575-9. Cat no. R62-401/2008E
Parks Canada. (1978). Trail Manual. Parks Canada. QS 7053-000-BB-A1.
Parks Canada. (1988). Trail Plan for Bruce Peninsula National Park. pp.1-15. Internal Library #309.
Parks Canada. (1998). Bruce Peninsula National Park Management Plan. Bruce Peninsula National Park. 1-50
Parks Canada. (2007). National Park Zoning System Backgrounder. Parks Canada. Parks Canada Internal Document.
Parks Canada. (2007a). Bruce Peninsula Birding Strategy. Prepared by Ethan Meleg. Internal Document. 1-2.
Parks Canada. (2008). Visitor Information Program Report 2007. Parks Canada. Visitor Information Program - Social Science Research & Application, OSC - April 2008. 1-27.
Parks Canada. (2009). Local Recreational Activity Assessment: Proposed Activity: Bouldering. Bruce Peninsula National Park. Parks Canada Agency. Parks Canada Internal Document.
Parks Canada. (2010). State of the Park Report 2010 Bruce Peninsula National Park of Canada. Parks Canada. 1–46.Cat no. R64-396/2010E.
Parks Canada. (2010a). Shoulder Season Project. Prepared by Ethan Meleg. Parks Canada Internal Document.
Parks Canada. (2010b). Tobermory Chamber of Commerce - Shoulder Season Tourism Initiative 2010-2011. Parks Canada Internal Document. 1-4.
Parks Canada. (2011). The Parks Canada Charter. *Parks Canada.* Retrieved from http://www.pc.gc.ca/eng/agen/chart/chartr.aspx
Parks Canada. (2012). Backgrounder Flowerpot Island Visitation Trends Draft Report. Parks Canada Internal Document.
Parks Canada. (2012a). QVE Resource Sheet 2.4.1. Visitor Experience Cycle. Parks Canada Internal Document. 1-5.
Parks Canada. (2013). 2013 Visitor Information Program - Final Report. Bruce Peninsula National Park. Parks Canada Internal Document.
Parks Canada. (2013a). BPNP & FFNMP Photo and Video Monitoring Report. Prepared by Katrina Keeshig. Parks Canada Internal Document.
Parks Canada. (2013b). Bruce Peninsula National Park of Canada Management Plan 2013. Parks Canada Internal Document.
Parks Canada. (2014). Field to Forest - Building Bruce Peninsula National Park. Request for Project Approval. Georgian Bay and Ontario East Field Unit. Parks Canada Internal Document.
Parks Canada. (2014a). Report on Plans and Priorities for 2014-15. Parks Canada Internal Document.
Parks Canada. (2014b). Winter Trails in the Banff Area. *Banff National Park – Parks Canada.* Retrieved from www.pc.gc.ca/eng/pn-np/ab/banff/activ/hivernales-wintertrails/banff.aspx
Parks Canada. (2014c). Ski Area Management Guidelines. Park Management Planning. *Banff National Park – Parks Canada.* Retrieved from www.pc.gc.ca/eng/pn-np/ab/banff/plan/gestion-management.aspx

Parks Canada. (2014d). Parks Canada Attendance 2009-10 to 2013-14. *Parks Canada.* Retrieved from http://www.pc.gc.ca/eng/docs/pc/attend/index.aspx

Parks Canada. (2015). Action on the Ground: Volume 3. Parks Canada Agency. Retrieved from, www.pc.gc.ca/eng/docs/v-g/ie-ei/at-ag/index.aspx

Scott, D., Jones, B. (2005). Climate Change, Seasonality and Visitation in Canada's National Park System. Abstracts of Papers Presented at the Eleventh Canadian Congress on Leisure Research. In *Lifestyle Information Network.* CCLR11-132.pdf.

Scott, D., Jones, B. (2006). Climate Change & Nature-Based Tourism. Implications for Park Visitation in Canada. Waterloo, ON: University of Waterloo, Department of Geography. In *Mountain Forum.* Report available online (PDF) at www.fes.uwaterloo.ca/u/dj2scott

Sondoh, J.R. Stephen, L., Omar, M.W., Wahid, N.A.,, Ismail, I, Harun, A. (2007). The Effect of Brand Image on Overall Satisfaction and Loyalty Intention in the Context of Color Cosmetic*. Asian Academy of Management Journal.* 12(1), 83-107.

Suffling, R., Clarke, T., Evans, M., Lamb, L., May, S., McKenzie, I., A. Ramunas. (1995). Vegetation Change and Vegetation Management in the Bruce Peninsula National Park. Parks Canada Internal Document.

Suffling, R., Lamb, L., Murphy, S., Oelbermann, M., Price, J. (2008). Biophysical Assessment of Selected Disturbed Sites at Bruce Peninsula National Park: Final Report for Parks Canada Contract 10063654. Waterloo, ON, Canada. Faculty of Environmental Studies, University of Waterloo. 75pp. + Data CD

Thorncrest Outfitters. (2014). Tobermory Location. *Thorncrest Outfitters.* Retrieved from, http://www.thorncrestoutfitters.com/tobermory.htm

Tobermory Snowmobile Club. (2014). About the Club. *Tobermory Snowmobile Club.* Retrieved from, http://www.tobermorysnowmobileclub.ca/index.php/tobermory-snowmobile-club

Vaske, J.J., Donnelly, M.P., Heberlein, T.A. (1980). Perceptions of Crowding and Resource Quality by Early and More Recent Visitors. *Leisure Sciences.* 3(4) 368-380.

Vezeau, S.L., Pettebone, D., Meldrum, B., Newburger, T., Leslie, C. (2010). Informed User Capacity Management Decision Making: Linking Visitor Use Levels to Visitor Experience. Rethinking Protected Areas in a Changing World: Proceedings of *2011 George Wright Society Conference on Parks, Protected Areas & Cultural Sites.*

Wilkes, D. (2001). An Overview of Canada's First National Marine Park. Parks Canada, Bruce Peninsula National Park/ Fathom Five National Marine Park. p.13-26 Parks Canada Internal Document.

Wilkinson, C. (2000). Ecological Impacts of Snowmobile Use: Review of Scientific Research. PhD Candidate, University of Waterloo. Parks Canada Internal Document.

APPENDICIES

APPENDIX I: Environics Visitor Classifications

"**Familiarity Seekers**
These are reluctant travellers who tend to only venture out when required by friends and family or for work. When they travel, they seek the familiar comforts of home and choose recognized brands over local products and services.

Escapists
These travellers are seeking a getaway from the everyday hustle and bustle of their lives. Their travel should be worry-free, safe and secure with few surprises. Vacations tend to be shorter with many opportunities to relax and recharge.

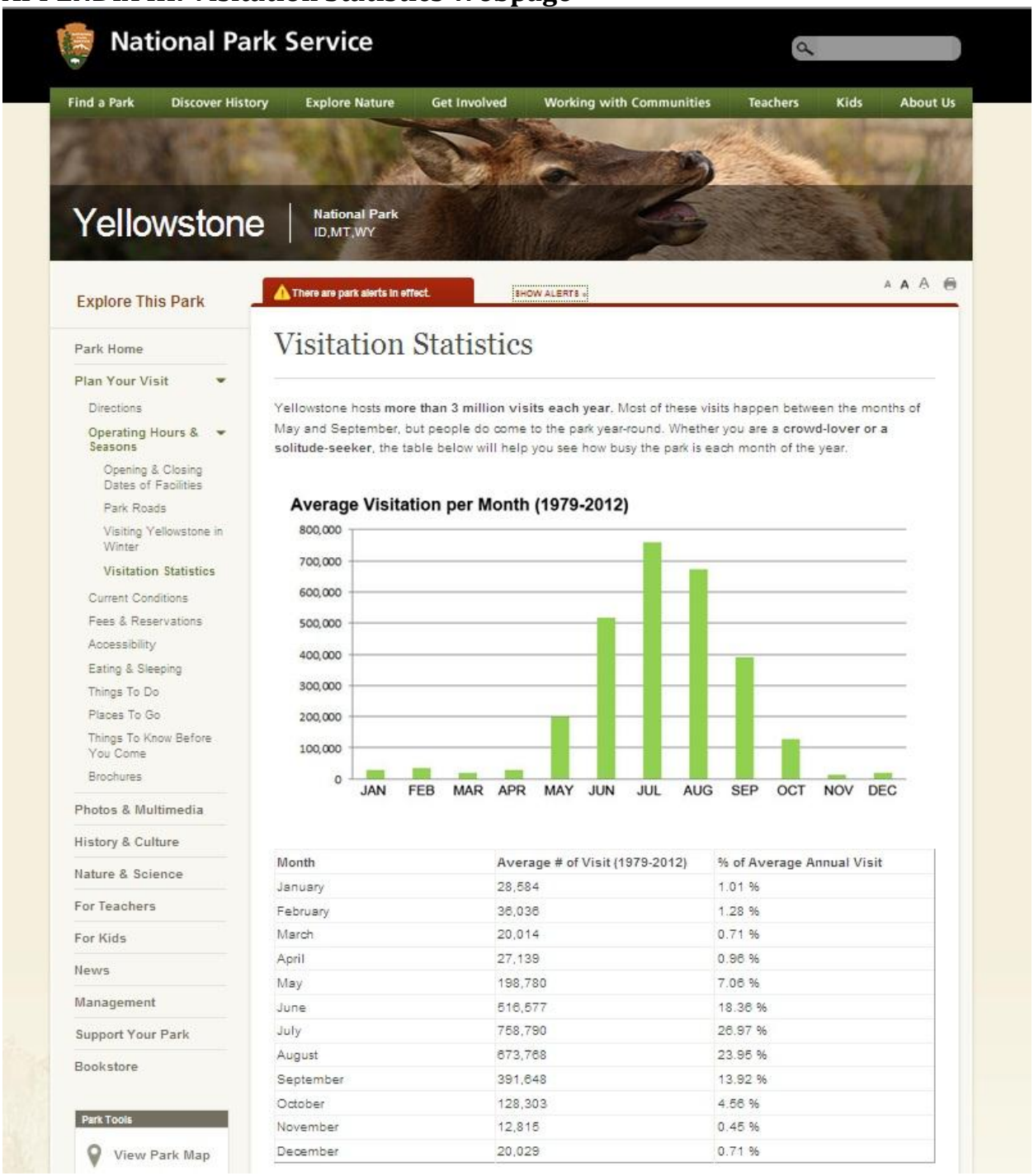
Enthusiastic Indulgers
While these travellers may not always be able to afford the best of the best, They strive for luxury and comforts. Checklists of key attractions are important to sample their destinations without getting too in-depth or overwhelmed by the details.

Learners
Learners seek immersion in their destinations, striving to truly understand the places they visit. While focusing on either the local nature or culture, the reward of travelling comes from exploration and personal growth." (CTC, p.7-8)

APPENDIX II: Indian Head Cove Trail Camera Imagery

(Parks Canada, 2013a)

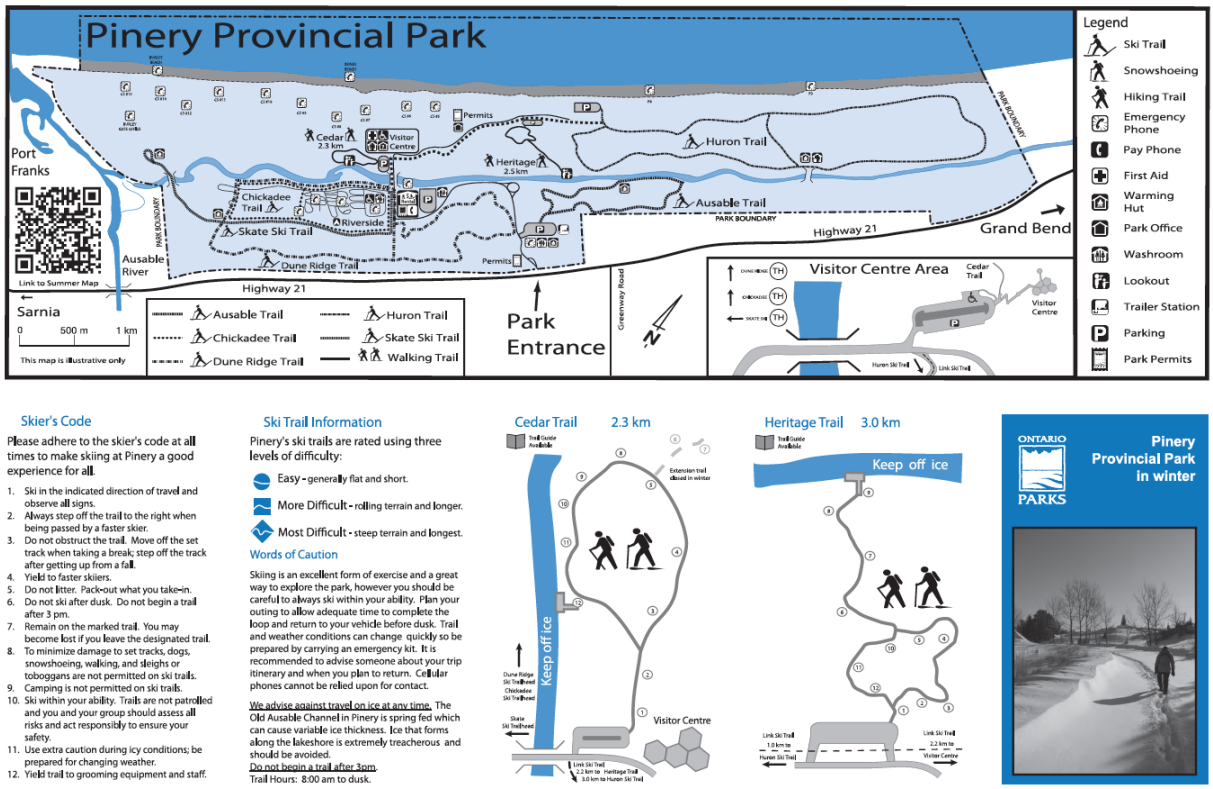
APPENDIX III: Visitation Statistics Webpage



Month	Average # of Visit (1979-2012)	% of Average Annual Visit
January	28,584	1.01 %
February	36,036	1.28 %
March	20,014	0.71 %
April	27,139	0.96 %
May	198,780	7.06 %
June	516,577	18.36 %
July	758,790	26.97 %
August	673,768	23.95 %
September	391,648	13.92 %
October	128,303	4.56 %
November	12,815	0.45 %
December	20,029	0.71 %

(NPS, 2014a)

APPENDIX IV: Winter trails at Pinery Provincial Park



Skier's Code

Please adhere to the skier's code at all times to make skiing at Pinery a good experience for all.

1. Ski in the indicated direction of travel and observe all signs.
2. Always step off the trail to the right when being passed by a faster skier.
3. Do not obstruct the trail. Move off the set track when taking a break; step off the track after getting up from a fall.
4. Yield to faster skiiers.
5. Do not litter. Pack-out what you take-in.
6. Do not ski after dusk. Do not begin a trail after 3 pm.
7. Remain on the marked trail. You may become lost if you leave the designated trail.
8. To minimize damage to set tracks, dogs, snowshoeing, walking, and sleighs or toboggans are not permitted on ski trails.
9. Camping is not permitted on ski trails.
10. Ski within your ability. Trails are not patrolled and you and your group should assess all risks and act responsibly to ensure your safety.
11. Use extra caution during icy conditions; be prepared for changing weather.
12. Yield trail to grooming equipment and staff.

Ski Trail Information

Pinery's ski trails are rated using three levels of difficulty:

- Easy - generally flat and short.
- More Difficult - rolling terrain and longer.
- Most Difficult - steep terrain and longest.

Words of Caution

Skiing is an excellent form of exercise and a great way to explore the park, however you should be careful to always ski within your ability. Plan your outing to allow adequate time to complete the loop and return to your vehicle before dusk. Trail and weather conditions can change quickly so be prepared by carrying an emergency kit. It is recommended to advise someone about your trip itinerary and when you plan to return. Cellular phones cannot be relied upon for contact.

We advise against travel on ice at any time. The Old Ausable Channel in Pinery is spring fed which can cause variable ice thickness. Ice that forms along the lakeshore is extremely treacherous and should be avoided.

Do not begin a trail after 3pm.
Trail Hours: 8:00 am to dusk.

(Ontario Parks, 2014)

APPENDIX V: Crowding at Primary Locations

"Crowding respondents were asked to indicate how crowded they felt in the locations they had visited…

- 61% of respondents felt crowded and 27% felt "very crowded" while visiting the Grotto.
- Half of respondents (49%) did not feel crowded while visiting Singing Sands and 8% felt 'very crowded'.
- Few respondents felt crowded at Halfway Log Dump.
- 55% of respondents did not feel crowded at the Visitor Centre, tower & trail.
- Respondents rating as to how crowded they felt while at Flowerpot Island were fairly divided across the rating scale with 31% providing a neutral rating (3/5)" (Parks Canada, 2013, p.10).

"Visitors were asked to explain what they experienced at the places where they felt crowded:

- 75 respondents provided a response, of which 13 were neutral or positive comments such as 'The Grotto was crowded but I don't mind'.
- Many respondents felt there were too many people or kids.
- Some respondents observed negative behaviour such as drinking, excessive noise, cliff jumping and dogs off-leash or barking.
- Some respondents indicated you had to wait on the trails and it was difficult to get around.
- A few respondents indicated that the parking lots were full and they were turned away.
- Very few respondents indicated that they avoided certain locations at peak times"

(Parks Canada, 2013, p.11).

DEFINITIONS

Redistribution: Takes the form of temporal, spatial and activity.

Temporal Redistribution: Redistributing visitors to different times of day, days of week, or months of the year to reduce pressures during peak times.

Spatial Redistribution: Redistributing visitors to different areas of the park, to reduce pressures in primary visitor nodes to keep quality of visitor experience and ecological integrity high

Peak Season: Time of year that has the most visitation, for BPNP, peak season is during the summer months from June- September

Shoulder Season: Time of year that boarder the peak season. For BPNP these are April-May and September-October

Off Season: Times of year that the park is not 'operational' and where there is the lowest number of visitation, for BPNP this is November-March.

Recreation: "organized free time activities that are participated in for their own sake and where there is an interaction between the participant and an element of nature" (Kettle, 1998, p.8).

Primary Visitor Node: An area within the park that is the most heavily visited.

Secondary Visitor Node: Areas within the park that are visited frequently, but not as often as primary visitor nodes

Tertiary Visitor Node: Areas of the park that are least visited, but still have infrastructure to support visitation.

Carrying Capacity: "the character of use that can be supported over a specified time by an area developed at a certain level without causing excessive damage to either the physical environment or the experience of the visitor" (Kettle, 1998, p.9 [adapted from Lime & Stankey, 1979, p.106]) The concept begs the question, "what are the desired resources and social conditions within the area that provide a high quality visitor experience?" (Kettle 1998, p.36).

Crowding: A person's perception that an area has too many people, or is too small for the number of people it houses, and typically makes the area undesirable (Kettle, 1998, p.39 [adapted from Stokols, 1972; Stankey & McCool, 1988]; Manning et al., 2000, p.58-59).

Primary Successional (Pioneer) Species: Woody pioneer plantings that are hearty and sun loving such as poplars, white birch, white pine, pin cherry, black cherry that will take 4-6 years to form a closed canopy shading out sun loving meadow species that compete with later plantings (Daigle & Havinga, 1996, p.132).

Secondary Successional Species: Shade tolerant tree species planted under pioneer species within 4-6 years that are less tolerant of high winds and direct sunlight, such as Yellow Birch, Oak, Maple (Daigle & Havinga, 1996, p.133).

Visitor Experience: The interaction between the visitor and their environment, the social interactions they have, and how their visit has met their expectations. Visitor experience extends before and after the visit as well through research and recall (Booth et al., 2011, p.11).