

Introduction

Interpretation, in its various forms, features prominently in many protected areas around the world (Hvenegaard et al., 2009) and can play a key role in shaping visitor experiences (Ham and Weiler, 2007). Interpretation is “a communication process designed to reveal meanings and relationships of cultural and natural heritage to the public” (Interpretation Canada, 1976). On-site, interpretive activities include personal (e.g. guided walks, drama, and amphitheatre presentations) and non-personal techniques (e.g. visitor centres, exhibits, publications, and websites). Off-site, environmental education activities include online, classroom, and special events delivery. In the public sector, interpretation is often delivered by park staff, while in the private sector, interpretation is delivered by tour guides hired by park visitors.

Some of the goals of park interpretation are to enhance visitor experiences, reduce negative visitor impacts, decrease enforcement problems, distribute visitors, minimize public safety incidents, and promote public understanding of an agency’s goals and objectives (Sharpe, 1982; Hendee and Dawson, 2009; Marion and Reid, 2007). Indeed, public outreach in the form of park interpretation can inform policy and planning, and promote environmental leadership and stewardship. Therefore, in order to guide interpretive programming, it is important to evaluate the effectiveness of interpretation programs in reaching these goals (Beckmann, 1999; Hvenegaard et al., 2009). In general, there is a small but growing body of research on visitors’ awareness and use of interpretive programs on a park or system-wide basis, but little outside of Australia, UK, and USA. Moreover, additional research is needed on the effectiveness and impact of current interpretive programming on public attitudes and actions. The goal of this study is to examine visitors’ motivations and constraints related to participation in interpretive programs, based on a Canadian case study, and to determine how participation affects visitors’ perceived awareness, knowledge, attitudes, and behavioural intentions.

Freeman Tilden (1977: 38) succinctly addresses the range of outcomes from interpretation when he quotes a National Parks Service Administrative Manual: “through interpretation, understanding; through understanding, appreciation; through appreciation, protection.” The Canadian Environment Advisory Council (1991) expanded this process into a general model of the interpretation-protection interface: awareness → insight → knowledge → understanding → appreciation → respect → love → preservation. More than 50 years later, Ham (2009) examined Tilden’s claims from theoretical research within the fields of cognitive and social psychology and concluded that Tilden’s claims have considerable merit. To guide programming and investment, it is important to critically evaluate the effectiveness of interpretive activities in achieving these outcomes (Beckmann, 1999). Only in the last 20 years have researchers critically examined if and how the many goals of park interpretation have been achieved. However, additional research is needed on the policies, practices, and outcomes of interpretive programming in a variety of contexts (Reigner and Lawson, 2009; Kim et al., 2011; Duerden and Witt, 2010).

Aside from the linear model above that places outcomes on a continuum, other theoretical frameworks have been applied to individual interpretation outcomes. To evaluate knowledge outcomes, common frameworks include the elaboration likelihood model (Petty et al., 1992), the moral development theory (Kohlberg, 1976), mindfulness emphases (Moscardo, 1999), cognitive map theory (Knopf, 1981), and cognitive dissonance and disequilibrium (Forestell, 1993; Orams, 1994). Another model to evaluate attitudinal outcomes is the value-attitude-behaviour hierarchy (Vaske and Donnelly, 1999). Last, other frameworks to evaluate behavioural change include the theory of planned behaviour (Ajzen, 1991, goal-directed behaviour (Carrus et al., 2008), persuasive communication (Roggenbuck, 1992), and decision-making (Marion and Reid, 2007).

Recent research

Participating in interpretive programs can lead to knowledge gain, behavioural change, and attitudinal shifts (Absher and Graefe, 1997). However, park visitors must know about programs before possibly attending them. For example, at Great Smoky Mountains National Park, USA, 63% of visitors knew the park, but only 13% attended a program on their current visit and 26% reported having attended an interpretive program at one time (Stern et al., 2011a).

Most current studies on interpretation effectiveness focus on visitor satisfaction, knowledge gain, behavioural change, or influential factors (Machnik et al., 2006; Munro et al., 2008; Benton, 2009; Weiler and Ham, 2010). First, regarding visitor satisfaction, most visitors to protected areas expect some contact with interpretive staff (Schliephack et al., 2013) and rate opportunities for interpretation as important to their visit (Stern et al., 2011a). Furthermore, interpretive programs have a large positive influence on park visitors' satisfaction (Hill et al., 2007). For example, Ham and Weiler (2007) observed that Panama Canal Watershed tourists' overall satisfaction with their visit was influenced most heavily by their satisfaction with interpretive experiences. In addition, several outdoor recreation and tourism studies have demonstrated a link between interpretation satisfaction, behaviour, and attitudes. For example, satisfaction is critical to achieving park goals of positive visitor experiences and discovery (Manning, 2011). Visitor satisfaction has also been linked with pro-environment attitudes (Lee and Moscardo, 2005) and pro-place behaviours (e.g. return visitation and recommendations to others; Halpenny, 2010; Yu and Dean, 2001). For instance, Hwang et al. (2005) found that satisfaction with park interpretation increased the chances of Taiwanese park visitors' involvement with the park.

Second, interpretation consistently demonstrates gains in visitor knowledge. In a recent meta-analysis, 33 out of 37 effectiveness studies showed increases in visitor knowledge resulting from interpretation (Skibins et al., 2012). Citing just a few examples, exposure to interpretive programs and activity levels for visitors to Australia's Great Barrier Reef Marine Park increased reef knowledge (Madin and Fenton, 2004). Similarly, interpretation in Dartmoor National Park, UK increased visitors' knowledge scores (Tubb, 2003). Following trips with a private whitewater rafting company and interpretive guides in Grand Canyon National Park, the percentage of correct visitor responses to knowledge questions rose from 37% to 60% (Powell et al., 2009).

Third, studies assessing behavioural change resulting from interpretation have produced mixed results. At Yosemite National Park, USA, interpretation addressing key beliefs was critical to increase compliance regarding the use of food storage systems to reduce black bear-human conflicts (Lackey and Ham, 2003). At Great Smoky Mountains National Park, USA, attendance at interpretive events appears to increase the likelihood of visitors donating to the park (Stern et al. 2011b). For visitors to two Australian park sites, interpretation increased compliance to desired behaviours, but salient beliefs and corresponding attitudes were not influenced (Hughes et al., 2009). Kim et al. (2011) found that interpretation fostered visitors' awareness of, and support for, management policies, but its impacts were limited to site-specific responsible behaviour. Contrary to this, at Petrified Forest National Park, USA, despite exposure to interpretive experiences, visitor attitudes and norms about petrified wood theft did not affect theft behaviour (Chandool, 1997).

Many factors seem to influence the impacts of interpretive programs on outcomes, including interpretive layering (exposure to more than one type of interpretive medium) and intensity (Madin and Fenton, 2004; Hughes and Morrison-Saunders, 2005; Weiler and Smith, 2009; Coghlan and Kim, 2012.). Second, outcomes of interpretive programs are influenced by visitor motivations (Ballantyne et al., 1998;

Stewart et al., 1998; Falk, 2006; Davis and Thompson, 2011) and visitor characteristics (e.g. age, experience; Porter and Howard, 2002; Peake et al., 2009; Kim et al., 2011; He and Chen, 2012). Third, park interpreter characteristics (i.e. knowledge, training, service attitude, communication competence, and emotional intelligence) increase the effectiveness of interpretation (Peake et al., 2009; Harrison et al., 2010; Io, 2012; Poudel and Nyaupane, 2013). Fourth, the provision of post-trip information reinforces gains in knowledge, attitudes, and behaviour (Hughes, 2011). Fifth, the content, emotional appeals, and delivery of interpretive messages are important (Hughes and Morrison-Saunders, 2005; Ballantyne and Packer, 2005; Marion and Reid, 2007; Powell and Ham, 2008; Falk and Gillespie, 2009; Reigner and Lawson, 2009).

Regarding visitor motivations to attend an interpretive program, Stern et al. (2011a) and Ortiz (2007) provide an overview of key elements to promote attendance, including convenience (e.g., length and location), interest in the subject matter, supportive values and attitudes, addressing fears, possibility of rewards, suitable marketing (e.g., advertising and information sources), positive perceptions of past participation, and a variety of other desires, such as learning new ideas, social interaction, appreciation for nature, skill development, escape, fitness, and safety. The most common constraints for participating in an interpretive program are lack of awareness, desire for unstructured time, awkward timing, inconvenient location, life stage barriers, lack of interest, availability of alternative activities, and doubts about personal capability (Stern et al., 2011a; Goodrich and Bixler, 2012).

Only a few Canadian studies have focused on outcomes from interpretation. In Pacific Rim National Park Reserve, British Columbia, Randall and Rollins (2006) examined the impact of kayak tour guides on knowledge and attitudes. Visitors on guided trips increased knowledge scores significantly, but visitors on non-guided trips did not increase knowledge scores. Similarly, visitors on trips whose guides commented on a fish conservation policy were more likely to support that policy than visitors on trips whose guides did not comment on that policy. Other interpretation effectiveness studies in Canada have been anecdotal in nature (Kath, 2009; Wolfe, 1997).

Purpose and context

Given the limited amount of research in Canada that integrates interpretive outcomes related to knowledge, attitudes and behaviour, and based on the model of the interpretation-protection interface (Canadian Environment Advisory Council, 1991), the goal of this study was to examine the characteristics of visitors using interpretive programs and visitor perceptions and constraints related to interpretive programs. In particular, the objectives of this study were: 1) to compare attendees of interpretive programs with non-attendees, on the basis of demographic characteristics, trip characteristics, motivations, and support for interpretation, parks, and conservation; 2) to determine attendees' perceived impacts of interpretation on awareness, knowledge, attitudes, and behaviour; 3) to determine constraints for non-attendees regarding participation in interpretive programs; and 4) examine the influence of trip and demographic characteristics on motivations to visit a provincial park, motivations to attend interpretive program, use of information sources, and perceived impacts of the interpretive programs.

This study relates to several themes of the recent World Parks Congress (2014). First, and most directly, interpretation supports the “inspiring new generations” theme which examines how to “empower the growth of an enduring global initiative for a new generation to experience, connect with, and be inspired by, value, and conserve nature”. This theme seeks to develop leadership and programs that connect people to nature. The second theme addressed by this study is the human health and well-being provided by protected areas; in particular, interpretation is a motivation for many people to visit protected areas, and resulting park activities provides many health, mental, spiritual, and educational benefits. Third, interpretation supports the

theme of reaching conservation goals; effective recreational management and actively engaged park supporters can promote conservation goals.

Study Site and Methods

Alberta's Plan for Parks (Government of Alberta, 2009: 16) sets out a vision to "inspire people to discover, value, protect and enjoy the natural world and the benefits it provides for current and future generations". A desired outcome for this vision is to offer "a variety of learning experiences that inform, inspire and involve visitors" (Government of Alberta, 2009: 10). Thus, Alberta Parks offers opportunities to "learn about, appreciate and care for Alberta's natural and cultural heritage" (Government of Alberta, 2009: 17). To achieve these goals of learning, appreciation, and caring, Alberta Parks provides interpretive programs within the parks and extension programs beyond the parks, in a variety of formats.

Miquelon Lake Provincial Park (MLPP), in east-central Alberta, Canada, is located 63 km southeast of Edmonton. The park is 1299 ha in size, found at the south end of the Beaver Hills - Cooking Lake Moraine. The park has over 10 km of hiking trails, day use facilities, a campground, and Park Centre. MLPP received 51,328 overnight campers in 2011 (day use data not available; Beaver Hills Initiative, 2015). The interpretive programs offered by MLPP staff (both full-time and seasonal staff with university training) in 2011 included amphitheatre shows (i.e., evening program with bench style seating for 100 people), family programs (i.e., intergenerational events focused on action and discovery), guided hikes (i.e., short walks into nearby habitats), slide shows and guest speakers (i.e., more formal presentations), discovery packs (i.e., day packs of equipment and information for self-guided study), drop-in programs (i.e., display tables of interesting artifacts), and roving (i.e., interpreters walking throughout campground or day use area with artifacts). These free programs, which have continued to the present day, were advertised at the Park Centre and on bulletin boards throughout the park, and are available on a first-come first-served basis. A total of 5,228 people attended interpretive programs offered by MLPP staff in July and August, 2011 (Mathews, 2011). MLPP staff conduct periodic evaluations of their programs.

Two types of in-person surveys were conducted on 22 different days between July 17 and September 1, 2011. First, the research team conducted surveys of visitors, evenly spreading the surveying effort throughout the day (morning, afternoon, and evening blocks) and week (weekdays and weekend days), with appropriate consideration to visitor needs (e.g., meal times and arrival and departure activities). Visitors were approached throughout the park at key visitor use zones (i.e., each of the three campground loops, Park Centre, day use area, group use area). Members of the research team walked through each visitor use zone in a systematic manner and approached the next individual visitor. Second, in order to obtain a sample large enough to provide adequate comparisons, the research team conducted surveys of interpretive program attendees immediately following an event. The park interpreter introduced the researcher who then invited attendees to participate in the survey. For both types of surveys, a researcher provided a brief explanation (e.g., purpose, ethics approval, voluntary) and invited only visitors aged 18 years or older to participate. If the visitor was willing to participate, the date, location, and gender of the respondent were recorded.

For each listed motivation to attend the park (modified from Stern et al. 2011a), respondents rated importance (1 = not important, 2 = somewhat important, and 3 = very important). For motivations and constraints to attend interpretive programs, respondents provided yes or no responses to a list of options modified from Stern et al. (2011a). For preferences for future interpretive programs (list provided by MLPP staff), respondents answered yes or not to a prescribed list applied (yes/no). Respondents rated the likelihood of attending interpretive programs upon a return trip (1 = definitely, 2 = maybe, and 3 = not likely).

Respondents evaluated current interpretive programs (5 = excellent, 4 = very good, 3 = good, 2 = fair, and 1 = mixed). For perceptions of impacts from, and importance of, interpretive programs, respondents indicated their level of agreement to a series of statements (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). Closed-ended questions were used for previous visit to MLPP, group type, and previous trips. Open-ended questions were used for age, origin, and trip length.

Closed-ended questions were coded prior to data collection and open-ended questions were coded incrementally throughout the survey season by the principal investigator and research assistants. Microsoft Excel was used to organize the data and SPSS was used for data analysis. Chi-square tests, independent samples t-tests, and one-way analyses of variance were used to test for differences (for post-hoc multiple comparisons, Tukey's Honestly Significant Difference test was used). To examine correlations, Pearson regression analysis was used. For comparisons, statistical significance was determined at $p < 0.5$.

Results

A total of 497 park visitors were surveyed, with a response rate of 83.3%. Among the 43 refusals, most reasons related to a lack of interest in surveys, being busy, and awkward timing. Among respondents, 68% were female and 32% were male. The average age of respondents was 42.7 years (range = 18-88). By age category, 9.4% of respondents were 18-29 years old, 37.9% were 30-39 years, 26.8% were 49-49 years, 15.7% were 50-59 years, 8.0% were 60-69 years, and 2.2% were 70 years or older. Most respondents (80.2%) came with their families, while 9.3% came as a couple, 7.9% came with friends, 1.0% came alone, and 1.6% came in another type of group. In terms of their origins, 12.7% came from within 50 km of MLPP, 39.3% came from Edmonton, 33.5% came from the municipalities within 20 km of Edmonton (total of 72.8% from within 100 km of Edmonton), 3.4% came from the rest of northern Alberta, 7.9% came from the rest of central Alberta, and 2.2% came from Calgary and southern Alberta. Only 1.0% came from outside of Alberta.

In the past five years, 38.2% of respondents were on their first trip to MLPP, 33.6% had visited 2-4 times, 20.1% had visited 5-10 times, 5.2% had visited 11-20 times, and 2.8% had visited more than 20 times. Respondents stayed in the park an average of 3.8 days (range = 1-30); 18.7% planned to stay for 1 day, 12.3% for 2 days, 21.3% for 3 days, 19.1% for 4 days, 22.9% for 5-7 days, and 5.6% for more than 7 days.

To examine potential sampling bias, this study was compared with a 2003 study at MLPP (Alberta Community Development, 2003). From that study, 50% came from Edmonton (versus 39.3% in 2011), 71% came from within 100 km of Edmonton and surrounding municipalities (versus 72.8%), and 2.6% came from outside Alberta (versus 1%). The 2003 study found that 33% were on their first trip to MLPP, close to the rate of 38.2% from the 2011 study. Average length of stay for the 2003 study was 3.3 days, but was 3.8 days for the 2011 study. Overall, this study seems to provide a good representation of the MLPP population.

Of the 497 respondents, 98 (19.7%) had attended an interpretive program on this visit (hereafter called attendees). Attendees stayed longer in the park than non-attendees (4.7 versus 3.6 days; $t = 3.695$, $df = 495$, $p < 0.001$). In addition, attendees were more interested in off-season interpretive programs than non-attendees (38.8 versus 27.1% indicating yes; $X^2 = 5.198$, $df = 1$, $p = 0.023$). Though not significantly different, attendees were more often female, younger, within a family group, and originated from beyond 100 km compared to non-attendees.

In deciding to visit MLPP, the most important motivations were spending time with family and friends, recreation, escape, scenery, reflection, and exercise (Table 1). Interpretive program attendees (vs. non-attendees) were more motivated by learning about nature ($t = 7.181$, $df = 495$, $p < 0.001$), developing outdoor skills ($t = 3.117$, $df = 493$, $p = 0.002$), and challenging themselves in the outdoors ($t = 2.397$, $df =$

494, $p = 0.017$) than non-attendees. The opposite was true for escaping from the everyday ($t = -2.185$, $df = 495$, $p = 0.029$). Teaching others in my group was more important for males (2.03) than females (1.87; $t = 2.032$, $f = 495$, $p = 0.043$). Related to group type, people traveling alone were less motivated by spending time with family and friends than all other group types (1.80 vs. 2.90+; $F = 41.696$, $df = 4$, $p < 0.001$).

The following motivations were positively correlated with trip length: to learn about nature ($r = 0.156$, $n = 497$, $p < 0.001$), to develop outdoor skills ($r = 0.123$, $n = 495$, $p = 0.006$), and to have quiet time for reflection ($r = 0.189$, $n = 497$, $p < 0.001$). The opposite was true for recreation ($r = -0.106$, $n = 495$, $p = 0.018$). Age was positively correlated with motivations about inspiration ($r = 0.167$, $n = 486$, $p < 0.001$) and exercise ($r = 0.120$, $n = 488$, $p = 0.008$), but inversely correlated with motivations about recreation ($r = -0.268$, $n = 488$, $p < 0.001$), escape from every day ($r = -0.105$, $n = 488$, $p = 0.021$), and teaching others in the group ($r = -0.171$, $n = 488$, $p < 0.001$). The number of past visits was positively correlated with the exercise motivation ($r = 0.097$, $n = 497$, $p = 0.031$), but negatively correlated with the motivation of spending time with family and friends ($r = -0.089$, $n = 497$, $p = 0.046$).

Table 1. Mean scores for importance of various motivations to visit MLPP.

Motivation	Attendees	Non-attendees	Total
To spend quality time with family and friends	2.97	2.96	2.96
For recreation	2.92	2.88	2.89
To escape from the everyday	2.77*	2.87*	2.85
To enjoy the scenery	2.81	2.79	2.79
To spend time in nature	2.67	2.60	2.62
To have some quiet time for reflection	2.24	2.31	2.30
To get some exercise	2.37	2.26	2.28
To teach others in my group	1.96	1.91	1.92
For inspiration	1.83	1.74	1.76
To learn about nature	2.19*	1.60*	1.72
To develop my outdoor skills	1.79*	1.55*	1.59
To challenge myself in the outdoors	1.61*	1.43*	1.46

*statistically significant difference based on t-tests.

When asked why they decided to attend this interpretive program, most attendees indicated that they thought the program would be good for members of their group, be entertaining, and be educational (Table 2). Respondents who said yes to “safe way to experience park” stayed longer (6.1 vs. 4.1 days) than those who said no ($t = 3.075$, $df = 96$, $p = 0.003$). Similarly, people who said yes to “develop new skills” stayed longer (6.1 vs. 4.4 days) than those who said no ($t = 2.105$, $df = 96$, $p = 0.038$).

Table 2. Motivations for visitors to attend interpretive programs at MLPP.

Motivation	% indicating yes
I thought it would be good for members of my group	75.5
I thought it would be entertaining	71.4
I thought it would be educational	68.4
I was interested in learning more about the topic	49.0
It was something to do in the park	44.9

I thought it would be a safe way to experience the park	29.6
I thought it would help me see the park's attractions	25.5
I thought it would help me develop new skills	17.3
A park employee invited me	14.3
Chance, I just happened on it	11.2
I heard from others that it was a good program	7.1
Other reason	10.2

In terms of how they found about the interpretive programs, most attendees indicated the bulletin boards, the Park Centre, and park employees (Table 3). The “other” sources included the amphitheatre sign, past experience, check-in booth, and campground hosts. People who used bulletin boards tended to stayed longer (5.4 days vs. 3.8 days) than those who didn't use them ($t = 2.728$, $df = 96$, $p = 0.008$). People who use local community papers were older (58.3 years) than those who didn't use those papers (40.9 years) ($t = 3.035$, $df = 93$, $p = 0.003$).

Table 3. Source of information about interpretive programs at MLPP.

Information source	% indicating yes
From the bulletin boards	56.1
From the Park Centre	32.7
From a park employee	21.4
From the park guide	13.3
I just noticed something going on and came to see	9.2
From other visitors	6.1
From the local community newspapers	3.1
From other sources	20.4

With respect to overall quality, 49.5% of attendees said the interpretive programs were excellent, 40.2% said very good, 8.2% said good, and only 2% said fair or mixed (mean score of 4.37/5). In explaining these answers, respondents indicated that the programs were fun and entertaining, were educational and informative, changed impressions of the topics, offered great ways to teach kids, provided opportunities to answer questions, involved well-spoken and knowledgeable presenters, were good for all ages, and were very interactive.

With respect to perceived impacts of interpretive programs, all statements garnered agreement or strong agreement from more than 60% of the respondents (Table 4). Statements with the highest levels of agreement were increased knowledge about nature in MLPP, desire to attending future programs, appreciation for MLPP, and appreciation for Alberta Parks. Respondents interested in off-season interpretive programs responded more positively than those not interested to “knowledge of nature in MLPP” (4.47 vs. 4.08; $t = 2.252$, $df = 93$, $p = 0.027$), “appreciation for MLPP” (4.30 vs. 3.88; $t = 2.572$, $df = 94$, $p = 0.012$), and “desire to support AB Parks” (4.16 vs. 3.69; $t = 2.519$, $df = 94$, $p = 0.013$). Trip length was positively correlated with each of these impacts (r was between 0.218 and 0.330, $n = 95$, $p < 0.05$).

Table 4. Impacts of interpretive programs

Interpretive programs increased my	% agree or strongly agree	Mean score (1-5)
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... knowledge of nature in MLPP	88.5	4.23
... desire to attend future interpretive programs	87.3	4.20
... appreciation for MLPP	82.3	4.04
... appreciation for AB Parks	81.3	4.03
... desire to support AB Parks	70.8	3.88
... awareness of environmental issues	68.5	3.78
... desire to help the environment	61.0	3.67

The most common constraints for attending interpretive programs were being unaware of the programs, having just arrived, and being too busy (i.e., other activities have priority; Table 5). The “other” category included “only here for the day”, “found out about it too late”, “hard to do with a large group”, poor weather, and lack of specific information.

Table 5. Reasons for not attending interpretive programs at MLPP.

Reason	% indicating yes
I am unaware of interpretive programs offered here	45.4
I just arrived and haven't had time yet	23.8
I am too busy with other things at the park	21.8
There wasn't a program offered during my visit	17.0
I prefer to explore the park on my own	9.3
I am not interested in the current topics	7.3
The programs are not educational enough	1.0
The programs are too educational	0.0
Other reasons	25.1

If respondents were to return to MLPP, the programs of highest interest were asking park staff a question, amphitheatre shows, family discovery packs, and scavenger hunts (Table 6). In terms of group type, families were more interested in discovery packs ($F = 23.444$, $df = 4$, $p < 0.001$), workshops ($F = 13.344$, $df = 4$, $p < 0.001$), and scavenger hunts ($F = 13.291$, $df = 4$, $p < 0.001$) than couples and people traveling alone. Female respondents were more interested than male respondents in scavenger hunts (1.72 vs. 1.92; $t = 2.422$, $n = 493$, $p = 0.016$). Respondents who attended an interpretive program on their current visit (and those interested in off-season programs) were more interested than non-attendees in attending all types of events (except asking park staff was not significantly different). Trip length was inversely related to interest in amphitheatre shows: ($r = -0.145$, $n = 495$, $p = 0.001$), slide shows ($r = -0.139$, $n = 493$, $p = 0.002$), and interest in guest speakers ($r = -0.176$, $n = 493$, $p < 0.001$). Age was inversely related to interest in guest speakers: ($r = -0.099$, $n = 484$, $p = 0.030$), but positively related to interest in family discovery packs ($r = 0.188$, $n = 486$, $p < 0.001$), family workshops ($r = 0.259$, $n = 483$, $p < 0.001$), scavenger hunts ($r = 0.285$, $n = 486$, $p < 0.001$), and self-guided trail contests ($r = 0.152$, $n = 486$, $p = 0.001$).

Table 6. Visitor interest in future interpretive programs.

Program	% indicating “definitely”	Average score
Asking park staff a question	81.2	1.25
Amphitheatre shows	53.1	1.62

Family discovery packs	50.5	1.74
Scavenger hunts	48.9	1.78
Family workshops/programs	38.6	1.95
Self-guided trail contests	33.3	2.05
Guest speakers	24.9	2.08
Guided hikes	27.5	2.12
Slide shows	24.7	2.13

When asked if they would be interested in programs that run during the “off-season” (between September and April at the Park Centre), only 29.4% of respondents indicated yes. For those interested, the explanations related to coming with a particular group, good for kids, specific topics (e.g., geology, plants, hibernation, seasons, and birds), learning potential, winter activities, and living close to the park. For those not interested, the explanations related to not being in the area at that time, poor timing with other demands, and the cold weather.

Regarding perceptions of interpretive programs, most respondents agreed that the park was well managed, interpretive programs were important to the mission of AB Parks, and interpretive programs increased the value of the experience at MLPP (Table 7). Attendees had much (and statistically significant) higher levels of agreement than non-attendees for all statements, especially those related to interpretive programs.

Female respondents were more likely than male respondents to agree with “MLPP is well managed” (4.22 vs. 3.97; $t = -3.630$, $df = 495$, $p < 0.001$), “interpretive programs are important to me” (3.52 vs. 3.30; $t = -2.261$, $df = 495$, $p = 0.024$) and “there is enough diversity in interpretive programs (3.69 vs. 3.53; $t = -2.208$, $df = 491$, $p = 0.028$). Family groups agreed more with the statement “interpretive programs are important to me” than people traveling alone (3.59 vs. 2.40; $F = 12.177$, $df = 4$, $p < 0.001$). Respondents in categories with five or more past visits agreed much more (4.21 and higher) with “MLPP is well managed” than those who had visited 2-4 times (4.16) or just once (4.00) ($F = 3.633$, $df = 4$, $p = 0.006$). Trip length is positively correlated with “MLPP is well managed” ($r = 0.158$, $n = 497$, $p < 0.001$), “interpretive programs are important to me” ($r = 0.156$, $n = 497$, $p < 0.001$), “interpretive programs are important to mission of AB Parks” ($r = 0.149$, $n = 497$, $p = 0.001$), “if interpretive programs did not exist, it would lower my opinion of MLPP” ($r = 0.120$, $n = 496$, $p = 0.008$), “interpretive programs add value” ($r = 0.143$, $n = 496$, $p = 0.001$), and “there enough diversity” ($r = 0.123$, $n = 493$, $p = 0.006$).

Table 7. Reactions to statements about the importance of interpretive programs at MLPP.

Statement	Attendees	Non-attendees	Avg. score
MLPP is well managed	4.39*	4.08	4.14
Interpretive programs are important to me	4.23*	3.26	3.45
Interpretive programs are important to the mission of AB Parks	4.33*	4.05	4.10
If interpretive programs did not exist, it would lower my opinion of AB Parks	3.58	2.93	3.05
If interpretive programs did not exist, it would lower my opinion of MLPP	3.43*	2.71	2.85
Interpretive programs increase the value of my experience at MLPP	4.41*	3.50	3.68
There is enough diversity in the interpretive programs at MLPP	3.88*	3.58	3.64

*statistically significant difference based on t-tests.

Discussion

The purpose of this study was to determine the characteristics of visitors at MLPP who participate in interpretive activities, to examine the constraints for non-participation, and to evaluate perceived visitor impacts of those interpretive opportunities. Clearly, park visitors are interested in, and appreciative of, interpretive programs at MLPP. In this study, 19.7% of respondents participated in interpretive programs, and with 2011 data, at most 10% (5,228/51,328) of campground users participated in interpretive programs. This may be due to other competing motivations and activities of park visitors and that many repeat visitors may have used interpretive programs in the past and choose not to use them on their current trip. Other studies have determined the actual rate of participation in interpretive programs of all visitors: 6% in state parks in Delaware, USA (Absher and Graefe, 1997), 8% in Yosemite National Park, USA (Ortiz, 2007), and 13.3% in Great Smoky Mountains National Park, USA (Stern et al., 2011b). At Fraser Island, Australia, 20% used visitor information leaflets, 20% used park guide brochures, 19% used island information centres, and 20% used park rangers (Ballantyne et al., 1998). In addition, of those visitors who attended interpretive programs at MLPP, 89.7% said they were either excellent or very good. At Great Smoky Mountains National Park, 88.6% of participants rated these programs as excellent or very good (Stern et al., 2011b).

For visitors to MLPP, the most common motivations related to time with family and friends, recreation, escape, scenery, and time in nature. These results are similar for visitors to Great Smoky Mountains National Park, who rated scenery, time with friends and family, escape, and immersion in nature as the most common motivations (Stern et al., 2011a). At MLPP, a few motivations relate directly with interpretive programs, notably “teach others in my group” (29.6% of respondents said yes) and “to learn about nature” (13.1%). These motivations suggest that some park visitors have particular goals that can be met with specifically-designed park interpretive programs. Even for visitors’ strong motivations for spending time with family and friends, recreation, escape, and enjoying scenery, park staff could potentially increase interest by designing interpretive programs to address these motivations. Attendees were less motivated than non-attendees for escape, but more motivated than non-attendees for nature learning, outdoor skill development, and outdoor challenges. Similarly, for visitors to parks in Delaware, USA, attendees of interpretive programs were motivated less by escape and enjoyment than attendees, but attendees were motivated more by nature learning than non-attendees (Absher and Graefe, 1997).

Interpretive programs represent an important option for the MLPP experience, even if visitors do not attend. For attendees and non-attendees combined, 54.7% agreed that interpretive programs were important to them, and 85.4% agreed that interpretive programs were important to the mission of Alberta Parks. This is crucial evidence for park managers and planners to know that future offerings of interpretation are desired and supported. Moreover, the main motivations for attending an interpretive program at MLPP was “good for members of my group”, entertainment, and education. By comparison, for attendees of interpretive programs at Great Smoky Mountains National Park, USA, the main motivations were entertainment, seeing attractions, “good for members of my group”, and learning (Stern et al., 2011a).

Given the low rate of attendance at interpretive programs at MLPP (10% or less), and that there seems to be substantial support for interpretive programs, MLPP might be able to increase attendance. Even though increased attendance might not be desirable in all cases, due to human resource capacity and resource impacts, staff might be able to address the barriers for those who did not attend and capitalize on the information sources currently used. The primary reason for not attending (45.4% of non-attendees) is a lack of awareness. Feedback from respondents indicated a desire for more and better advertising of interpretive

programs, new topics, better timing, more entertainment and interaction, and better hours for the Park Centre. In particular, since the primary information sources are information boards, the Park Centre, and employees (similar to results by Stern et al. 2011a), effort could be made to increase budget lines to support these sources (e.g. continuously stocked, updated, and accessible). If MLPP satisfactorily addressed these constraints, participation in interpretive programs could easily increase. In a different study, the main reason for non-attendance of interpretive programs at Great Smoky Mountains National Park, USA was not having time, prefer to explore park on my own, and inconvenient timing (Stern et al., 2011a). At state parks in southeastern USA, the key constraints were intrusions on unstructured time, competition with the park's main attraction, access to information, and life stages (Goodrich and Bixler, 2012). Overall, a lack of awareness of interpretive opportunities is a common theme in constraint studies (Tsang et al., 2011).

Results suggest that MLPP visitors are interested in a variety of interpretive opportunities, especially asking park staff questions, amphitheatre shows, family discovery packs, and scavenger hunts. Trip length affected which interpretive programs a visitor could attend. For example, day use visitors were less likely to participate in amphitheatre shows, slide shows, and guest speaker events because they occurred during the evening when those visitors would be returning home. Over 29% of park visitors are also interested in "off-season" interpretive activities. Making note of specific requests by park visitors and their most preferred information sources (i.e., bulletin boards, Park Centre, and park employees) will help park staff implement more effective plans to deliver notices about upcoming interpretive programs.

Regardless of whether MLPP visitors participated in an interpretive program, they had a high regard for such programs (e.g. importance, mission, opinion, and value). In particular, attendees rated the importance of interpretive programs higher than non-attendees. Moreover, Schliephack et al. (2013) found that visitors had high expectations for interpretive information at Cape Byron State Conservation Area, Australia.

Fifth, the results offer some support for the initial conceptual framework (Canadian Environmental Advisory Council, 1991) of visitors' engagement with interpretive programs, starting with interest, and then progressing to participation, learning, awareness, concern, and action. Most MLPP visitors (85.4%) support interpretive programs in AB Parks, but fewer (54.7%) find interpretive programs personally important. Moreover, very few visitors actually participate in interpretive programs. Nevertheless, many non-attendees have motivations that could be served by carefully designed interpretive programs. Further along the framework, for attendees of programs, 68.5% became more aware of environmental issues and 88.5% increased their nature knowledge at MLPP. In terms of attitudes, 82.3% increased their appreciation for MLPP or for AB Parks (70.8%). Finally, in terms of behavioural intentions, most attendees (70.8%) increased their desire to support AB Parks or to help the environment in general (61.0%). For comparison, at Great Smoky Mountains National Park, USA, over 80% of visitors viewed live interpretive programs as important to the National Park Service mission (Stern et al., 2011b). Among those who had attended a program, most reported that it helped increase their appreciation of Great Smoky Mountains National Park (88.3%), increased their appreciation of the National Park Service (88.2%), increased the likelihood they would donate to the park (58.7%), increased awareness of environmental issues and concerns (61.0%), and increased awareness of the nation's cultural heritage (74.0%).

There are some limitations to this study. First, data were gathered only during July to early September, when most on-site interpretive activities take place. The rate of participation and other results would likely be different if the study took place September to June. Second, the study did not sample respondents involved in off-site interpretive programs (i.e., outreach to community groups or schools) or on-site interpretive programs for school groups. Third, the study likely under-estimated the proportion of visitors taking part in interpretive programs because the interview process acted as an information conduit to visitors

about upcoming programs. That is, some respondents, upon learning about interpretive opportunities, asked interviewers about specific details, and later chose to participate in those interpretive programs as a result. Conversely, the estimated rate of attendance in interpretive programs was hindered by the lack of day use data for MLPP. Fourth, this study measured perceptions of attitudes and learning, but did not measure actual attitude change or learning.

More research is needed to examine the differences between attendees and non-attendees with respect to actual levels of awareness, knowledge gain, and changes in attitudes and environmentally-friendly behaviour. In addition, more work should examine the significant links among awareness, knowledge gain, changing attitudes, and changes in environmentally-friendly behaviour (Kim et al., 2011; Orams, 1994; Howard, 2000; Powell and Ham, 2008). In particular, these variables deserve scrutiny across a variety of jurisdictions, recreational settings, visitor motivations (Tsang et al., 2011), ecological settings, and theoretical frameworks (especially the Theory of Reasoned Action and the Elaboration Likelihood Model). In addition, it is important to examine how changes in knowledge, attitudes, and behaviour last in the longer term (Hughes, 2013). It would also help to conduct a full market analysis of the kinds of interpretive programs desired by park visitors. Last, it would be helpful to determine the effectiveness of programming decisions in response to addressing constraints, desired topic areas, and demographic marketing.

Referring back to relevant themes from the World Parks Congress (2014), this study provides evidence that park interpretation can assist in “inspiring a new generation” by nurturing interest in nature, supporting knowledge gains, promoting environmental attitudes, and providing opportunities and incentives for environmentally-friendly behaviour. These people can develop deeper connections with nature and become leaders on behalf of nature and park conservation. Second, this study demonstrates that humans derive many health benefits (learning, challenge, social interactions) from park interpretation. These benefits can provide a valuable argument for continued park conservation, which in turn will provide a host of other ecological benefits. Last, interpretation in parks can help managers reach conservation goals by developing knowledgeable, supportive, and actively engaged park visitors.

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