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Attitude and Knowledge Study

of: Newfoundland Residents

on: Moose and Moose Management in
Terra Nova National Park of Canada



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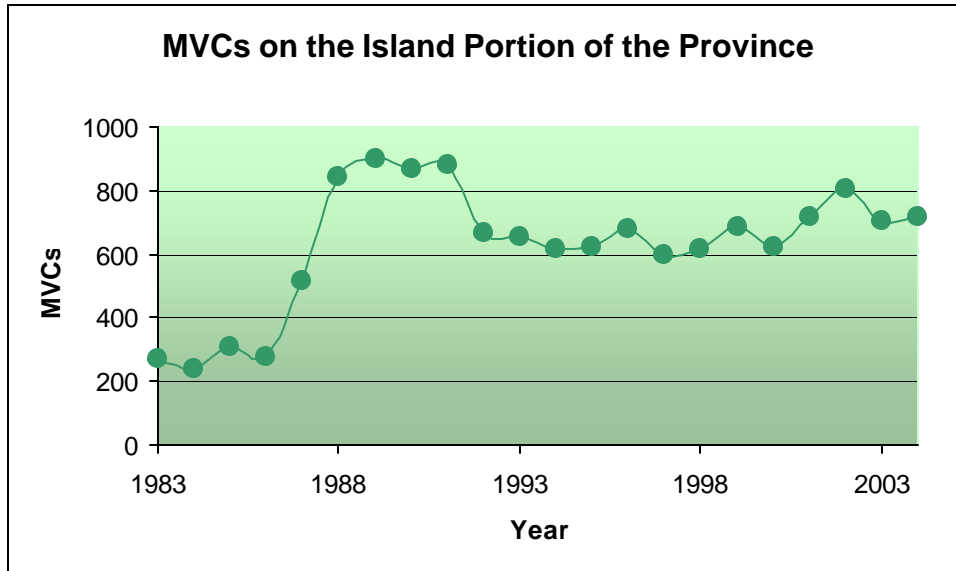
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1.0 Introduction

Moose (*Alces alces*) are not native to the island of Newfoundland; they were introduced in the early 1900s just before the extermination of wolves on the island (Pimlott 1953). Since those early days of a few individuals the population has grown significantly; today the population is estimated at just over 122,000 (Joyce 2005. Pers. comm.). The moose population peaked in 1997 with estimates of approximately 150,000 individuals (O'Donague 1997. Pers. comm.; Joyce 2005. Pers. comm.). This peak in the moose population, however, was not reflected in the number of moose-vehicle collisions (MVCs); in fact in 1997 there were 595 MVCs, the lowest since 1988 when numbers began to be more accurately reported using reports from RCMP and Wildlife Conservation officers (Joyce 2005. Pers. comm.). Between 1988 and 1994, 3.5% of all motor vehicle accidents involved moose; these 5,433 moose vehicle collisions (MVCs) resulted in 604 people injured and 14 people killed (Joyce and Mahoney 2001). MVCs peaked in the late 1980s, early 1990s in the province. In 1989 there were 897 MVCs on the island portion of the province, in 1990, 867 accidents and in 1991, 879 MVCs. Throughout the rest of the 1990s, MVC numbers were approximately 650, but since 2001 numbers have started to rise again. In 2002, there were 805 MVCs and over 700 in 2001, 2003 and 2004 prompting natural resource managers to again consider the seriousness of the issue in the province (Figure 1). While biologically the moose population has done well since its introduction to the island portion of the province, as is clearly evident, there have been direct impacts to humans.

By the 1950s moose occupied most of the potential moose habitat on the island portion of Newfoundland and Labrador. At that time there were already recommendations to harvest more moose in inaccessible parts of the island to reduce potentially high densities of moose (Pimlott 1959). Wildlife managers have monitored the population and its effects on the landscape for many years. A general decline in moose numbers occurred between 1960 and 1972 probably due to over hunting in accessible areas of the island and range deterioration through overbrowsing in other areas of the island portion of the province (Mercer and Manuel 1974). Whether moose are affecting the boreal forest and whether anything should be done has been debated for many years, and continues to be an important wildlife management issue on the island portion of the province. Although an exotic species to the island, the moose has become for many a

Figure 1: MVCs on the Island Portion of the Province



Newfoundland and Labrador cultural symbol sung about in songs, considered on the highways as the province's speed bump, and a food staple in the fall for many Newfoundland and Labrador families.

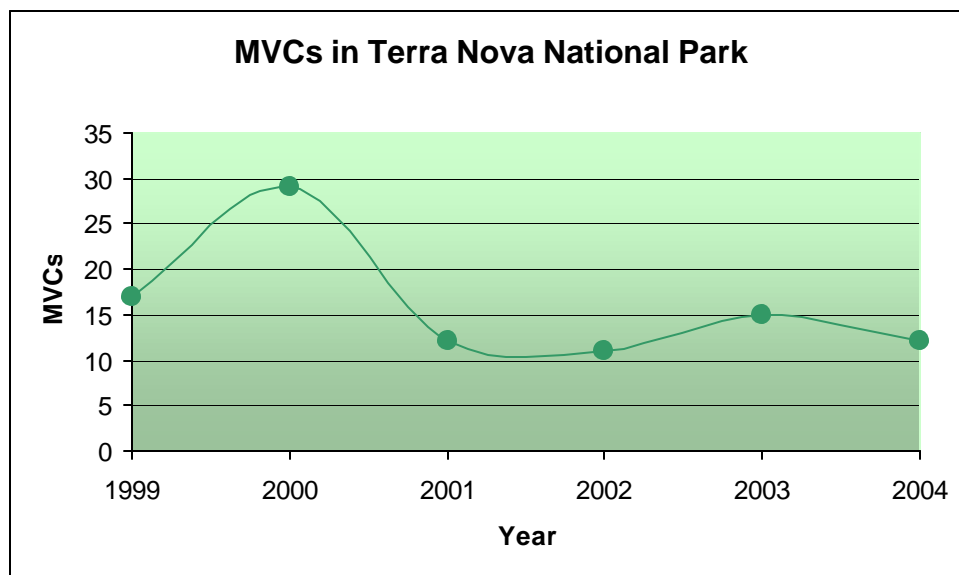
While in most parts of North America, natural predators control moose population growth and moose density, on the island portion of Newfoundland and Labrador moose numbers depend mainly on hunter harvest (Ferguson et al. 1989). There is some black bear predation on moose calves in the spring in some areas of the island (Mahoney 1984), but in most areas a controlled hunter harvest has largely determined moose densities (Mercer et al. 1988). Thus, the moose management situation on the island is very much a human dimensions issue requiring an understanding of Newfoundlander attitudes and values toward moose and moose management options.

Within the island portion of Newfoundland and Labrador, Terra Nova National Park of Canada exists. The park was partly established to represent the boreal forest region of Eastern Newfoundland. Ecological integrity has become an important aspect within Parks Canada's

system of national parks. Each park is required to better understand and address the threats to their ecological integrity. To this end, Terra Nova National Park of Canada from a biophysical perspective is conducting research to better understand and document the impact moose have on the vegetation. If moose were found to be a significant threat to the ecological integrity of the relatively small national park, then managers would need to consider managing the moose inside the park.

Moose have always had an impact on humans inside Terra Nova National Park of Canada. For some visitors to the park, moose provide wildlife observation opportunities, for others they are a dangerous natural hazard. MVCs inside Terra Nova National Park of Canada are documented and have become common enough to require a variety of educational efforts to increase visitor awareness of moose and minimize MVCs. In 2000, there were 29 MVCs inside the park; Figure 2 illustrates the number of collisions over the past six years in the park (Cote 2005. Pers.comm.). For some local residents, moose impact their gardens eating shrubs and vegetables, while for others, the opportunity to hunt a moose that leaves the national park offers a recreational hunting experience and food for the winter. From a social science or human dimensions perspective any decisions regarding moose management will require the acceptance of the Newfoundland public and community residents closest to the park, two key target groups who would be directly affected and can affect any decisions.

Figure 2: MVCs in Terra Nova National Park



2.0 Purpose and Objectives

Moose management issues have been identified as early as 1996 by Terra Nova National Park of Canada staff as a key resource issue worthy of study from a social science or human dimensions (HD) perspective. In 1996, visitor attitudes toward and beliefs about moose, moose management, and moose vehicle collisions (MVCs) were explored (Bath 1997). The focus of this early human dimensions work in Terra Nova National Park of Canada was on visitor's perceptions of risk, tolerance of risk, beliefs, and influencing driving behaviour to reduce MVCs. In discussing further direction in terms of HD work in Terra Nova National Park of Canada, Bath (1997) wrote that:

“the true strength of this research will be realized by turning this one-shot case study into a longitudinal study where changes in attitudes, perceptions and beliefs can be monitored over time as moose numbers change, education efforts change, and policy decisions regarding moose are implemented. If a decision is reached by park managers concerning possibly decreasing the moose population, then further data will be required from visitors and other stakeholders on the level of support for this decision” (Bath 1997, p. 90).

Nine years later and moose remain a key resource issue as Terra Nova National Park struggles with the challenge of an exotic species inside their park boundary that could be influencing the ecological integrity of the park. The moose issue not only has remained important from a biophysical perspective as research has been done on the impact of moose on the boreal forest, particularly balsam fir, but moose have also remained on the radar screen from a human dimensions perspective. In fact, the recent social science strategy for Terra Nova National Park also emphasized the need to better understand public attitudes toward moose and to begin an active public involvement process working with all the key interest groups toward a comprehensive assessment of management options and a common understanding of the issue (Bath 2006).

The purpose of this study was to build upon the earlier work completed in 1997 by using similar items where possible to obtain preliminary trend data on attitudes and beliefs toward moose. The earlier study (Bath 1997), however, focused just on Newman Sound campground visitors and data were collected from a relatively small, random sample of visitors (n=298) over a three weekend period in August 1996. Since 1996, Parks Canada has realized that managing park resources requires an understanding not only of visitor attitudes. Implementation of park decisions can only occur with the acceptance of local community residents and a broader general public who may or may not be visitors to the park. Clearly management of controversial species like moose require a more comprehensive human dimensions approach involving larger and more representative sample sizes and focused on these new “social partners” in resource management decision-making processes.

This study has the following specific objectives:

- To begin to document trends in attitudes and beliefs where possible by directly comparing items from 1996 and 2004 where appropriate,
- To understand community resident attitudes toward and beliefs about moose and moose management issues, and contrast these attitudes and beliefs with those of residents representative of the entire island portion of the province.
- To explore specifically public perception of numbers of moose, their impacts in the park, and whether the public believes anything should be done about moose numbers, and if moose should be decreased what options might be acceptable by the public,
- To provide park managers with a very clear picture of management priorities with regards to moose from the general public’s perspective.

Similar to HD studies done on Newfoundland marten (Bath 2002, 2003, 2004) this study will allow park managers to understand what people know and don’t know, what they believe are important aspects of the issue, and what factors seem to be influencing the attitudes. Thus,

interpretation programs, educational programs, communication strategies and public involvement strategies can be planned and better targeted by using the results from this study.

3.0 Methods

Data were collected through a mail-out questionnaire to a representative sample of community residents (e.g., those residents from the communities directly in and surrounding the park), and to a representative sample of island-wide residents. Park visitors were not directly sampled in this study. The number of individual residents selected from various communities was based on the population size of each community defined in the study area; 800 residents for each sample were initially sent a questionnaire. Table 1 outlines the number of individuals from each community that were randomly selected for the park community sample based upon the understanding that a minimum sample size of approximately 400 from each region was required to allow the results to be accurate 19 times out of 20, plus or minus five percentage points. As Table 1 indicates residents from a variety of communities participated in the study. For the island-wide sample, residents were randomly selected from all communities on the island where the chance of a resident being selected was based proportional to population; thus most of the sample was drawn from the urban centres of St. John's, Gander, Grand Falls-Windsor and Corner Brook. The island-wide sample is representative of the island portion of the province as a whole; no additional sampling was done to increase the number of rural respondents. Many Newfoundland rural communities were, however, a part of this sample.

Table 1: List of Communities in and Surrounding the Park Study Sample

| Community | Sampling Frame | Sample Size |
|--|----------------|-------------|
| Eastport Area Burnside Eastport Salvage Sandringham Sandy Cove | 827 | 188 |
| Musgravetown Area Bloomfield Bunyan's Cove Lethbridge Musgravetown Canning's Cove | 1259 | 286 |
| Glovertown Area Glovertown Glovertown South Traytown | 1092 | 248 |
| Charlottetown | 110 | 25 |
| Port Blandford | 231 | 53 |

Respondents within each household were randomly selected using the “next birthday rule” and were asked to verbally accept to complete the questionnaire over the telephone before the questionnaire was mailed out to them. A postcard follow-up thanking respondents for

completing the questionnaire or encouraging respondents to complete the questionnaire was sent to all respondents approximately a week and a half after the initial questionnaires were sent (Appendix 1). A postage paid envelope was enclosed to help increase the response rate. Response rates and the characteristics of the sample will be reported in the following section.

The questionnaire was designed using mainly close-ended items, printed on coloured paper (green), and prepared as a small two-page booklet. The cover letter outlining the purpose of the study, the importance to respondents to voice their opinions, and the statement that individual responses would be held confidential, was integrated as the first page of the booklet. Name and contact number of the principal investigator were placed on the front page also to encourage response. Several respondents did call the principal investigator to ask questions about the study. In addition, there were respondents who contacted Parks Canada employees asking for the answers, so “they could fill out the questionnaire properly”. In this way, the study itself acted as a learning tool for various people.

The questionnaire consisted of 37 items (Appendix 2). Attitudinal items were placed at the beginning of the questionnaire followed by several belief questions. A seven point Likert scale from strongly disagree to strongly agree was used for the attitudinal items. A seven-point scale was used to allow respondents to express a wider range of support or opposition to a statement over a five-point or simple yes/no response set. Human dimension researchers are as interested in the strength of the attitude as in the direction; spreading responses over a longer scale can offer a better understanding of the strength of opinions. Belief items were mainly measured with statements that respondents stated were generally false, generally true, or not sure. The latter response was used to reduce the amount of guessing.

The questionnaire also consisted of a section asking respondents to prioritize various management aspects from very low to very high priority. Respondents were also asked about their past experiences with moose (e.g., hunting behaviour and whether they had ever personally experienced a MVC). At the end of the questionnaire respondents were asked for additional comments and some information about themselves (e.g., age, gender, and length of residence

within the community). The additional comments are presented in appendix 3 and discussed within the final section of the report.

4.0 Results

4.1 *Response rates and the nature of the sample*

Of the 800 questionnaires mailed to each region, there were several questionnaires that were non-deliverable. The number of non-deliverables is comparable to other mail-out studies done on the island. A 62% response rate was achieved from the communities in and around Terra Nova National Park (n=496). A lower response rate of 49% was achieved with the island-wide sample (n=394). The difference in response rates is not unexpected given that samples drawn from larger urban areas (e.g., St. John's, Grand-Falls, Corner Brook, etc.) tend to elicit lower response rates than those in rural areas. In addition, communities close to the park have a stronger tradition of communicating ideas through human dimensions research to Terra Nova National Park of Canada managers, and have more interest in the management decisions that are made on their doorstep. The sample sizes in both areas are sufficiently large enough to allow direct comparisons between the two regions and to generalize to the populations they represent, being accurate 19 times out of 20, plus or minus 5 percentage points.

In the island-wide sample, 39.6% were females while 60.4% were males. The breakdown for community residents was similar with 44.3% of respondents being female and 55.7% male.

While the “next birthday rule” ensures that a random selection of males and females occurs, the higher percentage of male respondents may be due to the nature of the topic. Most moose hunters in the province are male and women may feel their male counterparts opinion on moose management issues is better informed and “more useful” to the study than their own. In fact, several questionnaires were returned with comments written on the front explaining that the husband filled out the questionnaire.

While a large percentage of respondents were between 36 and 55 years of age, a wide range of ages responded to the questionnaire suggesting a broad interest in moose management issues (Table 2). Table 3 compares the age structure of respondents to gender for each study region.

The two samples are relatively similar in their gender and age structure with two exceptions. There is a higher percent of males in the island-wide sample (15%) compared to 9% in the community sample in the age cohort 26-35 years of age. There is also a higher percentage of respondents over 65 years of age in the community sample compared to the island-wide sample; approximately 20% of males and 12% of females in the community sample were over 65 compared to 14% males and 9% females in the island-wide sample.

Table 2: Crosstabulation of Age against Region

| | | Island Wide | Communities around the park | Total |
|-------|---------------|-------------|-----------------------------|--------|
| Age | 18 - 25 years | 3.6% | 4.1% | 3.9% |
| | 26 - 35 years | 15.4% | 12.0% | 13.5% |
| | 36 - 45 years | 22.4% | 20.8% | 21.5% |
| | 46 - 55 years | 26.2% | 24.4% | 25.2% |
| | 56 - 65 years | 19.8% | 22.4% | 21.3% |
| | over 65 years | 12.6% | 16.3% | 14.7% |
| Total | | 100.0% | 100.0% | 100.0% |

Table 3: Crosstabulation of Age Against Gender

| | Age | | | | | |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 18 - 25 years | 26 - 35 years | 36 - 45 years | 46 - 55 years | 56 - 65 years | over 65 years |
| Island Wide | | | | | | |
| Female | 3.3% | 17.1% | 27.6% | 25.7% | 17.8% | 8.6% |
| Male | 3.9% | 14.7% | 19.0% | 27.2% | 21.1% | 14.2% |
| Communities Around the Park | | | | | | |
| Female | 4.2% | 16.2% | 25.0% | 23.1% | 19.9% | 11.6% |
| Male | 4.0% | 8.8% | 17.6% | 25.4% | 24.6% | 19.5% |

A phenomenon found in Newfoundland more so than in other parts of Canada is the long length of residence found amongst respondents; more than 60% of respondents stated they had lived in the community for more than 25 years (Table 4).

A small percentage of respondents have had direct experiences with moose, either participating in moose hunting, or having an unfortunate moose-vehicle collision (MVC). Approximately 17% of residents from the island-wide sample and 16% of community residents indicated having a moose license in fall of 2004. Slightly more residents (22% island-wide and 24% community) had a hunting license in 2003. Approximately 20% of visitors from the Bath (1997) study stated they had hunted moose in 1995. Participation in moose hunting appears to be slightly decreasing, a trend evident throughout most parts of North America. This also has implications for controlling a moose population.

Approximately 12% of the respondents in this study had experienced a MVC, up slightly from the 10.6% of visitors who had personally had a MVC in the Bath (1997) study. While in terms of actual numbers of MVCs, moose hunters did not experience as many MVCs as non-moose hunters, Chi Square analysis revealed no significant difference between the two groups at $p < 0.05$. While it has been suggested that moose hunters rarely experience a MVC perhaps due to a better search image of moose, thus allowing moose hunter drivers to observe a moose sooner than non-moose hunters and thus avoid an accident, findings from this study suggest that a slightly higher percentage of moose hunters compared to non-moose hunters experienced a MVC (Table 5). No differences were found between community residents and the island-wide portion of the province sample. Males were more likely to experience a MVC than females, however, this may be as much a function of males driving more frequently than females. Within the park community sample, approximately 15% of MVCs involved males compared to 9% that involved females, however, the difference was not statistically significant (Chi square = 3.479, $p = 0.062$). Similar percentages occurred with the island-wide sample respondents (Table 6). While it was not the purpose of this study to compare attitudes and beliefs of residents who have and have not experienced personally MVCs, such analysis could be done as a large number ($n = 105$) of respondents have experienced a MVC thus lending such comparative analysis possible.

Table 4: Crosstabulation of age against years of residence?

| | | | How long have you lived in the community? | | | | | | | Total |
|-------|---------------|--------------|---|-------------|--------------|---------------|---------------|---------------|---------------|--------|
| | | | less than 1 year | 1 - 5 years | 6 - 10 years | 11 - 15 years | 16 - 20 years | 21 - 25 years | over 25 years | |
| Age | 18 - 25 years | Count | 0 | 9 | 1 | 2 | 10 | 12 | 0 | 34 |
| | | % within Age | .0% | 26.5% | 2.9% | 5.9% | 29.4% | 35.3% | .0% | 100.0% |
| | 26 - 35 years | Count | 2 | 23 | 17 | 6 | 5 | 5 | 61 | 119 |
| | | % within Age | 1.7% | 19.3% | 14.3% | 5.0% | 4.2% | 4.2% | 51.3% | 100.0% |
| | 36 - 45 years | Count | 0 | 18 | 19 | 17 | 14 | 11 | 109 | 188 |
| | | % within Age | .0% | 9.6% | 10.1% | 9.0% | 7.4% | 5.9% | 58.0% | 100.0% |
| | 46 - 55 years | Count | 0 | 11 | 11 | 11 | 17 | 15 | 156 | 221 |
| | | % within Age | .0% | 5.0% | 5.0% | 5.0% | 7.7% | 6.8% | 70.6% | 100.0% |
| | 56 - 65 years | Count | 1 | 26 | 16 | 7 | 7 | 4 | 126 | 187 |
| | | % within Age | .5% | 13.9% | 8.6% | 3.7% | 3.7% | 2.1% | 67.4% | 100.0% |
| | over 65 years | Count | 0 | 6 | 4 | 8 | 4 | 5 | 102 | 129 |
| | | % within Age | .0% | 4.7% | 3.1% | 6.2% | 3.1% | 3.9% | 79.1% | 100.0% |
| Total | | Count | 3 | 93 | 68 | 51 | 57 | 52 | 554 | 878 |
| | | % within Age | .3% | 10.6% | 7.7% | 5.8% | 6.5% | 5.9% | 63.1% | 100.0% |

Table 5: Crosstabulation of MVC and hunting

| | | Have you been involved in a moose-vehicle accident? | |
|--|-----|---|-------|
| | | Yes | No |
| Did you have a licence to hunt moose this past fall? | Yes | 15.1% | 84.9% |
| | No | 11.4% | 88.6% |

Chi-square = 1.512, df=1, p=0.219 NS

Table 6: Crosstabulation of MVC and gender

| | Have you been involved in a moose-vehicle accident? | | | |
|--------|---|-------|-----------------------------|-------|
| | Island-wide | | Communities around the park | |
| | Yes | No | Yes | No |
| Female | 8.6% | 91.4% | 9.3% | 90.7% |
| Male | 13.9% | 86.1% | 14.9% | 85.1% |

Documenting whether attitudes and beliefs are the same or significantly different may help provide an understanding of the possible effects of such an event on attitudes toward the species.

4.2 *Attitudes toward Moose*

Attitudes are learned feelings about issues and objects, and as they are learned, attitudes can be affected positively or negatively by educational and communication campaigns that are targeted on the key items that are responsible in forming the attitude. Attitudes tend to be well organized and predispose the way we will behave in certain situations. For example, strong feelings toward animals having rights will often result in anti-hunting attitudes and the lack of participation in hunting. Strongly held perceptions of risk of driving at night and the chance of a MVC, with attitudes of little risk tolerance will influence driving behaviour in terms of whether one will drive at night (Bath 1997).

Understanding the strength of attitudes offers managers information on the likelihood of being able to affect such attitudes. People tend to seek out information when considering an attitude change. According to Eagly and Chaiken (1993), individuals that already have favourable or unfavourable thoughts predominating their attitudes about an issue will be more susceptible to cognitive structure change and thus to attitude change. Their attitudes will be relatively enduring, resistant and predictive of behaviour. In contrast, Eagly and Chaiken (1993) suggest that those who hold neutral attitudes, when exposed to new information might experience peripheral attitude shift and form attitudes that are relatively temporary, susceptible and not as strongly predictive of behaviour. While attitude change was not clearly documented over the years of the human dimensions in Newfoundland marten research (Bath 2004, 2003, 2002), with this species, that was not as well-known to the public as the moose, it was hypothesized that the many documented neutral attitudes toward the marten was due to attitudes not yet being formed and the suggestion from that research was to focus on these neutral attitudes to encourage a shift in opinion. With a well-known species such as moose, understanding issues of attitude formation and change may be much more complicated.

There are four main components of attitude: affective (i.e., liking or disliking of something), cognitive (i.e., perceptions or beliefs about something that may or may not be true), behavioral intention (i.e., what someone says they will do) and actual behaviour (what someone has done in the past). In striving to understand the human dimension of a resource

management issue, questions are designed to assess the various components of attitude. In this section of the results, attitudes toward moose are presented.

4.3 Affective (liking/disliking) component of attitude

Newfoundlanders hold strong positive feelings toward moose. Most residents on the island (63.6%) and in the communities (74.3%) slightly like, moderately like or strongly like moose when asked: “Which of the following best describes your feelings toward moose?”

Approximately 24% of the island sample expressed neutral attitudes compared to only 17% of community residents. And while attitudes are mainly positive, the strength of the attitudes was quite different between the communities and the island as a whole. Over 40% of community residents expressed “strongly liking” moose; in contrast, 30% of island residents stated the same strong liking of moose. It is interesting that attitudes to this item seem to be very similar to the results found nine years earlier in the Bath (1997) study. Table 7 illustrates that visitors in 1996 expressed views that were similar to the island resident views seen today; community residents were more positive than both groups.

When asked about how people feel about having moose in Terra Nova National Park of Canada attitudes were less positive and quite different from the earlier study (Bath 1997). Most respondents (68%-70%) stated that they enjoy having moose but do worry about problems moose may cause. While these results are similar to those from 1996, more respondents today than in 1996 stated they did not enjoy having moose in the park and regard moose as a nuisance, and significantly less respondents stated they enjoyed having moose and did not worry about problems moose may cause (Table 8). A similar percentage of those that stated they did not enjoy moose (Table 8) also indicated they disliked moose (Table 7). This indicates a consistency in the affective (liking/disliking) component of attitude tested for in the two items asking about feelings toward moose. Residents representative of the entire island appear less positive toward moose than local community residents.

4.4 Understanding values

While attitudes are similar to a film in a camera that can be changed after a while, values tend to be stronger and organized within a hierarchy where the strongest values can over ride

Table 7: Which of the following best describes your feelings toward moose?

| | Which of the following best describes your feelings toward moose? | | | | | | |
|-----------------------------|---|--------------------|------------------|--------------------------|---------------|-----------------|---------------|
| | Strongly dislike | Moderately dislike | Slightly dislike | Neither like nor dislike | Slightly like | Moderately like | Strongly like |
| Visitors 1996 | 4.9% | 2.8% | 3.5% | 22.9% | 7.4% | 27.5% | 31.0% |
| Island Wide | 5.7% | 2.7% | 3.8% | 24.3% | 8.6% | 24.5% | 30.5% |
| Communities around the park | 4.2% | 1.9% | 2.8% | 16.8% | 7.2% | 27.0% | 40.1% |

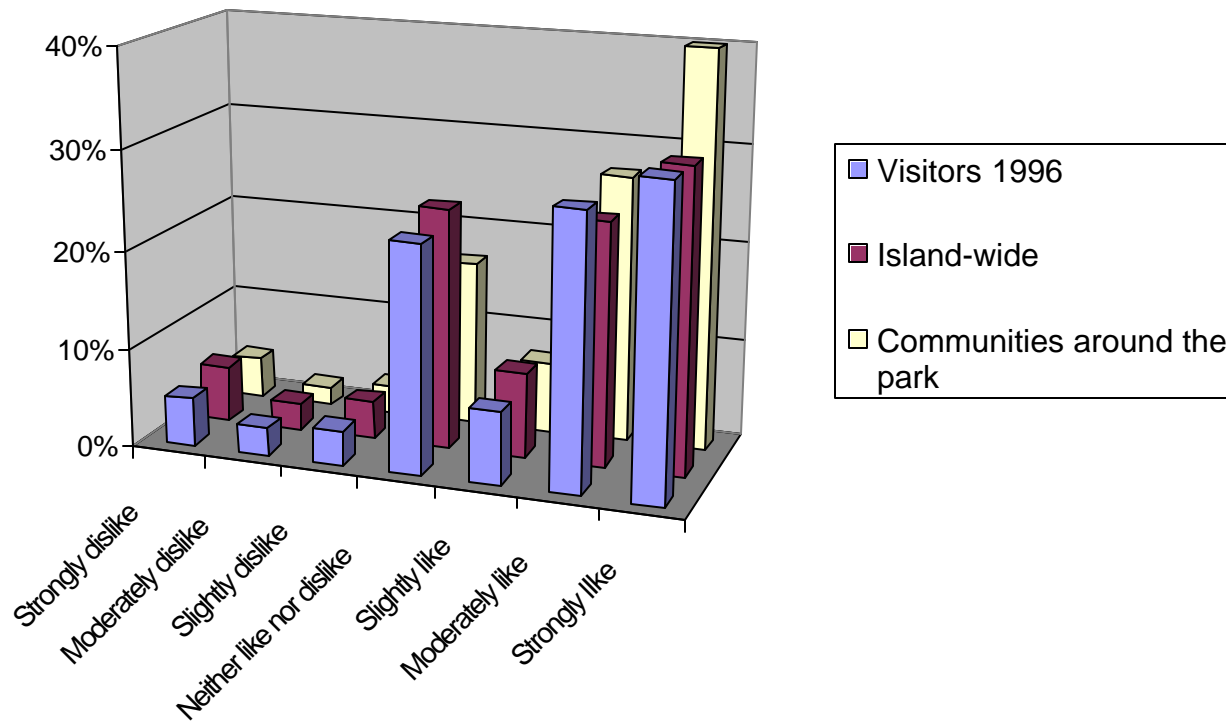


Table 8: Generally, how do you feel about having moose in Terra Nova National Park?

| | Generally, how do you feel about having moose in Terra Nova National Park? | | |
|-----------------------------|--|-----------------|--------------|
| | Enjoy, do not worry | Enjoy, do worry | Do not enjoy |
| Island Wide | 12.5% | 67.9% | 11.4% |
| Communities around the park | 16.2% | 69.9% | 8.5% |
| Visitors 1996 | 23.3% | 66.9% | 4.9% |

(Percentages do not add up to 100% due to no opinion responses not being included)

lesser values. Values like a camera rarely change but by understanding the nature of one’s value system and gaining a sense of the strength of certain values, environmental educators and communication officers can design value persuasive messages that can be important in influencing attitudes and behaviour. In this study, future generation values, existence values, cultural values, and ecosystem values were assessed.

Future existence values of moose are extremely important to Newfoundlanders.

Approximately 80% of respondents from both the community and island samples agreed to some degree with the statement: “It is important to maintain moose populations in Terra Nova National Park so that future generations can enjoy them” (Table 9). Over 40% of island residents strongly agreed to the statement while 45% of community residents expressed similar strength in values toward moose. There were approximately 15% of respondents who disagreed to the statement in some way.

While Newfoundlanders have strong positive values toward moose, it seems that local community residents surrounding Terra Nova National Park of Canada have stronger positive values than residents from the rest of the island. Community residents consistently expressed values as much as 9%-13% stronger than their island counterparts. For example, 56% of community residents strongly disagreed compared to 43% of island residents in response to the statement: “Because there are plenty of moose in other parts of Newfoundland, there is no

Table 9: It is important to maintain moose populations in TNNP so that future generations can enjoy them.

| | | | It is important to maintain moose populations in TNNP so that future generations can enjoy them. | | | | | | Total | |
|--------|-----------------------------|-----------------|--|---------------------|-------------------|----------------------------|----------------|------------------|-------|----------------|
| | | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | | Strongly agree |
| Region | Island Wide | Count | 32 | 16 | 11 | 24 | 66 | 82 | 157 | 388 |
| | | % within Region | 8.2% | 4.1% | 2.8% | 6.2% | 17.0% | 21.1% | 40.5% | 100.0% |
| | Communities around the park | Count | 42 | 16 | 12 | 24 | 65 | 107 | 218 | 484 |
| | | % within Region | 8.7% | 3.3% | 2.5% | 5.0% | 13.4% | 22.1% | 45.0% | 100.0% |
| Total | | Count | 74 | 32 | 23 | 48 | 131 | 189 | 375 | 872 |
| | | % within Region | 8.5% | 3.7% | 2.6% | 5.5% | 15.0% | 21.7% | 43.0% | 100.0% |

need to have moose in Terra Nova National Park” (Table 10). In another item assessing existence values, 41% of community residents compared to 32% of island residents strongly agreed to the statement: “It is important to me that moose exist in Terra Nova National Park” (Table 11). Approximately 16% of Newfoundland residents feel that there is no need to have moose in Terra Nova National Park of Canada and that it is not important that they exist in the park.

Although an introduced species, the moose has become a cultural symbol of the province. It has been immortalized in song (e.g., Gotta Get Me Moose B’y, by Buddy Wasiname and the Other Fellers), posters (e.g., The Newfoundland Speed Bump), and has become an integral part of recreational hunting experiences in the fall. While most residents on the island realize that the moose was introduced and not native to the island of Newfoundland, nearly 80% agreed to some degree with the statement: “The moose is part of our unique Newfoundland heritage” (Table 12). Over 47% of community residents and nearly 43% of island residents strongly agreed with the statement suggesting that the moose does have a strong cultural value to most Newfoundlanders.

The moose in Terra Nova National Park of Canada is also perceived as having a strong ecosystem value to most Newfoundlanders. Approximately 70% of island respondents and 73% of community residents agreed to some degree with the statement: “The moose is an important part of the park ecosystem” (Table 13). Similar to other items, community residents held slightly stronger and more positive views of moose as evident by 34.4% strongly agreeing to the statement compared to 27% strongly agreeing in the island sample. In terms of attitudes toward moose, there seems to be a consistent 15% approximately of Newfoundlanders who hold negative attitudes toward moose.

4.5 Understanding perceptions of risk, damage and benefits of moose

Entire human dimension studies can focus on perceptions of risk, perceived likelihood of risk, tolerance of that risk, and trade-offs of risks and benefits associated with a species or recreational activity. On a daily basis, we assess risk, weigh the benefits and costs of certain decisions, assess alternatives and subsequently choose what we believe is the best decision,

Table 10: Because there are plenty of moose in other parts of Newfoundland, there is no need to have moose in Terra Nova National Park.

| | | | Because there are plenty of moose in other parts of Newfoundland, there is no need to have moose in Terra Nova National Park. | | | | | | Total | |
|--------|-----------------------------|-----------------|---|---------------------|-------------------|----------------------------|----------------|------------------|-------|----------------|
| | | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | | Strongly agree |
| Region | Island Wide | Count | 168 | 69 | 46 | 29 | 30 | 14 | 31 | 387 |
| | | % within Region | 43.4% | 17.8% | 11.9% | 7.5% | 7.8% | 3.6% | 8.0% | 100.0% |
| | Communities around the park | Count | 273 | 62 | 37 | 36 | 28 | 18 | 30 | 484 |
| | | % within Region | 56.4% | 12.8% | 7.6% | 7.4% | 5.8% | 3.7% | 6.2% | 100.0% |
| Total | | Count | 441 | 131 | 83 | 65 | 58 | 32 | 61 | 871 |
| | | % within Region | 50.6% | 15.0% | 9.5% | 7.5% | 6.7% | 3.7% | 7.0% | 100.0% |

Table 11: It is important to me that moose exist in Terra Nova National Park.

| | | | It is important to me that moose exist in Terra Nova National Park. | | | | | | Total | |
|--------|-----------------------------|-----------------|---|---------------------|-------------------|----------------------------|----------------|------------------|-------|----------------|
| | | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | | Strongly agree |
| Region | Island Wide | Count | 39 | 13 | 13 | 70 | 60 | 69 | 123 | 387 |
| | | % within Region | 10.1% | 3.4% | 3.4% | 18.1% | 15.5% | 17.8% | 31.8% | 100.0% |
| | Communities around the park | Count | 44 | 18 | 16 | 67 | 61 | 82 | 199 | 487 |
| | | % within Region | 9.0% | 3.7% | 3.3% | 13.8% | 12.5% | 16.8% | 40.9% | 100.0% |
| Total | | Count | 83 | 31 | 29 | 137 | 121 | 151 | 322 | 874 |
| | | % within Region | 9.5% | 3.5% | 3.3% | 15.7% | 13.8% | 17.3% | 36.8% | 100.0% |

Table 12: The moose is part of our unique Newfoundland heritage.

| | | | The moose is part of our unique Newfoundland heritage. | | | | | | Total | |
|--------|-----------------------------|-----------------|--|---------------------|-------------------|----------------------------|----------------|------------------|-------|----------------|
| | | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | | Strongly agree |
| Region | Island Wide | Count | 29 | 9 | 22 | 26 | 52 | 83 | 165 | 386 |
| | | % within Region | 7.5% | 2.3% | 5.7% | 6.7% | 13.5% | 21.5% | 42.7% | 100.0% |
| | Communities around the park | Count | 28 | 23 | 21 | 27 | 62 | 95 | 230 | 486 |
| | | % within Region | 5.8% | 4.7% | 4.3% | 5.6% | 12.8% | 19.5% | 47.3% | 100.0% |
| Total | | Count | 57 | 32 | 43 | 53 | 114 | 178 | 395 | 872 |
| | | % within Region | 6.5% | 3.7% | 4.9% | 6.1% | 13.1% | 20.4% | 45.3% | 100.0% |

Table 13: The moose is an important part of the park ecosystem.

| | | | The moose is an important part of the park ecosystem. | | | | | | Total | |
|-----------------------------|-----------------|-----------------|---|---------------------|-------------------|----------------------------|----------------|------------------|--------|----------------|
| | | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | | Strongly agree |
| Island Wide | Count | 32 | 12 | 18 | 52 | 75 | 92 | 104 | 385 | |
| | % within Region | 8.3% | 3.1% | 4.7% | 13.5% | 19.5% | 23.9% | 27.0% | 100.0% | |
| Communities around the park | Count | 37 | 19 | 14 | 59 | 78 | 112 | 167 | 486 | |
| | % within Region | 7.6% | 3.9% | 2.9% | 12.1% | 16.0% | 23.0% | 34.4% | 100.0% | |
| Total | | Count | 69 | 31 | 32 | 111 | 153 | 204 | 271 | 871 |
| | | % within Region | 7.9% | 3.6% | 3.7% | 12.7% | 17.6% | 23.4% | 31.1% | 100.0% |

and we make thousands of decisions this way each day. In this study, residents were asked to assess their perceptions of damage caused by moose and the benefits gained by moose. In exploring damage, residents were asked questions about moose-vehicle collisions (MVCs), effects on trees and tree growth, and generally whether benefits outweigh the problems moose may cause.

Perceptions are much like the actual pictures we take with a camera suggesting they are easy to change in comparison to attitudes and values. Often environmental educators and communication officers begin influencing opinions by focusing on messages that can sway perceptions as these are the easiest to change and the first steps toward attitude change. Human dimensions research such as this study can help managers identify whether a large percentage of respondents are neutral to an issue or have strong feelings in favour or against something. Those items where there are many neutral responses may lend themselves to education and communication efforts if the target group is willing to accept and believe information that is directly provided to them. Those with neutral attitudes may hold such attitudes because they have never actively sought information to change their attitudes.

While Newfoundland island residents recognize that there are benefits to having moose, and as seen in the previous section hold strong positive values toward moose, there is considerable concern over MVCs. Most residents (62% to 66%) believe that the benefits they get from having moose in Terra Nova National Park of Canada are not worth the risk of a moose-vehicle collision (Table 14). Compared to 1996 (Bath 1997), approximately 48% of visitors disagreed in some way with the statement: “The benefits I get from having moose in Terra Nova National Park are worth the risk of a moose-vehicle accident”. While in 1996, nearly 31% of visitors agreed with the statement believing there were more benefits from moose than risks, only 21%-23% of residents today expressed the same view suggesting a growing concern amongst the general public about MVCs and perhaps less tolerance of moose.

Newfoundlanders have less strongly formed views about whether moose cause significant damage to balsam fir trees inside Terra Nova National Park of Canada, and many are also not

Table 14: The benefits I get from having moose in Terra Nova National Park are worth the risk of a moose-vehicle accident.

| | | The benefits I get from having moose in Terra Nova National Park are worth the risk of a moose-vehicle accident. | | | | | | | Total |
|-----------------------------|-----------------|--|---------------------|-------------------|----------------------------|----------------|------------------|----------------|--------|
| | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree | |
| Island Wide | Count | 167 | 43 | 26 | 57 | 32 | 24 | 32 | 381 |
| | % within Region | 43.8% | 11.3% | 6.8% | 15.0% | 8.4% | 6.3% | 8.4% | 100.0% |
| Communities around the park | Count | 227 | 51 | 38 | 64 | 36 | 31 | 36 | 483 |
| | % within Region | 47.0% | 10.6% | 7.9% | 13.3% | 7.5% | 6.4% | 7.5% | 100.0% |
| Total | Count | 394 | 94 | 64 | 121 | 68 | 55 | 68 | 864 |
| | % within Region | 45.6% | 10.9% | 7.4% | 14.0% | 7.9% | 6.4% | 7.9% | 100.0% |

that concerned even if moose are possibly damaging trees. Approximately 50% of island-wide residents neither agreed nor disagreed with the statement: “Moose are causing significant damage to the balsam fir trees inside Terra Nova National Park” (Table 15) suggesting unformed attitudes that could lend themselves for communication messages. In contrast, only 37% of community residents had neutral attitudes, 39% of community residents agreed with the statement, and 24% disagreed in some way. When asked whether residents were concerned at all that moose may be damaging trees, a similar percentage to the previous item were concerned (Table 16), but some of those who were neutral earlier indicated they were not concerned, rather than remain neutral (Figure 3). Island-wide residents were more likely than community residents to change their perceptions of the situation when asked about their evaluation of that perception. For example, while 50% of the provincial sample residents stated they neither agreed nor disagreed with the statement in Table 15, only 36% remained neutral when asked whether they were concerned about moose damaging trees. In contrast, only a few community residents changed their views (37% to 34%).

In response to the statement: “ There are more problems than benefits with having moose in Terra Nova National Park”, approximately 47% of community residents disagreed with the statement, and of those who disagreed, most of them strongly disagreed. Approximately 30% of community residents agreed to some degree and 23% were neutral. More residents representing the island were neutral (27%) compared to community residents who seem to have shaped their views toward moose, and they are in general very positive (Table 17).

4.6 Attitudes and beliefs about moose numbers and trends

Often, public knowledge about the number of individuals left in a population and whether the population is increasing, remaining the same, or declining are important beliefs in influencing attitudes. In this study perceptions of moose numbers on the island portion of the province and in Terra Nova National Park of Canada were explored. There were differences in attitudes not only between residents across the island compared to local community residents, but also in attitudes toward there being too many moose on the island versus inside

Table 15: Moose are causing significant damage to the balsam fir trees inside Terra Nova National Park.

| | | Moose are causing significant damage to the balsam fir trees inside Terra Nova National Park. | | | | | | | Total |
|-----------------------------|-----------------|---|---------------------|-------------------|----------------------------|----------------|------------------|----------------|--------|
| | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree | |
| Island Wide | Count | 20 | 19 | 26 | 185 | 52 | 34 | 36 | 372 |
| | % within Region | 5.4% | 5.1% | 7.0% | 49.7% | 14.0% | 9.1% | 9.7% | 100.0% |
| Communities around the park | Count | 39 | 48 | 25 | 176 | 71 | 45 | 67 | 471 |
| | % within Region | 8.3% | 10.2% | 5.3% | 37.4% | 15.1% | 9.6% | 14.2% | 100.0% |
| Total | Count | 59 | 67 | 51 | 361 | 123 | 79 | 103 | 843 |
| | % within Region | 7.0% | 7.9% | 6.0% | 42.8% | 14.6% | 9.4% | 12.2% | 100.0% |

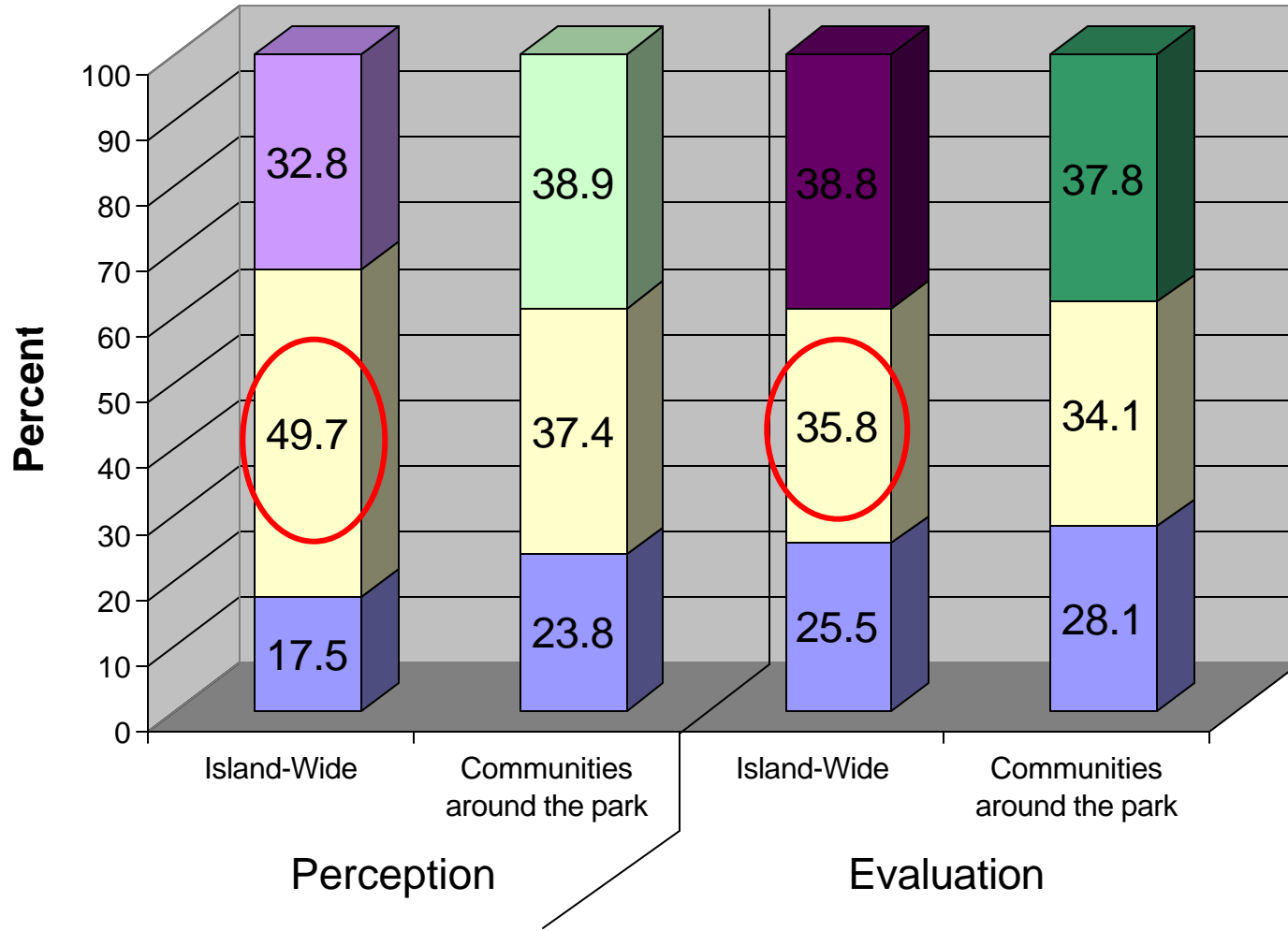
Table 16: I am concerned that moose are possibly damaging trees in Terra Nova National Park.

| | | I am concerned that moose are possibly damaging trees in Terra Nova National Park. | | | | | | | Total |
|-----------------------------|-----------------|--|---------------------|-------------------|----------------------------|----------------|------------------|----------------|--------|
| | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree | |
| Island Wide | Count | 24 | 29 | 43 | 135 | 70 | 33 | 43 | 377 |
| | % within Region | 6.4% | 7.7% | 11.4% | 35.8% | 18.6% | 8.8% | 11.4% | 100.0% |
| Communities around the park | Count | 58 | 44 | 33 | 164 | 81 | 51 | 50 | 481 |
| | % within Region | 12.1% | 9.1% | 6.9% | 34.1% | 16.8% | 10.6% | 10.4% | 100.0% |
| Total | Count | 82 | 73 | 76 | 299 | 151 | 84 | 93 | 858 |
| | % within Region | 9.6% | 8.5% | 8.9% | 34.8% | 17.6% | 9.8% | 10.8% | 100.0% |

Table 17: There are more problems than benefits with having moose in Terra Nova National Park.

| | | There are more problems than benefits with having moose in Terra Nova National Park. | | | | | | | Total |
|-----------------------------|-----------------|--|---------------------|-------------------|----------------------------|----------------|------------------|----------------|--------|
| | | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree | |
| Island Wide | Count | 65 | 46 | 48 | 106 | 41 | 28 | 50 | 384 |
| | % within Region | 16.9% | 12.0% | 12.5% | 27.6% | 10.7% | 7.3% | 13.0% | 100.0% |
| Communities around the park | Count | 107 | 72 | 47 | 111 | 37 | 42 | 65 | 481 |
| | % within Region | 22.2% | 15.0% | 9.8% | 23.1% | 7.7% | 8.7% | 13.5% | 100.0% |
| Total | Count | 172 | 118 | 95 | 217 | 78 | 70 | 115 | 865 |
| | % within Region | 19.9% | 13.6% | 11.0% | 25.1% | 9.0% | 8.1% | 13.3% | 100.0% |

Figure 3: Perception and Evaluation of Moose Impact on Trees



Terra Nova National Park. Within island residents there is a diverse set of opinions on whether there are too many moose on the island of Newfoundland; while 46% disagreed that there were too many moose on the island (30% strongly disagreeing), 39% agreed. Only 15% were neutral (Table 18). In contrast, 61% of community residents disagreed (45% strongly disagreed), and only 27.5% agreed that there were too many moose on the island.

In response to the statement: “There are too many moose in Terra Nova National Park”, the percentage of residents that disagreed was significantly less than in the previous item. Nearly 28% of island residents disagreed to some degree while a much larger percentage (46%) of community residents disagreed. What is interesting, is though the amount of disagreement decreased between the two items, the amount of agreement remained relatively the same (Table 19). Almost twice as many residents responded neutral to whether there were too many moose in Terra Nova National Park of Canada compared to the statement regarding too many moose in Newfoundland. Such results may suggest that people are less sure about the situation inside the park, thus focusing an educational message on this item could prove useful in helping to create informed attitudes. Figure 4 illustrates the differences between the two regions across both items regarding numbers of moose, and illustrates quite clearly the difference in strength of attitudes between the two groups.

Upon understanding beliefs about moose in terms of whether respondents believe there are too many, respondents were asked their management preference regarding the moose population inside Terra Nova National Park. “Considering all of the current interactions between moose and people, would you like the moose population inside Terra Nova National Park to” decrease to varying degrees, remain at the present level or increase to varying degrees. Most island-wide residents (63.4%) believed the population should be decreased to some degree while significantly less community residents (48.7%) expressed the same view. There were large percentages of neutral responses (31.3% and 38.6%) from island-wide and community residents respectively, suggesting that attitudes could be influenced with the appropriate information messages. Nearly 15% of community residents would like to see the moose population increase in the park. In contrast, only 5.3% of island-wide residents

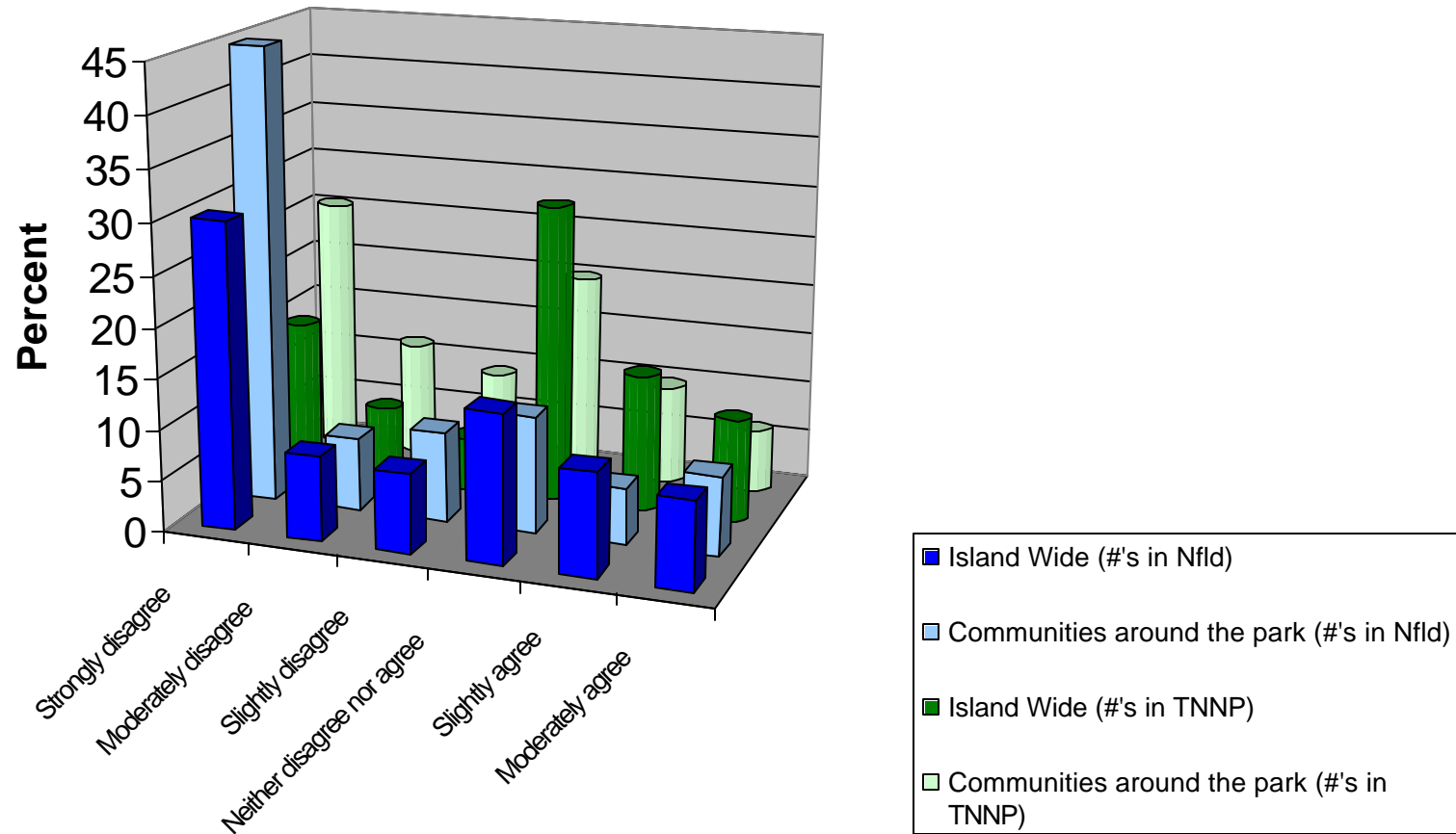
Table 18: There are too many moose in Newfoundland.

| | There are too many moose in Newfoundland. | | | | | | |
|-----------------------------|---|---------------------|-------------------|----------------------------|----------------|------------------|----------------|
| | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree |
| Island Wide | 30.1% | 8.4% | 7.9% | 14.7% | 10.2% | 8.6% | 20.2% |
| Communities around the park | 45.0% | 7.2% | 8.8% | 11.5% | 5.5% | 7.8% | 14.2% |

Table 19: There are too many moose in Terra Nova National Park.

| | There are too many moose in Terra Nova National Park. | | | | | | |
|-----------------------------|---|---------------------|-------------------|----------------------------|----------------|------------------|----------------|
| | Strongly disagree | Moderately disagree | Slightly disagree | Neither disagree nor agree | Slightly agree | Moderately agree | Strongly agree |
| Island Wide | 15.1% | 7.3% | 5.2% | 29.5% | 13.6% | 10.2% | 19.1% |
| Communities around the park | 25.5% | 11.4% | 9.1% | 20.1% | 9.8% | 6.2% | 17.8% |

Figure 4: Comparison of attitudes toward too many moose numbers in TNNP versus on the island



expressed the desire to see the moose population increase inside Terra Nova National Park of Canada (Table 20).

Figure 5 illustrates the differences between visitors' attitudes in 1996, island-wide and community attitudes toward management of the moose population inside Terra Nova National Park of Canada. There seems to be more support today from island-wide residents and community residents for decreasing the population compared to the 1996 visitors. We might hypothesize that if attitudes of community residents and island-wide residents had been studied in 1996 that there would have also been less support for decreasing the moose population. Attitudes may be shifting and a growing willingness to consider decreasing the moose population may be emerging.

Given the previous responses, the results to an item specifically asking whether moose should be completely protected in Terra Nova National Park are interesting. Most community residents (54.5%) agree that moose should be completely protected within the park; 30% strongly agreed. Slightly less (48.2%) of island-wide residents believed moose should be completely protected; 39.1% thought moose should not be completely protected. In contrast, 33.9% of community residents believed that moose should not be completely protected in the park. Approximately 12% of both groups were neutral (Figure 6). There seems to be room for Parks Canada to explore in more detail options of managing the moose population within the park.

4.7 Exploring options and views to decrease the moose population

There are a variety of possible options that could be used to decrease the moose population and/or reduce the impact of moose in the ecosystem. For example, in Norway to reduce moose damage to trees, supplemental feeding of moose with hay occurs so to concentrate moose in one area and reduce the migratory movements of the animals (Gundersen et al. 2004). Feeding wildlife however, within a Canadian national park has traditionally been prohibited.

Table 20: Considering all of the current interactions between moose and people, would you like the moose population inside Terra Nova National Park to:

| | Considering all of the current interactions between moose and people, would you like the moose population inside Terra Nova National Park to: | | | | | | |
|-----------------------------|---|---------------------|-------------------|-----------------------------|-------------------|---------------------|------------------------|
| | decrease significantly | decrease moderately | decrease slightly | remain at the present level | increase slightly | increase moderately | increase significantly |
| Island Wide | 15.0% | 21.3% | 27.1% | 31.3% | 2.1% | 1.6% | 1.6% |
| Communities around the park | 13.1% | 16.4% | 17.2% | 38.6% | 5.6% | 6.4% | 2.7% |

Figure 5: Preference for Moose Population in TNNP Across visitors (1996), Island-wide and Communities around TNNP

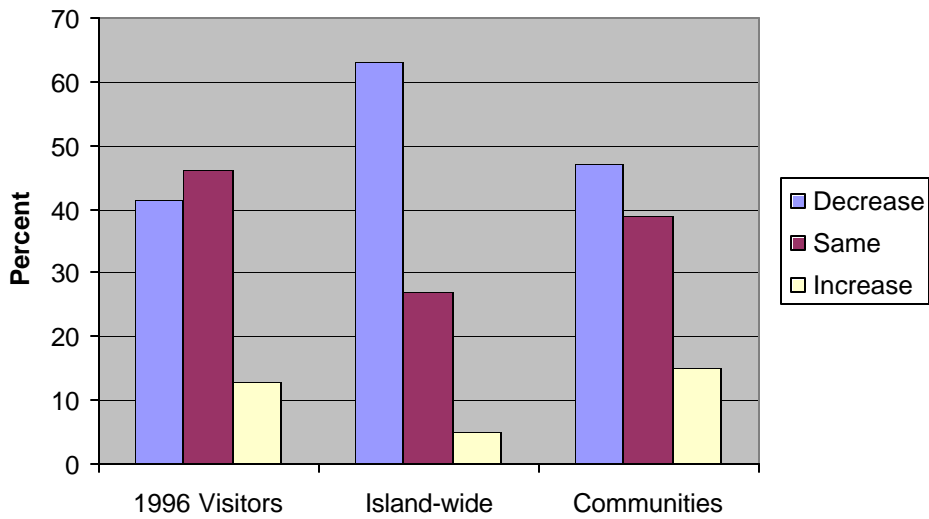
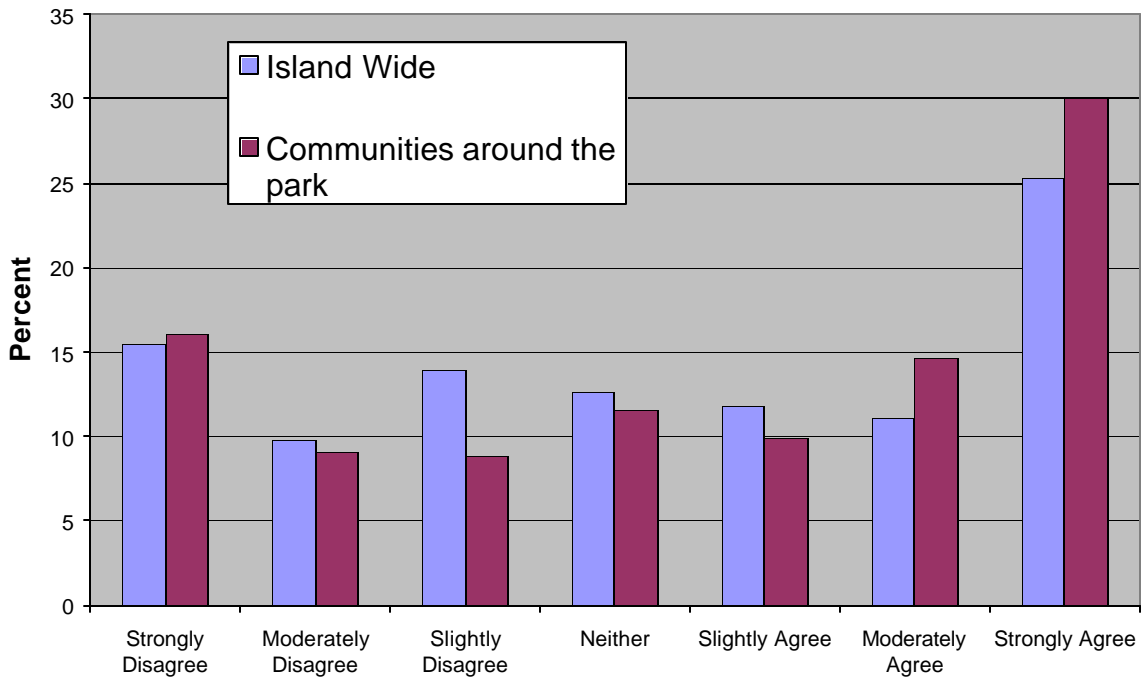


Figure 6: Moose should be completely protected in Terra Nova National Park.



Accepting moose in large fenced natural reserves (i.e., fence in moose) or fencing vegetation (i.e., fence out moose) are other options to protect the natural environment. Moose exclosures that have been set up in Terra Nova National Park like the one near Minchin's Cove could be effective communication tools in illustrating the differences in vegetation growth in areas where moose have not been able to feed. While large scale fencing in Canadian national parks has been done (e.g., fencing of the highway in Banff National Park and fencing around Elk Island National Park), such efforts are expensive and controversial.

Reducing a moose population in a specific area can be achieved by relocating moose, conception control methods or by reintroducing a native predator such as the wolf; the challenge with these methods and those mentioned previously is they are costly, and they are not usually as effective as simply shooting moose to reduce their numbers. Within this last option, there are however, various possibilities focused mainly on the following questions:

- **Who** does the killing? (e.g., park officials, locals, any qualified hunter),
- **Where** does the killing occur? (e.g., increase licenses outside the park or allow killing of animals inside the park),
- **What?** (e.g., what happens to the meat and possibly trophy of the animal?). In addition, what type of animal will be killed? (e.g., males only, females only, calves only, or what combinations will be allowed?),
- **How** is the killing to be carried out? (e.g., concerns will emerge about the fairness and humaneness of the killing from those groups concerned about animal rights; there will also be safety issues to consider). In addition, questions will be asked about how much reduction will occur, for how long such a program will be needed, and how will the program be evaluated to determine its success? The public may also be concerned about how much the program will cost, and

- **When** will the killing occur? (e.g., regular fall hunting period, spring, summer or winter when visitation to the park will be less).

Before considering any of the above questions, it is essential for park managers to understand the various responses possible to the question, “**Why** is a reduction of moose required”, and to effectively communicate the answer to all interest groups. In national parks in Canada where hunting inside the park is rarely allowed, park officials have traditionally been responsible for reducing animals. One example of such a reduction program occurred in Point Pelee National Park where white-tailed deer numbers were reduced. In that situation, the ungulate was also causing significant damage to the natural vegetation, in that case the Carolinian forest.

These various options to decrease a moose population were not directly explored with the respondents to this study. Such detailed questions may lend themselves better to be explored within a focus group setting with residents of local communities, rural and urban communities, and through individual workshops with each interest group (e.g., Protected Areas Association, Hunters, Wildlife Division, etc.) individually first and then collectively as a team of various interests working toward a common vision. Parks Canada personnel, considered as another interest group, should also think through these questions in a facilitated workshop approach. In addition, respondents to this study were not offered options so to explore what, if any, options might emerge from the public through an open-ended question.

Of those respondents who stated they wanted the moose population inside Terra Nova National Park of Canada decreased, an open-ended question asked respondents; “what options would you suggest to achieve this decrease? Most respondents did not offer a response to this open-ended item. Those that did respond suggested ten different options to decrease moose numbers inside the national park; most of these options were similar to those outlined above. The actual responses from the respondents are presented in Appendix 4.

Island-wide residents and local communities identified the same top six options for decreasing the moose population within the park, although not in the same order of

importance (Table 21). A limited kill or cull of animals within the park was the most common response for both groups, clearly well ahead of any other options suggested, however, after this option priorities for addressing the issue between local residents and island residents varies considerably. For example, while offering licenses to hunt in the park and having an open season on moose were the next two important options to use from a community perspective, they were the last two options of six suggested by residents from the island-wide sample. The four options receiving the least amount of mention by respondents included: having park officials shoot, administering a small quota, increasing the hunt outside the park, and a do nothing/leave the situation alone option. The implications of these various options could be explored further within Parks Canada's decision-making process through an Options Analysis Paper, and also with the public and key interest groups through focus groups or a representative questionnaire to ask residents to prioritize a list of possible management options.

4.8 *How many moose are on the island and in Terra Nova National Park of Canada?*

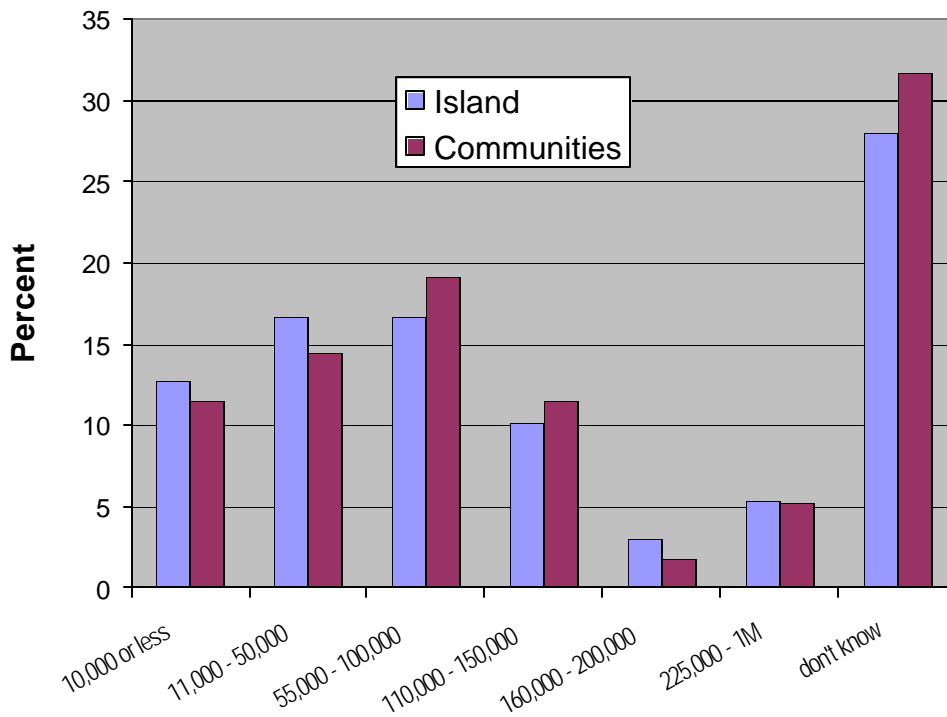
Understanding public attitudes toward management options, and public beliefs of whether there are too many or too few moose, while interesting to resource managers, mean relatively little without knowing the actual public beliefs about moose numbers from residents. When asked the open-ended question, to avoid biasing the response by offering categories, of “how many moose do you think are in Newfoundland”, residents offered a wide range of responses. Approximately 45% of island-wide residents and community residents believe there are less than 100,000 moose on the island; nearly 13% of island-wide residents and 12% of community residents felt that the moose population was below 10,000 animals. Approximately 10% of respondents identified correctly that moose numbers were between 110,000 and 150,000 on the island portion of the province. Approximately 5% of respondents believed that moose numbers were between 225,000 and one million animals on the island. Nearly 32% of community residents and 28% of island-wide residents stated honestly that they did not know how many moose were on the island (Figure 7). A few individuals offered responses of “hundreds”, “thousands” and “too many”. Overall, what is interesting in these beliefs is that both island-wide residents and community residents have similar knowledge levels about moose numbers on the island, but as previously noted differ

Table 21: Options to decrease moose numbers inside TNNP

| Options to Decrease moose and inside TNNP | | | |
|---|-------------------------------------|-----------------------------|-------------------------------------|
| Island-wide | | Communities around the park | |
| 1. | Option 2 (46%) Limited kill or cull | 1. | Option 2 (39%) Limited kill or cull |
| 2. | Option 1 (15%) More licenses | 2. | Option 8 (13%) License in the park |
| 3. | Option 9 (11%) Other | 3. | Option 3 (13%) Open season |
| 4. | Option 7 (10%) Relocate | 4. | Option 9 (11%) Other |
| 5. | Option 3 (9%) Open season | 5. | Option 7 (10%) Relocate |
| 6. | Option 8 (6%) License in park | 6. | Option 1 (10%) More licenses |

*Percentages are of those respondents who stated an option

Figure 7: Beliefs about moose numbers on the island of Newfoundland



in their attitudes of whether there are too many or too few moose, and whether they should be decreased, remain the same or increased on the island.

Respondents were also asked through another open-ended item: “how many moose do you think are in Terra Nova National Park?” Local residents were more accurate in their knowledge about moose numbers in the park than island residents. For example, only 8.4% of island residents believed that moose numbers inside Terra Nova National Park of Canada were less than 300 animals; in contrast, nearly 28% of local community residents believed there were less than 300 moose inside the park. While 7% of community residents believed there were 2500-5000 moose inside the park, 13% of island-wide residents believed the same. Nearly 15% of island-wide residents believe the moose population inside the park is larger than 5500; 5% stating the population was greater than 25,000 animals. These large overestimates of moose numbers suggest very low knowledge about moose densities. It is surprising that given these beliefs the desire to reduce the population is not much stronger amongst residents, and that the perception of damage to vegetation is not stronger. Approximately 33% of residents stated they did not know how many moose were inside Terra Nova National Park of Canada (Figure 8).

4.9 Are moose numbers decreasing, remaining stable, or increasing

The difference in attitudes toward moose and moose management options between local community residents and island-wide residents is a direct result of their significantly different perceptions of the status of moose on the island portion of the province and inside the national park. Island-wide residents not only believe there are more moose on the island and in the park than their community resident counterparts, but clearly see the moose population as increasing in both locations. In contrast, local residents are more likely to believe that moose numbers are decreasing on the island and in Terra Nova National Park of Canada. Figures 9 and 10 illustrate these differences between the two sample groups very clearly. For example, while 30% of local community residents believed that the moose population was decreasing inside Terra Nova National Park of Canada, only 8% of island-wide residents held the same belief. It is interesting to note that a larger percentage of local residents (44%) and island-wide residents (30%) believed that moose numbers were decreasing across the island

Figure 8: How many moose do you think are in TNNP?

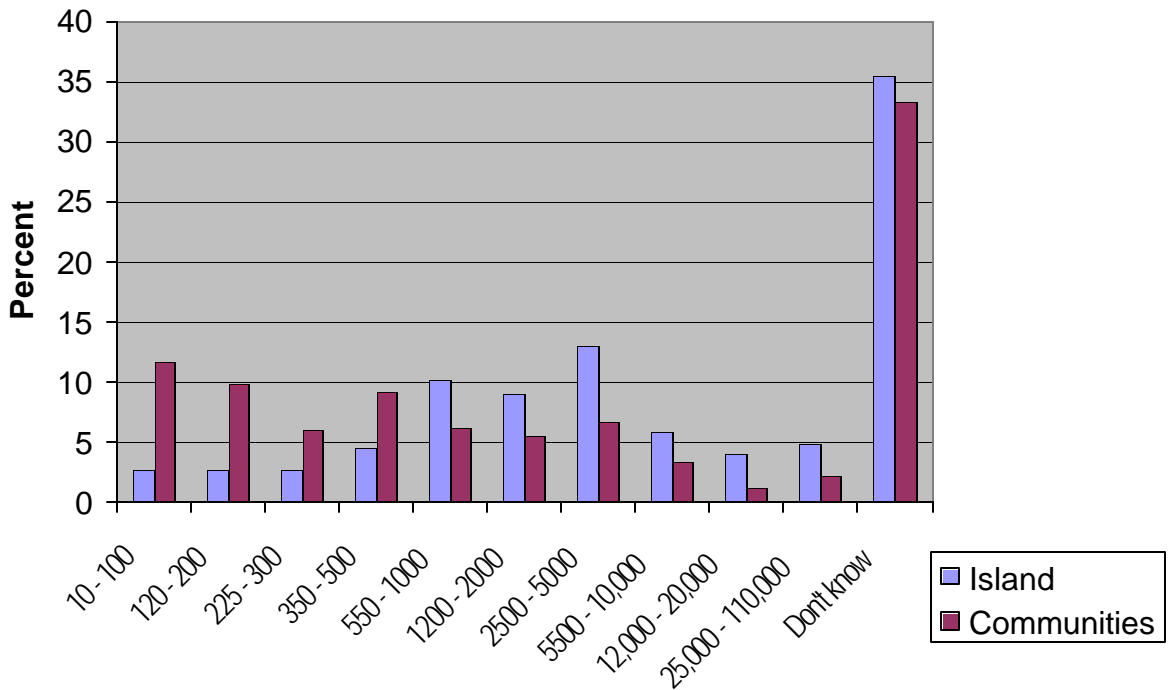


Figure 9: Do you believe moose numbers in Newfoundland are decreasing, remaining the same or increasing?

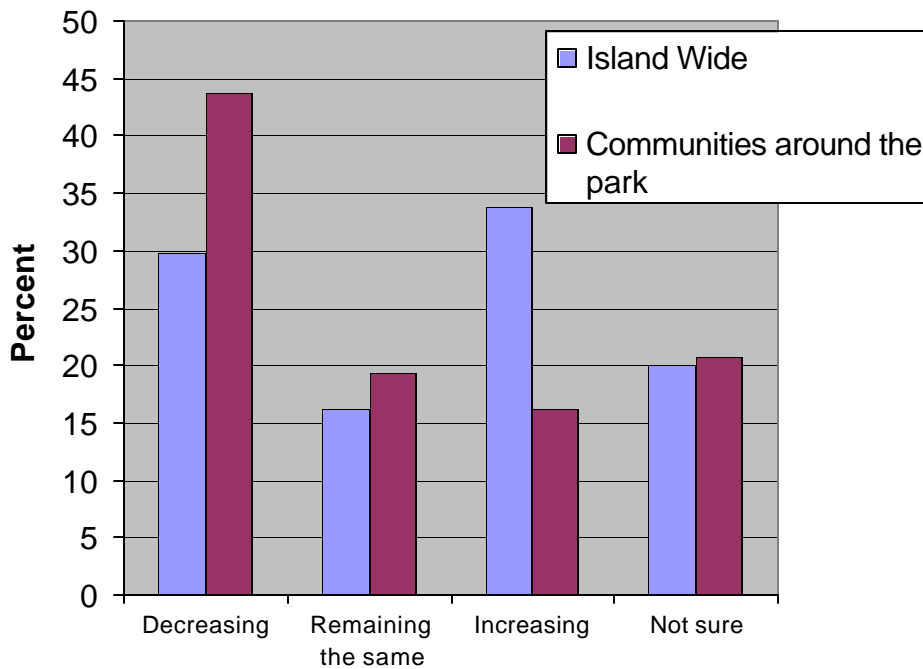
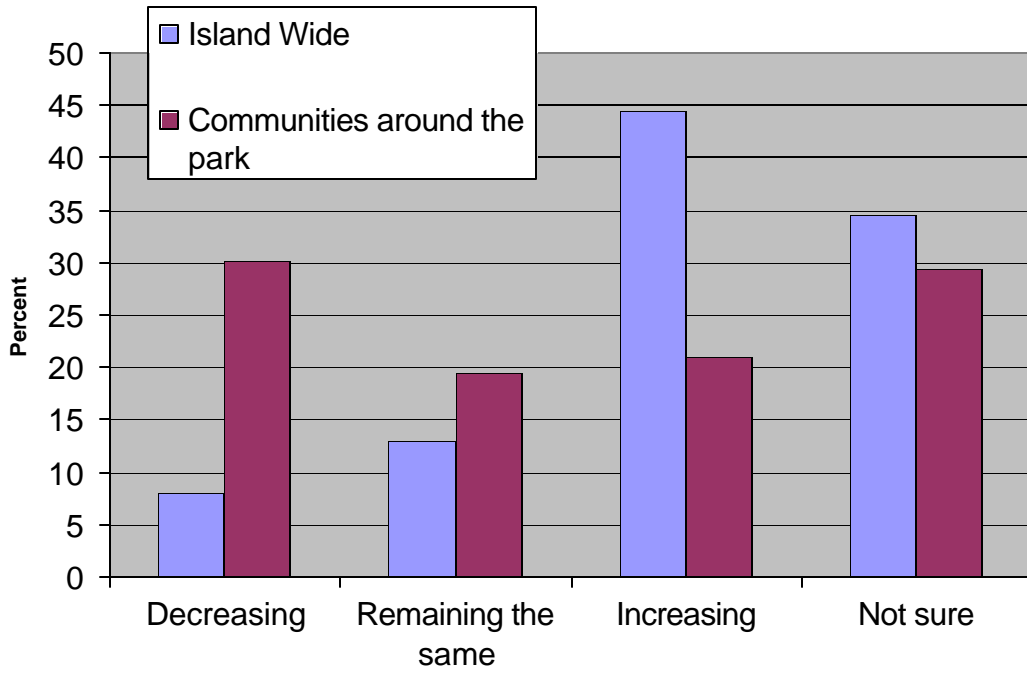


Figure 10: Do you believe moose numbers in Terra Nova National Park are decreasing, remaining the same or increasing?



portion of the province compared to within the park. In 1996, most Terra Nova National Park visitors (56%) agreed or strongly agreed that moose numbers were increasing in the park, however, a relatively large percentage (36%) were neutral; the remainder (8%) believed the population was not increasing choosing to disagree with the statement (Bath 1997). From biological evidence (Joyce and Mahoney 2001), the moose population on the island peaked in 1997 suggesting that most visitors were probably correct in their perception that moose were increasing in numbers at that time.

4.10 Additional beliefs about moose and Terra Nova National Park of Canada

Approximately 90% of island-wide residents and 85% of local community residents correctly identified that moose were introduced to the island of Newfoundland and are not native to the island portion of the province. Only 2% believed moose were not introduced, and 8% and 13% of island-wide and community residents respectively were unsure.

Large percentages of island-wide residents (51%) and local community residents (45%) indicated they were not sure when asked whether “Terra Nova National Park was created to represent the boreal forest region of Eastern Newfoundland”. An additional 6% of island-wide residents and 8% of community residents believed the statement was generally false. Parks Canada staff should be concerned with the lack of resident’s knowledge regarding the importance of the boreal forest to Terra Nova National Park of Canada. This weakness in knowledge may be linked to the lack of concern toward forest damage caused by moose inside the park. On a more positive note, 67% of island-wide residents and 71% of local community residents stated “generally false” to the statement: “Terra Nova National Park was created to protect moose”. Approximately 26% of island-wide residents and 19% of community residents were “not sure”, and just over 10% of local residents and 7% of island-wide residents believed the park was created to protect moose.

Most community residents (50.2%) stated “generally false” to the statement: “Moose are a major threat to the forests in the park”. An additional 31% of community residents stated they were “not sure” leaving only 19% of community residents believing that moose are a major threat to the forests of the park. More island-wide residents (25%) believed moose

were a major threat to the forests of the park, but a large percentage (35%) believed the statement was “generally false” indicating the belief that moose were not a major threat to the forests of the park. An even larger percentage of island-wide residents (39%) indicated they were “not sure”. If Parks Canada wishes to communicate to the general public about the possible threats of moose to the forests in the park and thus to the ecological integrity of the park, there seems much educational work to do.

The final belief item asked respondents whether they believed the following statement was “generally true,” “generally false” or “not sure”: “There are more moose inside Terra Nova National Park than between Gander and the northern boundary of the park”. Wildlife statistics from the park and the province would suggest that the statement is “generally true”; only 29% of island-wide residents and 24% of community residents believed the statement to be true. Nearly 26% of community residents believed the statement was “generally false” but only 12% of island-wide residents felt the same. A large percentage of community residents (50%) and island-wide residents (59%) expressed that they were “not sure” about moose densities inside the park compared to outside the park toward Gander. Items that have such large percentages of “not sure” responses may lend themselves to educational efforts as the potential is greater to increase awareness on these items. This being said, increasing knowledge on this particular item may not be that important in influencing attitudes toward moose or moose management. Efforts should focus on knowledge of forest-related issues and moose.

It seems that despite the levels of uncertainty and incorrect responses expressed by respondents throughout this belief section of the questionnaire and in other parts of the questionnaire, most residents in the local communities (60%) and island residents (53%) believe they have “some knowledge” or are “extremely knowledgeable” about moose. Nearly 8% of local community residents and 11% of island-wide residents stated they were “not knowledgeable” and 36% and 32% of island-wide and community residents respectively stated they had “a little knowledge”. This self assessment of knowledge about moose compared to respondent’s knowledge of moose numbers and their effects seems to suggest that individuals will suggest their knowledge is higher about moose than it actually is. Other

than communication about MVCs, Parks Canada has delivered limited information to the general public about moose-forest relationships and the possible need to manage the moose population. Given the limited public knowledge found in this study it seems there is much work to do in building awareness and support to address a problem before any decisions could be made about affecting the moose population.

4.11 Understanding management priorities

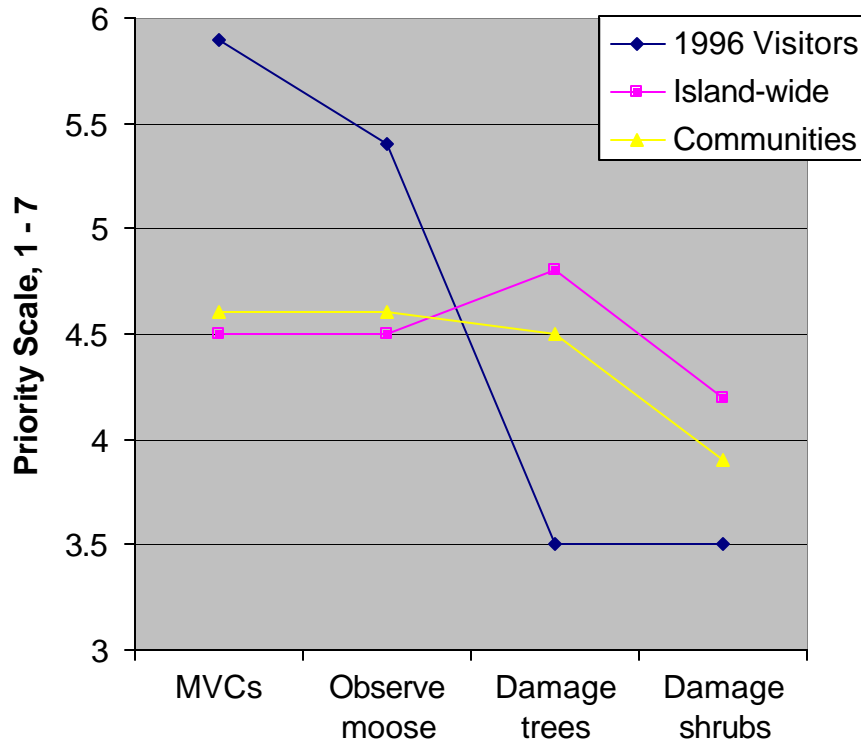
Moose populations can be managed for different interest groups and for different management priorities. In an effort to understand public preferences for moose management, residents were asked: “What priority do you believe park managers should place on addressing the following issues inside Terra Nova National Park?” Respondents were given four management considerations and asked to suggest the management priority of each on a scale from one to seven where 1=very low, 4=medium, and 7=very high. These four statements were:

- Minimizing the number of moose-vehicle collisions,
- Minimizing the amount of moose damage to residential shrubs, trees and gardens,
- Minimizing the amount of damage to young trees in the park,
- Providing opportunities to observe moose.

After the four statements respondents were then asked to circle which statement they believed should be the highest management priority.

Consistent with the visitor results from 1996 (Bath 1997), minimizing moose-vehicle collisions was clearly the highest priority with providing for opportunities to observe moose a distant second (Figure 11). While there was little difference in the priority mean scores between visitors from 1996, island-wide residents and community residents across issues of MVCs, visitors did have a significantly higher mean priority score than the other two groups

Figure 11: Understanding management priorities



Note: For visitors in 1996 only one general question was asked about minimizing damage to vegetation.

in terms of providing opportunities to observe moose and also a much lower mean score on concern for vegetation than island-wide and local community residents. Once again, all residents expressed their lack of interest in the impact moose may have on trees and shrubs by placing only medium priority on these items. Island-wide residents consistently had higher priority scores for impacts on trees and shrubs than local community residents, but yet the issues remained only of moderate priority. Perhaps the most positive aspect to be taken from Figure 11 is an understanding that island-wide residents and community residents did give damage to vegetation a significantly higher priority than visitors did in 1996.

5.0 Discussion, Recommendations and Conclusion

This human dimensions research study has provided insights to managers on the public's views on various management options and general attitudes and beliefs toward moose. In this final section of the report, some of the additional comments from the questionnaire are shared so to contribute "flavour" to the quantitative results presented thus far. The comments offer some of the reasoning behind how respondents think and why perhaps they responded in the way they did. Additional comments are usually written by those respondents with the strongest feelings about the issue, either positive or negative. By examining the comments some of the important issues are usually emphasized. In addition, some of the key findings regarding trends, beliefs, comparisons between island-wide and community residents, and management priorities are revisited. Finally, a strategy for future direction is recommended building on the success of the Engaging Canadians Initiative previously taken in the park. The moose management issue is really at the beginning of an exciting decision-making process where there is tremendous potential for park managers to do the "right thing" in terms of implementing a truly human dimensions applied facilitated workshop approach to move beyond "insights" about moose management to "resolving conflicts, finding and implementing solutions".

Given the strong response rate to this mail-out questionnaire, especially from residents in and near Terra Nova National Park of Canada, and the nearly 200 additional comments written at

the end of the questionnaire by respondents, it is clearly evident that moose management remains an important issue to Newfoundlanders. Since the first human dimensions research completed on moose in 1996 that just focused on TNNP Newman Sound campground visitors, concern amongst residents of the island remains high regarding MVCs. Approximately 120 of the nearly 200 additional comments to the questionnaire expressed concern about MVCs. One individual stated:

“I feel the moose population of the whole island is a great threat to the human population because of the death and destruction caused by moose-vehicle accidents”.

For others, solutions of culling the moose population were offered to deal with MVCs:

“I feel that more licenses should be issued to cull the moose population in areas that they are causing the most problems along our highways. The loss of one human life is worth more than all the moose in the world.”

While concern for MVCs seemed to remain constant over the years, there appears to be more willingness to reduce moose numbers today than in 1996, but there remains a large percentage that are not supportive of reducing the moose population. However, the target populations are different in this study compared to 1996 and one would assume that there would be a difference in willingness to reduce moose numbers from park visitors, community residents and island-wide residents. In fact, there is less support for decreasing moose by community residents than by island-wide residents.

Those respondents that believed in a cull made comments such as:

“I think there should be a moose hunt in the park every fall”

“I think there should be a strict moose hunt in TNNP for a certain period of time”.

“I would expect that wildlife and ecosystem scientists should be able to manage the moose population. Culls - keeping them in balance with food supply, etc. in the park so that damage to the vegetation is very minimal”

Overall, while there were approximately 32 additional comments focused on issues of hunting moose, only a few specifically mentioned a moose cull inside the park. Most respondents whether island-wide or local communities still feel that moose should be completely protected in the park. Future generations value is extremely important for more than 80% of the respondents who want to ensure that moose exist in the park for their children and children’s children. For many, the moose is an integral part of the park ecosystem and definitely worthy of protection. There are however, other items that suggest there may be some flexibility in management and these really need to be explored qualitatively through focus groups with various residents and also with representatives from various key interest groups.

More than 40 of the additional comments focused on the need to protect moose and mentioned that moose numbers were declining in the province and inside Terra Nova National Park of Canada. These respondents do not support reducing the moose population. Some examples of these types of comments are found below:

“A park is a place where animals should be protected...”

“I chose to live on the outskirts of a national park and accept the fact that there are problems associated with living in our wildlife’s backyard. I would rather work to make the relationship as painless as it can be for both humans and wildlife. I will not support a program that culls a species simply for the convenience of people who build in an area known for plentiful wildlife and then complain when their trees or flowers get nibbled”

“...As for killing them [moose] simply no...”

“I think people should leave the moose alone, they are not hurting anyone, they have to live like human’s do. They have families to raise just like us, it’s a sin to kill moose.”

Community residents tended to be more positive than island-wide residents toward moose; community residents were also more likely to believe that moose numbers were decreasing and that there are less moose on the island and in the park. These local residents in and near the park also appeared more knowledgeable about moose numbers inside the park and tended to not overestimate moose populations to the same degree as island-wide residents. This belief may be an important variable to understanding attitudes toward moose management.

Further multivariate analysis could be used to explore the best predictors of attitudes. Additional analysis could also explore whether differences exist between hunters and non-hunters; in 1997, Bath (1997) found no difference in attitudes of TNNP visitors, who were hunters and non-hunters in their attitudes toward moose and moose management. There is also a sufficient sample size to allow for a comparison of attitudes between residents who have experienced a MVC and those who have not. It would be interesting to see how large a factor (if at all) this experience could be in influencing attitudes. Experiential learning tends to be an effective tool in influencing attitudes and one would hypothesize that such an event should influence attitudes.

While ecologists may document that moose are having a definite impact on the boreal forest ecology inside Terra Nova National Park, residents do not see impacts on vegetation as an important reason for implementing any form of moose management. Not only do many residents not understand that moose may be impacting the vegetation, many simply do not care. Most residents do not believe protecting vegetation is a high priority and many respondents simply do not understand that Terra Nova National Park is a terrestrial park protecting the boreal forest. One respondent obviously wasn’t sure why the park existed at all, stating:

“I have lived in NL for 50 years and still can’t see any reason for the TNNP. All it does is gives us bad roads in the park and slows down driving through the park. I guess they had to have a national park close to St. John’s.”

When respondents did consider vegetation issues, the blame was not put on the moose but on the forest companies. Several respondents made comments about the negative impacts they believe forest companies are having on the forests. For example, one respondent stated:

“Moose are being made the bad guys but the truth is the Paper Companies are destroying their habitat and the moose are forced to live in the parks and along the highway where there is no cutting allowed.”

Few respondents identified moose as an ecological threat to the boreal forest ecology of Terra Nova National Park, and many see the moose as a legitimate part of the boreal forest ecosystem. It has also become very much part of the Newfoundland psyche. As a couple of respondents stated:

“I would hate to see moose disappear from our province. It is part of our heritage”

“Although the moose were imported, today they are part of Nfld’s image, beautiful animal, etc”

When respondents do recognize that moose may eat vegetation, this is not seen as a problem but just part of nature as the comments below suggest.

“I drive through the park virtually everyday. I rarely see a moose. If they damage young fir trees, surely they do the same everywhere else in NF. They are moose after all – its what they have to eat in winter. To me its more natural for the moose to eat young fir, then it is for wardens to be setting fires in the park. Less dangerous too.”

“As for the forest in the park I don’t think it is the moose or animals. I think it needs better forest management of the park forest, it is not looked after at all.”

These above comments also reveal respondent’s concerns with current and past park policies. Concerns about fire management issues and “dead wood just lying in the woods unfit to look at” as some local residents often say, reflect a lack of understanding of natural processes. This lack of understanding has been documented in past human dimensions research focused on attitudes toward fires and fire management (Bath 1997). At that time recommendations were made to focus interpretive messages on the nature of natural processes and stress the importance of certain events like fire to ecological integrity. These same issues seem to now plague the park again as moose management needs to be resolved, and one of the key educational messages are about natural processes, exotic species and impacts on vegetation. Such issues are complex to communicate to the public especially when you consider that beliefs of many respondents are similar to those of the individual below:

“Moose seek thick woods for shelter, over cutting in some areas cause moose to herd in timber, causing forest damage and too many moose in one area. Parks offer moose protection.”

5.1 Future Direction – Stay where you’re to, til I come where you’re at

Moose, while introduced to the province and clearly an exotic species from a biological perspective, have now been on the island portion of the province for over 100 years. Could it be considered now naturalized, a true Newfoundlander, or is it still a CFA (Come from away)? For almost every Newfoundlander alive today, they have grown up with moose. As most respondents indicate, the animal is an integral part of the Newfoundland culture. Does *Alces alces* ever become a legitimate part of an ecosystem, or will it be destined to always remain an exotic species that either should be removed, or whose impact should be minimized? How does a federal agency mandated to protect ecological integrity and places for all Canadians balance the importance of a provincial cultural symbol with their mandate? Is there room for a Newfoundland and Labrador solution?

Terra Nova National Park has been very effective in implementing the Engaging Canadians Initiative with local communities in and surrounding the park. The positive high response rate to this mail questionnaire from local residents is just another indicator of the credibility and trust that continues to be gained between TNNP and local residents. These residents have come to expect an innovative applied human dimensions facilitated workshop approach from the park to work toward solutions on tough management issues. The NW River Salmon working group, the community vision exercises and efforts at a marten working group are all examples of planning processes that continue to work in finding solutions. The issue of moose management though has bigger implications. This HD research study reveals that attitudes and beliefs of residents representative of the island are different than local residents and while local support must exist for any management action and implementation of a decision, there must also be provincial support for the decision when the issue goes political.

No knowledge exists on how key interest groups might feel about moose and moose management issues. Has the Provincial Wildlife Division set a vision and a set of clear goals for moose management for the island? Will Parks Canada's vision be different and if so what are the implications of a different vision? Can a common vision be achieved? For environmental groups, are the values of ecological integrity strong enough to support a reduction or elimination of moose within a national park? How many moose taken is too much or not enough? Between hunters, outdoor rights activists and animal rights activists is there a willingness to find common ground? Are there groups nationally that should be involved? Even for a science experimental reduction of moose, there is a need for a solid HD facilitated workshop approach applied to ensure an effective team works toward a common solution.

Before any work with all the interest groups to identify common issues of concern individually and eventually as a team, Parks Canada needs to clearly articulate its own vision, goals, objectives and possible targets, or at least work itself through a decision tree to consider key questions. For example, are moose an important issue within Terra Nova National Park? If yes, how are moose an important issue? Ecologically, moose may be a

threat to ecological integrity. Socio-politically, moose are clearly an exotic species and under the National Parks Act there is some direction provided, but provincially the moose is an important cultural symbol and thus one may be playing with the “golden egg”, and thus should play carefully. Economically, are moose causing damage? Within certain parts of Europe, a clear price tag is placed on damage to trees by ungulates and the owner of the trees is duly compensated; this is not currently the case in Canada. Are there costs to reduce the moose population? Will this become a yearly expenditure and can it be afforded? How will expenditures on wildlife viewing be compensated once moose observation opportunities are reduced? From a social or human dimensions perspective, does the public perceive there is a problem? If yes, does the public feel it is a high enough priority that something should be done? Data from this research would suggest the public does not feel protecting vegetation is a high priority.

If after considering these initial questions and preliminary assessment the answer remains that yes moose are indeed an issue, then Parks Canada should explore what the desired situation should be? Articulate a clear vision and identify obstacles to achieving that vision. The obstacles will then become objectives and a clear understanding of the objectives can be achieved through further discussion. A set of activities could be generated to achieve the objectives. There will be a variety of possible alternatives. One can continue to make no decision (do nothing approach) and gather better information to reduce uncertainty for a possible future decision. Like any wildlife management issue, moose management has a human component and a biological component. Managers could choose to affect the human component. This may mean changing people’s perceptions of risk, tolerance levels, attitudes, and behaviour by increasing awareness or by effectively listening to their concerns. Another alternative is to affect the moose. Given the variety of options that could be explored to decrease moose numbers, a SWOT (strengths, weaknesses, opportunities and threats) analysis could be done on each option; such work would be a strong start toward an options analysis paper, the document usually considered by Parks Canada’s Executive Board.

“Large ungulate species pose particularly unique resource management problems because of their potential for dynamic population changes, their potential impact on a variety of park

resources, and their high visibility and aesthetic importance to park visitors” (Robisch and Wright 1995). However, in today’s age of innovative human dimension tools for listening to all interest groups and building willingness to work together toward solutions, win-win solutions can be found that satisfy park managers, senior staff, various interest groups, and concerned citizens.

References

- Bath, A.J. 2006. Developing a social science strategy for Terra Nova National Park.
- Bath, A.J. 2005. Human dimensions issues in salmon management in the Northwest River, Terra Nova National Park. Results of HD facilitated workshops with the NW River Working Group. Report submitted to Terra Nova National Park.
- Bath, A.J. 2004. Central Newfoundland resident attitudes toward and knowledge about Newfoundland marten and marten recovery. Report submitted to Terra Nova National Park, Parks Canada Agency, and Heritage Foundation for Terra Nova National Park. Middle Cove, NL, Canada. 150pp.
- Bath, A.J. 2003. Western Newfoundland resident attitudes toward and knowledge about Newfoundland marten and marten recovery. Report submitted to Terra Nova National Park, Parks Canada Agency, and Heritage Foundation for Terra Nova National Park. Middle Cove, NL, Canada. 133pp.
- Bath, A.J. and J. Enck. 2003. Wildlife-human interactions in Canadian and U.S. national parks. Commissioned work for National Park Social Science Series Publication. U.S. National Park Service. Washington, DC.
- Bath, A. J. 2002. Resident attitudes toward and knowledge about Newfoundland marten and marten recovery in Terra Nova National Park and Newfoundland. Report submitted to Terra Nova National Park, Parks Canada Agency. St. John's, NL. Canada. 125pp.
- Bath, A.J. 1997. Terra Nova National: Visitor attitudes toward and beliefs about moose, moose management and moose-vehicle collisions. Report submitted to Parks Canada. Terra Nova National Park. 108pp.
- Bath, A.J. 1997. Resident attitudes toward fire and fire management in Terra Nova National Park. Parks Canada Agency. Terra Nova National Park. 137pp.
- Cote, A. 2005. Pers. comm. Terra Nova National Park, Glovertown, NL.
- Eagly, A.H. and Chaiken, S. 1993. *The Psychology of Attitudes*. Harcourt Brace Jovanovich, Inc., Orlando.
- Ferguson, S.H., W.E. Mercer and S.M. Oosenbrug. 1989. The relationship between hunter accessibility and moose condition in Newfoundland. *Alces* 25:36-47.
- Gundersen, H., H.P. Andreassen and T. Storaas. 2004. Supplemental feeding of migratory moose *Alces alces*: forest damage at two spatial scales. *Wildl. Biol.* 10:213-223.

- Joyce, T. 2005. Pers. comm.. Provincial Wildlife Division, St. John's, NL.
- Joyce, T. and S. Mahoney. 2001. Spatial and temporal distributions of moose-vehicle collisions in Newfoundland. *Wildl. Soc. Bull.* 29:281-291.
- Mahoney, S. 1984. Newfoundland status report. In *Proc. East. Workshop Black Bear Manage. Res.* 7:17-20.
- Mercer, W.E., R.B. Porter, S.H. Ferguson and S. Oosenbrug. 1988. Moose management Newfoundland island. Unpubl. Rep. to Res. Policy Comm. Nfld. And Labr. Wildl. Divi. Research and Manage. Section. 78pp.
- Mercer, W.E. and F. Manuel. 1974. Some aspects of moose management in Newfoundland. *Naturaliste Can.*, 101:657-671.
- O'Donague, M. 1997. Pers. comm. Provincial Wildlife Division, St. John's, NL.
- Pimlott, D.H. 1953. Newfoundland moose. *Trans. 18th. North Amer. Wildl. Conf.*, Washington, DC.
- Pimlott, D.H. 1959. Moose harvests in Newfoundland and Fennoscandian countries. *Trans. 18th. North Amer. Wildl. Conf.*, Washington, DC.
- Robisch, E. and R.G. Wright. 1995. A survey of ungulate management in selected U.S. national parks. *Nat. Areas Journal* 15:117-123.

Postcard Follow-Up

Thank you

Attitudes Toward Newfoundland Moose

Dear Newfoundland Resident:

Thank you very much for voicing your opinions on Newfoundland moose and moose management, and for returning your questionnaire. Your help is greatly appreciated.

If you haven't yet completed the questionnaire, please do so today and put it in the self-addressed stamped envelope provided. We still need your response. It is very important we hear back from everyone who agreed to fill out the questionnaire.

Thank you for your help.

Dr. Alistair Bath

Questionnaire

Newfoundland Attitudes Toward Moose and Moose Management in Terra Nova National Park

Dear Newfoundland resident:

Thank you very much for agreeing over the phone to participate in this study and for taking a few minutes to answer these questions about your feelings toward moose and moose management in Terra Nova National Park.

Please answer all the questions as completely as possible and return the survey today or tomorrow in the postage paid envelope provided. I encourage you to voice your opinions whether for, against or neutral toward moose; your views will help guide future management decisions. Your answers will be grouped with those of others. All individual responses are strictly confidential.

If you have any questions about the study, please do not hesitate to contact me at 709-437-6780. Your assistance with this project is greatly appreciated.

Thank you for your help.

Sincerely,

Dr. Alistair J. Bath
Project Coordinator

The first few questions ask about your feelings toward moose.

Please circle the response that best represents your opinion.

- Which of the following best describes your feelings toward moose?
 - strongly dislike
 - moderately dislike
 - slightly dislike
 - neither like nor dislike
 - slightly like
 - moderately like
 - strongly like
- Generally, how do you feel about having moose in Terra Nova National Park? (Check one)
 - I enjoy having moose and I do not worry about problems moose may cause
 - I enjoy having moose but I do worry about problems moose may cause
 - I do not enjoy having moose in the park and regard them as a nuisance
 - I have no particular opinions about moose

Please circle the response that best represents your opinion, where:

- | | strongly
disagree
1 | moderately
disagree
2 | slightly
disagree
3 | neither
agree nor disagree
4 | slightly
agree
5 | moderately
agree
6 | strongly
agree
7 |
|--|---------------------------|-----------------------------|---------------------------|------------------------------------|------------------------|--------------------------|------------------------|
| 1. It is important to maintain moose populations in Terra Nova National Park so that future generations can enjoy them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. The moose is part of our unique Newfoundland heritage. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Because there are plenty of moose in other parts of Newfoundland, there is no need to have moose in Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. It is important to me that moose exist in Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. The moose is an important part of the park ecosystem. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | strongly disagree | | | | | | strongly agree | |
|---|-------------------|---|---|---|---|---|----------------|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 6. The benefits I get from having moose in Terra Nova National Park are worth the risk of a moose-vehicle accident . | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 7. Moose should be completely protected in Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 8. Moose are causing significant damage to the balsam fir trees inside Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 9. I am concerned that moose are possibly damaging trees in Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 10. There are more problems than benefits with having moose in Terra Nova National Park. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 11. There are too many moose in Newfoundland. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 12. There are too many moose in Terra Nova National Park | | | | | | | | |
| 13. Considering all of the current interactions between moose and people, would you like the moose population inside Terra Nova National Park to: | | | | | | | | |
| a) decrease significantly | | | | | | | | |
| b) decrease moderately | | | | | | | | |
| c) decrease slightly | | | | | | | | |
| d) remain at the present level | | | | | | | | |
| e) increase slightly | | | | | | | | |
| f) increase moderately | | | | | | | | |
| g) increase significantly | | | | | | | | |
| 14. If you feel the population inside the park should be decreased, what options would you suggest to achieve this? _____ | | | | | | | | |

The next few questions ask about your beliefs about moose.

- How many moose do you think are in Newfoundland? _____
- How many moose do you think are in Terra Nova National Park? _____
- Do you believe moose numbers in Newfoundland are:
 - decreasing
 - remaining the same
 - increasing
 - not sure
- Do you believe moose numbers in Terra Nova National Park are:
 - decreasing
 - remaining the same
 - increasing
 - not sure

Please indicate whether you believe the statement listed is generally true, generally false, or whether you are not sure. Please circle your response.

| | generally true | generally false | not sure |
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| 1. Moose were introduced to the island and are not native to Newfoundland. | 1 | 2 | 3 |
| 2. Terra Nova National Park was created to represent the boreal forest region of Eastern Newfoundland. | 1 | 2 | 3 |
| 3. Terra Nova National Park was created to protect moose. | 1 | 2 | 3 |
| 4. Moose are a major threat to the forests in the park. | 1 | 2 | 3 |
| 5. There are more moose inside Terra Nova National Park than between Gander and the northern boundary of the park. | 1 | 2 | 3 |
| 6. How knowledgeable are you about Moose? <ol style="list-style-type: none"> Not knowledgeable Have a little knowledge Have some knowledge Extremely knowledgeable | | | |

What priority do you believe park managers should place on addressing the following issues inside Terra Nova National Park?

Suggested Management Priority

| | Very Low | | Medium | | | Very High | |
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| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Minimizing the number of moose vehicle collisions. | | | | | | | |
| 2. Minimizing the amount of moose damage to residential shrubs, trees and gardens. | | | | | | | |
| 3. Minimizing the amount of damage to young trees in the park. | | | | | | | |
| 4. Providing opportunities to observe moose. | | | | | | | |

5. Now **please circle** the number of the question above (1, 2, 3 or 4) that you believe should be the **highest** management priority.

Experiences with Moose

1. Did you have a licence to hunt moose this past fall? a) Yes b) No
2. Did you hunt moose in 2003? a) Yes b) No
3. Have you been involved in a moose-vehicle accident? a) Yes b) No

The last few questions help us learn how representative the sample of residents in this study are to the characteristics of residents in communities in and near Terra Nova National Park.

1. Are you: a) female b) male
2. Are you: a) 18-25 years b) 26-35 years c) 36-45 years
d) 46-55 years e) 56-65 years f) over 65 years
3. How long have you lived in the community where you currently reside?
a) less than 1 year b) 1-5 years c) 6-10 years d) 11-15 years
e) 16-20 years f) 21-25 years g) over 25 years

If you have any additional comments or concerns, please feel free to write them below.

Thank you for your cooperation. Please put the questionnaire in the self-addressed stamped envelope and mail it today.

Appendix 3

Extra Comments at End of Questionnaire

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| <ol style="list-style-type: none">1. Moose, find safe havens in parks and restricted areas and congregate there2. I would like to see if as in my fathers day, go to a designated place and buy a license. If every household could purchase a moose license to supplement their winter meat especially those on social assistance. I don't think these would be as much poaching as it is today. (P.S. think about it. It will work) |
| A lot of moose accidents are due to the means of speed. Too fast. |
| A park is a place where animals should be protected and people, need to realized this when driving in a park area. |
| After almost having a collision I do think that there has to be some more management done on these animals. More licenses, longer season maybe. Something needs to be done to save more people against these animals |
| Although damage to residential shrubs etc. and young trees in the park are definitely a concern, it would be great to control the moose population to reduce the # of fatalities as a result of moose vehicle accidents. |
| Animals are part of our parks Island. whether we like it or not, without them, then why have parks etc. when they become a danger, over populated, then we can try and control them (animal's) and maybe we can also change some of our habits (driving) for one. |
| As you may be aware the TNNP has a certain number of moose that it can support. Once this number or carry capacity has been reached the results will be devastating for the habitat and moose population. When the availability of food is reduced this will cause a downward decline in the moose population until the habitat can support them again. As a hunter, I do realize that these peaks and valleys in the moose population can be managed and their numbers controlled by hunting. In order to maintain the integrity of the habitat in the TNNP hunting should be permitted. |
| Being aware of moose presence seems to be the most important factor in preventing moose accidents. An increase in the moose population doesn't necessarily lead to more accidents. For example in the last twenty years there has been a large increase in the number of moose on the Northern peninsula but this has not lead to a great increase in moose/vehicle accidents. Public awareness as caused people to be more cautious. So I feel that public awareness of the presence of moose will do more to prevent accident then reducing the number of moose in our area. I think that the moose warning signs and the moose are very effective in the park. More of them would help reduce moose/vehicle accident. |
| Bigger fines for poachers. General public getting involved in what happening around them. <ol style="list-style-type: none">1. such as knowing whats happening to the moose year round.2. reporting what they see3. think more about the moose population 10 years down the road instead of now. 10 years down the road the moose is going to become an endangered species. Because of people killing moose all year round, getting a fat pocket under the black market. Not realizing what they are doing because they are blinded by greed and ignorance and a |

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| satisfied attitude toward the wildlife of NFLD and Labrador |
| <ol style="list-style-type: none"> 1. clear cut trees shrubs approximately 100ft back from the TCH 2. Seasonal hunting (moose) in the Terra Nova National Park 3. Serious concern and risk of moose/vehicle accidents in the park. |
| Cut back the trees from the highway so drivers would have a better chance to see moose before they come up on the highway. (not just in the park but across the Island) |
| Cut the brush along the side of the TCH going through the park. |
| Cut trees back, 50 ft. from road. |
| Definitely something has to be done with over population of moose. I think it is becoming a very serious problem with people/moose related accidents. |
| Driving without due care to weather and other adverse conditions (e.g. darkness) is the reason for the vast majority of moose accidents. Wildlife have as much right to live on this permit as we do. |
| Electric fencing or under highway tunnels will cut down on moose accident (ex: Jasper). The community of Charlottetown should be very involved in this survey and be more informed about park activities. |
| Everything should be done to prevent accidents and life lost. Would you be willing to lose your life or your child's for the sake of having moose here. I always felt strongly conceiving moose in Newfoundland, the highways not safe, especially at night. Have more hunting. Sorry didn't know space was provided for this) I really feel it is very serious to lose lives because of a dumb animal on the highway. Also I feel that tourist should have warning when they board the ferry in N.S. or rent a vehicle in NF concerning the danger of moose on the road. Thank you for the opportunity to voice. |
| Fence highways with moose crossings like in NB in force speed in park. Educate drivers to the dangers of moose. |
| Fortunately, I have never been involved in a moose-vehicle collision. However, I have had some very <u>close calls</u> . I am very concerned about the threat to human life. |
| From my experiences with moose crossing highways they seem to cross in certain areas with I believe could be marked an driver's should be made aware, so they could reduce speed. |
| Give out more moose licence for area 38 |
| Give the privilege of hunting back to the people that do not use (Helicopters float planes etc.) and only give tourist permits to shoot moose, caribou, or any big game with a <u>camera</u> , and never allow them to export any meat, horns etc. out of province. |
| Have an open season so many km from TCH |
| Have never hunted or shot a gun – rarely travel outside the overpass – on few visits to NNP encounters with moose (as a pedestrian/hiker) were unique part of visit. |
| Have the gov't look at the NB new highway underpass/fence/turnstyle system. Keep the brush trimmed on the road sides. More lighting exp. in heavily travelled areas. ie. Blue Portes Dr. T-N Park, G.M National; Increase the # of licences available to hunters in NL and Labrador. Encourage American and others to hunt under licence. Generally, dumb bloody nuisances, a real threat to the motoring public and farmers in some areas. If available my wife would like a survey. |
| Having lived in this area all my life, I do not have any problem with moose in TNNP. My opinion is that there does not seem to be as many moose today as there have been in recent |

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| <p>years. so far as moose damaging trees, if there is any, to the ordinary person it is practically non-visible.</p> <p>As far as moose-vehicle collisions are concerned, it has always been a problem and will continue to be until something is done to curb the problem. TNNP is no different. The moose in TNNP should be left as they are until such time as it appears they are becoming over-populated or they are causing monumental damage.</p> <p>Drivers know there are moose on our hwys and more caution should be taken when driving.</p> |
| <p>I am a old age pen and I can't afford to hunt. It cost too much money for license and they got the guns now it is not safe to take it because the next thing you will be in jail. They got all the fun took out of it. You got to have a moose license you got to have a gun license you got to have a bullet license So I just can't afford it.</p> |
| <p>I am a moose hunter, but know very little about the moose in around TNNP. As a hunter, I think it's a great sport, and they provide food, but at the same time they are a nuisance on the high warp. Something should be done, but what?</p> |
| <p>I am a person (business) who serves TNNP, towing and service, we get a lot of people coming through our community wanting to see moose and other wildlife (i.e.) ?? you get up towards St. Anthony. This would create more traffic in our area, create more jobs etc. Most of these people come from outside the province.</p> |
| <p>I am a very active outdoorsman. I do quite a bit of hunting, fishing, and wildlife observing. I would be more than happy to take part in any surveys on wildlife in my area. Thank you.</p> |
| <p>I am concerned about driving after dark.</p> |
| <p>I am concerned about the coyote population. These animals are very clever excellent predators and appear to serve no useful place in this environment. I think hunters should be encouraged to inhibit their spreading throughout the island.</p> |
| <p>I am interested in the results of your survey in this matter. Will they be published/where? How can I access them?</p> |
| <p>I am not a moose hunter. I have never shoot a moose nor do I intend to. Maybe the park management people should stress even more the dangers of driving at night. I have come very close to having a moose/car accident not only on the park, but other areas of the TCH my wife and I are avid animal lovers.</p> <p>Maybe the park should have street lights installed through the park. Maybe you could place fence along the highway like they do in New Brunswick PS just an idea</p> |
| <p>I am not a native of Nfld but am concerned about all wildlife and their survival which I think is a must if our planet in its present environmental form is to continue. I know little about moose. Most of what I do know comes from the museum of nature in Ottawa where I worked as an interpreter for a number of years, but would like to know more especially in Terra Nova Park and Nfld in general. I have enclosed my address should you have any information you might send it to me. Thank you.</p> |
| <p>I am not familiar with TNNP but I do think moose is a nuisance in parks and the licence for that area and other areas should be increased so the population of moose should be decreased by a big demand</p> |
| <p>I am not sure about damage to young trees inside the park. It was my understanding that as the trees in the park are mature that it would not be a choice moose area. (no woodcutting). If the moose population is high in the parks then perhaps the parks could issue moose licenses as it is federal. This money could then be reinvested in the park trees and moose vehicle accident prevention. I drive a lot in my job and in order to avoid moose, caribou etc. I slow</p> |

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| <p>down in the evening, night and early morning. My experience from drive around the island and hunting moose is that the moose appears to be on the decline in all areas except Gros Morne Park. (Go there in the spring to early summer – 100’s of yearlings on side of the road. If there is a problem in Terra Nova it may be because the moose are herded there yearly by the moose hunting on the perimeter of the park. Perhaps a hunt in the park should start at the same time and duration as the other adjacent areas.</p> <p>Also it appears to me there are more moose in the St. John’s area then elsewhere. I know the population density is up but the number of licenses is down. (the accidents are up). Just some ramblings to consider.</p> |
| <p>I am not sure if my answers helped, but I do believe that Terra Nova should have moose inside the park. But in saying that I am concerned about all of the accidents that occur due to moose.</p> |
| <p>I am pleased to see that people are trying to find ways to lower moose-vehicle accidents. But I strongly believe that moose populations all over the island are high. If we lower moose populations, we lower all of everyone’s concerns.</p> |
| <p>I am returning your survey partly completed. I have lost interest in moose hunting and haven’t applied for a licence in the past couple of years.</p> |
| <p>I am very concerned about the moose population on the island, although I haven’t had a licence in a couple of year, most people I talk to say they haven’t seen moose so scare in years and year. What’s happening to all the moose? Now I hear about coyote’s in our area and I am afraid they to will hurt the population too.</p> |
| <p>I am, and have been for many years, a member of the Freshwater Alexander Bay Ecosystem Corporation, and agree firmly with its overriding “objective,” “to respect, protect sustain and enjoy our ecosystem.”</p> |
| <p>I believe moose which are not native to NL are very destructive on our forest which affects every other living creature (even the water shed). Eventually coyotes will bring the pop, down overtime (plus caribou) coyotes should be a major concern for Newfoundlanders. Newfoundland being an island is prime reason, which validates <u>control</u> in any regard to nature.</p> |
| <p>I believe that all moose-vehicle accidents aren’t primarily caused by the moose. The speed factor and lack of respect for the moose and its environment by careless drivers has a great deal to do with the problem.</p> |
| <p>I understand that “all” drivers aren’t careless and disrespectful. So, what I propose is the increase in speed limit signs and higher speeding fines in the park. Thank you.</p> |
| <p>I believe that better patrol of highway through the park will reduce speed which will reduce moose/vehicle accidents</p> |
| <p>I believe that the main increase in moose vehicle accidents are due to increased traffic (# vehicles on road) and more roads encroaching into moose habitat. People today drive too fast and crazy. If you spend any time on the highways you can easily see this. The moose are not the problem. People driving in an unsafe manner is the larger issue. (e.g. driving too fast for your headlight range). Perhaps increased policing on the highways and larger fines and stiffer penalties for unsafe driving is the answer. Not to cull the herd. That is not the answer.</p> |
| <p>I believe that the moose at the park should be hunted by the residents of the park, 25-50 animals should be taken to every year in order to maintain the safety of the tourist and peoples of NL traveling through the park. I had a friend this fall who was very luck, his</p> |

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| vehicle received \$9000 in Damoger. The moose die very unfortunately. |
| I believe the annual moose hunt has become culturally engrained in a Newfoundlanders way of life and it should continue although be managed with regards to humaneness of method – Quotas should be increased in higher traffic areas. |
| I choose to live on the outskirts of a national park and accept the fact that there are problems associated with living in our wildlife’s backyard. I would rather work to make the relationship as pamless as it can be for both humans and wildlife. I will not support a program that culls a species simply for the convience of people who build in an area known for plentiful wildlife and then complain when their trees or flowers get nibbled. RE: Moose/vehicle accidents in TNNP> Drivers have a responsibility to match their speed to the conditins. It is well known that there are a number of moose on the road through the park, yet drivers exceed the speed limit, putting themselves, other drivers and other living creatures in peril. I drive through the park several times a month, and I have yet to see enforcement officers regulating speed. Finally, where will all these displaced moose go? I’m sure they will find their way into communities and on to roads wherever they are placed! |
| I do not drive on the highway in NL because of moose accidents in the night. Doesn’t help the tourist industry, who take chances at night and have their cars demolished running into a moose. |
| I do not own a car, so I do not travel that much on the highway, I don’t know the population of moose in the park or NL |
| I do think moose population is going down every year |
| I don’t have anything to do with the TNNP area or its involvement regarding moose. The survey was done to the best of my ability |
| I don’t know if it would work but to block off the highway and put a tunnel through or walkway over the highway at the major moose crossings to avoid moose vehicle accidents |
| I don’t think that the trans Canada Highway should go through the Park: tourist like to driving through the park at a speed that they can enjoy the scenery without having to watch for a lot of traffic that comes from the TCH. There would be a lot less if not none moose/vehicle accidents, especially when there are not way around the park. |
| I drive through the park on a routine basis and often see moose. I am very concerned. My husband came very close to having a serious accident recently! Something has to be done before more people are injured or killed. |
| I drive through the park virtually everyday. I rarely see a moose. If they damage young fir trees, surely they do the same everywhere else in NF. They are moose after all – its what they have to eat in winter. To me its more natural for the moose to eat young fir, then it is for wardens to be setting fires in the park. Less dangerous too. I’d sooner see human lives saved by putting passing lanes in the park. |
| I drove through New Brunswick and they had electric fences along the TCH. I think it would make a big difference if they did this in the park and other dangerous moose crossings along the TCH. Thank you. |
| I enjoy viewing moose from a far as long as they are not in front of my vehicle. |
| I feel if moose are killing people, the population should be put under control. Also our trees are very important, cause they produce the oxygen we need for breathing. |
| I feel our moose population is being sacrificed for safe driving across the Island. It would be |

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| better to slow the speed limits for after dark which is when most moose accidents occur. |
| I feel that if the trees and brush along the side of the highway in the park were cut back a 100ft on either side, the number of moose vehicle accidents would decrease significantly |
| I feel that more licenses should be issued to cull the moose population in areas that they are causing the most problems most important along our highways. The loss of one human life is worth more than all the moose in the world. (signed) |
| I feel that the current way of obtaining a moose licence should be changed. A person who is qualified to hunt moose be able t do so every 3 years, with out having to go 400 or 500 kms. to get it. Should be a reasonable distance 50-150 kms from place of residence. Unless there are no moose as close as this. |
| I feel that the moose population in Terra Nova Park as well as the Island portion of Newfoundland is decreasing rapidly. |
| I feel that the moose population inside Terra Nova National Park should be left has it is and let nature take its own course. The moose population on the east coast as decreased significantly in the past years, which would aid in the cause to leave the moose population in the park has it is. Thanks. (P.S. The speed limit in the park should be lowered to decrease the accidents) |
| I feel the moose population of the whole island is a great threat to the human population because of the death and destruction caused by moose-vehicle accidents. |
| I feel the moose/vehicle collisions are the fault of people: <ol style="list-style-type: none"> 1) going too fast 2) using salt on highways (attracting moose to feed on same) 3) not using common sense when moose like to roam; dawn and dusk |
| I have been a member of Notre Dame Rod and Gun Club for almost 20 years and our club has often voiced its concerns over moose and moose matters and we have been privileged to have the well-known big game biologist Shane Mahoney address our club several times. By the way I will no longer apply for moose licence, the taste for moose meat no longer exists in our family. Incidentally for some reason, I have found quite a few folds of same opinion. Key to avoidance of auto/moose collisions is reduced speed. Although so far I have not been involved in such collisions, I have been close enough that only reduced speed prevented actual contact. I feel publicizing the idea that reduced speed with prevent auto/moose collisions may not have much effect either. At my age and experience I feel there are folks from say age 18 to 30-35 who <ol style="list-style-type: none"> 1) don't read newspapers 2) only watch home movies on TV 3) only listen to "music" on FM radio so how do you get the message out? Good luck. |
| I have hunted moose in the past, but recently I have been hunting caribou |
| I have lived in NL for 50 years and still can't see any reason for the TNNP. All it does is give us bad roads in the park and slows down driving through the park. I guess they had to have national park close to St John's. |
| I have never seen a moose in the park! |
| I have no idea the amount of moose in the park or NL to answer these questions rightfully. |
| I have no recollection of agreeing to participating in this survey, sorry. I really don't know |

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| anything about moose problems. |
| I have stopped the car suddenly several times because of moose on the highway. My husband and I haven't seen a lot of moose in TNNP, out of 4 trips a year – through the park, we usually see one – moose – although we may see more moose in other areas. We have seen as many as 11 moose in one day, but, that only happened once. and sometimes we could be on the highway and could go 6-8 months and never see a moose – depends on the time of year – and hour of the day. Moose appear when you least expect to see one. P.S. maybe vehicles should be equipped with some sort of moose alarm. |
| I have travelled the park extensively for 20 years and the moose population has declined drastically over this period of time. Probably due to the lack of new growth. |
| I like Banff's answer: a fence. Yes, it's \$ but human life is much more valuable than any animal and as much as I ? moose I would like to see fences erected. As for killing them simply no. Reality humans are more of a threat to the environment and self. But you know this. I hope you are part of a healthy solution. God bless. |
| I like to see of see moose hunter's I dislike to see moose vehicle accidents |
| I live close to TNNP and spent a fair amount of time traveling highways in Nfld and fair amount of times traveling in woods. I see considerably less moose than I did a few years ago, everywhere including the park. |
| I love having moose in Newfoundland they are wonderful creatures and should be maintained at a reasonable level. |
| I love to look at moose, I love the taste of moose, love to hunt moose, when in driving through TNNP or any park I choose to drive with caution and keep my eyes peeled for moose. So should everybody. |
| I only hunt moose on the burin peninsula. I have very little knowledge of he moos population at TNNP |
| I personally do not travel in or around TNNP very often so some of the questions were a little hard to answer. However I hoped I have helped you in some way. |
| I rarely travel at night for fear of moose encounters – I know others who feel the same |
| I realize all animals are significant to our ecosystem. I believe the moose population should be decreased significantly because of somany fatalities ech year. While I'm driving, I'm always watching for moose. It's hard to completely relax especially at night. Moose are different than other animals, They are so big, dangerous always close to roads. I believe that human life is far more important than animals. Many believe moose are attracted to the highways in winter because of salt – why not use something with less salt or salt. We could have campaigns, beginning in school to better educate people on the moose population and to be more careful when it's foggy, snowing or night. I believe that it is better to control the population of the moose, because most people are not driving as safely as they could and they feel nothing can happen to them. Good luck with the study, if you wish to get more opinions, please contact me at work or home. |
| I really don't mind moose if they are not on the highway. If we had a fence around certain areas. Where they are more plentiful. Too many people losing their lives by moose. |
| I recall when the park first opened. Moose was the big attraction for tourist etc. when visiting. One could usually sight one any time during the day. In the last few years seldom do |

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| one see a moose while driving through the park in day light. I am not sure whether this is a lack of young growth or the park attendants doing a good job of preventing them close to the highway. |
| I think a park is where people expect to see wildlife and drivers should be aware of this and show down during evening, night and early morning hours. This would avoid most accidents. |
| I think farmers should build fences to keep moose out not shoot them down. |
| I think hunting should be twice a year |
| I think in an area where the speed is decreased like TNNP and you are aware of a large moose population it should lessen the chances of an accident. |
| I think it's important to keep moose in the province. I also think people need to understand moose behaviour |
| I think it's stupid that the park officials insist upon having the trees and such along the sides of the highway right up to the edge of the road in so many places. |
| I think people should leave the moose alone, they are not hurting anyone, they have to live like humans' do. They have families to raise just like us, it's a sin to kill moose. |
| I think people should leave the moose alone. They are not hurting anyone, they have to live like human's do, they have families to raise just like us, it's a sin to kill moose |
| I think some of Nfld hunters should be able to hunt on farm lands that are in their own communities esp. if you have unsuccessful hunting in your area that you have a license for. Then you go into the farm land to get your moose in your own communities |
| I think speed is the major cause of moose vehicle accidents. If people would drive with more caution at night, in areas frequented by moose I think accident rates would drop considerably |
| I think that a lot of accidents can be prevented if people just slow down! |
| I think that if the trees along the Trans Canada Highway were cut back it would give motorist a better view of what is just off on the sides of the road and a better chance of reacting to the situations that may happen if a moose were along side the road. |
| I think that licences issued should be more closely observed, the reason I say this is because some families may receive 2 or 3 licences for one household and other families do not et anything. It should be evened out. |
| I think that moose licences should be increased in areas which are having problems with moose collisions and or other problems |
| I think that the moose in all parks should be culled. |
| I think that the moose should be decreased by having a moose hunt. This will decrease the moose vehicle accidents and save a lot of lives. We should have this hunt when the moose get over populated on the park. |
| I think that they should have a hunt at a certain time of the year when there is nobody in and around the park. Or you can close the park at a certain time so that hunters can hunt. |
| I think that you should have some kind at invention to eliminate for entering the way of cars on all roads. |
| I think the <u>bull</u> only licence should be discontinued or a <u>female</u> only licence should be added to the application list. |
| I think there is a misconception about moose and vehicle accidents. Too much blame is placed on the moose. Areas highly frequented by moose should be clearly marked. Drivers should reduce their speed, especially at night and at times of low visibility – fog etc. If particular areas are being damaged beyond repair by moose, a season with a quota should be had in which hunters harvest that quota. Transportation to such areas should be regulated |

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| if it is seen that fragile parts of the ecosystem might be damaged by ATV's for example. |
| I think there should be a cull in all parks if population dictates a substantial population |
| I think there should be a moose hunt in the park very fall. |
| I think there should be a strict moose hunt in TNNP for a certain period of time. |
| I think there should be an open season for one or two years. Anybody that wants a licences should be able to pick one up in a store for just a small fee. Instead of going in a draw. |
| I think there should be licences giving in a hunt at times in the park put out by the government to help manage moose on the park. I really think this would help keep them away from the highway a nice bit. As for the forest in the park I don't think it is the moose or animals. I think it need better forest management of the park forest is not look after at all. |
| I think there should be some moose on the parks for tourists to enjoy. |
| I think we should have more moose signs that glow in the dark when vehicles lights hit them placed in the park. Good luck. |
| I think you the number of moose in the park are going to be lowered. I think you should start with a small number of licenses because I've seen what can happen when the wildlife gives a large number of licences in a small area. Thank you. |
| I thoroughly enjoy the park and I believe moose is a vital aspect in tourism and natural beauty. My biggest concern is moose-vehicle accidents. For years I've been wondering why there couldn't be some kind of fence or barrier built along the stretch of highway (hidden by the trees) to greatly hinder the moose from walking onto the highway. I know this isn't fool proof but I do believe it would decrease the amount of moose/vehicle accidents. |
| I travel the country a lot of skidoo, I also canoe and hike. I am seeing less moose now than I use to. I feel there has been a serious drop in the population of moose in Nfld. |
| I value the life of one human more than all the moose on this island |
| I was not involved in a moose-vehicle accident but my son was. |
| I was once in contact with a very aggressive (pregnant cow moose.) Not a pleasant situation to be into. But I survived the ordeal and lived to fill in this questionnaire. Thank you. |
| I worked at TNNP for over 20 years. There are fewer moose vehicle accidents now then there was 10 years ago for what reason I don't know. |
| I worked in TNNP in the 1984ish and I have noticed that the moose population has increased. They were placing collars on moose then – and I am sure that more than enough data has been collected on the imported moose. There are more moose accidents in the last 15-20 years. More people are being maimed every year or unnecessary deaths since. Many trees are ruined by moose. Make the moose issue priority. Thank you. There are too many people killed and not enough moose throughout the moose hunting season being killed. Too many moose!!!! |
| I worked with TNNP for 32 years as a (left out for confidentiality). During that period of time I drove to work from Eastport to the park compound 5 days a week. During that period of time I saw hundreds of moose kills both in TNNP and outside the park (moose vehicle kills). My thought to why we are having so many moose vehicle accidents is 1) speed and 2) driving without due care and attention especially at night. My suggestion is that the park wardens and the RCMP should put a all out ban on speeding give out speeding tickets, and give out pamphlets to speeders and others warning them of driving to fast and driving without due care and attention, after all we are supposed to be the intelligent ones who put out highways through animal habitat and want to drive at any speed. If the above was done I think it would cut moose vehicle accidents by probably 90%, I wish you people luck. |

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| <p>I would expect that wildlife and ecosystem scientist should be able to manage moose population. Culls – keeping them in balance with food supply etc. in the park so that damage to vegetation is very minimal. About 40 years ago moose population levels in the Milertown area of Central Newfoundland were such that very severe winter damage to young ? fir trees resulted. Control of population levels of moose. Controlled the damage - ? enabled moose both moose and trees to be a part of the environment of the area.</p> |
| <p>I would hate to see moose disappear from our province. It is a part of our heritage. I or someone in my family has a licence every year and I enjoy hunting, we always practice responsible hunting. ie – never shoot at a moose unless we’re sure we’ll be able to get it. It disgusts me when someone shoots at a moose for “sport or the fun of it” and the poor creature gets away only to go somewhere laydown and die. How many moose have been killed this way? They are beautiful and majestic animals and I think it is silly for someone to “say” There’s too mnay moose accidents on our highways..we have to get rid of all the moose in our province.” It’s not the moose’s fault – people have to learn to take some responsibility for their own selves – “Be aware of the possibility of moose, slow down while driving after dark on our highway.”</p> |
| <p>I’m always afraid of having a moose accident and we have come close about a dozen times.</p> |
| <p>I’m not overly familiar with TNNP’s problems, but if they are similar to Gros Morne Park conditions, then in my estimation, a fall, winter cull hunt would help the situation out a lot, probably every 3-4 years. Although the moose were imported, today they are part of Nfld’s image, beautiful animal etc.</p> |
| <p>If Parks Canada should remain strong in protecting moose to the point where too many moose within the 400km2 boundary. The moose population will rise within the Parks boundary but will roam outside to find food. Fir trees, other vegetation will be eaten from elsewhere, plus the moose roaming increases accidents. Has to be managed!</p> |
| <p>If people where allowed to cut wood on the park (limited) It would give the young moose and the population in whole a place to feed instead of on the same fir trees all the time and not letting them grow. There is nothing more inticing to a moose then a cut over a couple of years old. The first thing to grow back are popular and birch which they love.</p> |
| <p>If people would show down on the highways at night they would get along with moose OK.</p> |
| <p>If the government continues to use “moose” for tourism they should construct fences on both sides of the TCH to make it safer for the motoring public using money generated from moose licences.</p> |
| <p>If the had a hunting in the park starting 40 years ago they wouldn’t have had all the trees eaten. Same thing is happening in the Gros Morne Park right now. Parks do not preserve wildlife, they destroy it.</p> |
| <p>If the moose are getting too overpopulated issue more moose licences and that will then them out and decrease the population.</p> |
| <p>If there happens to be a survey on moose, I like to participate.</p> |
| <p>If there is too many accidents with moose on the road give licenses to hunters to hunt on the road</p> |
| <p>If we are to provide any area as a sanctuary for any animals, we are to be some wardens of the ecosystem – to keep in balance the ecology of this area</p> |
| <p>In my opinion there are far fewer moose per sq. km. in TNNNP than in the community logged forest west of the park. The moteas (?) forest of TNNNP do not produce good moose habitat. Lets face it, moose are in this province to stay. A shift from a fir dominant forest to</p> |

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| <p>one of spruce may be inevitable. More “mainland like” in structure. One option: open season on moose in TNNP. This would be difficult to do under the National Park Act. Also, this would not be “politically correct.” As for moose vehicle accidents, public education may be the only productive answer. People need to drive at a reasonable speed at night. Good luck. P.S. I drive through TNNP on a regular basis. I have not seen a moose in the past year.</p> |
| <p>In the 1980’s. We were involved with a moose on the C.N. bus from Grand Falls to St. John’s the moose got killed. No one seriously injured. Few got whiplash.</p> |
| <p>In the Glovertown area clear cutting is reducing moose habitat. Moose/vehicle accidents you can educate drivers (I hope) but not moose.</p> |
| <p>In the past here have been too many lives lost in the park due to collisions with moose and there doesn’t seem to have been anything done about it.</p> |
| <p>It gives me pleasure to see wildlife as I drive through TNNP.</p> |
| <p>It is my opinion that moose population generally is well managed. While eliminating moose/vehicle accidents completely may not be possible, I would think the TCH in the park could be fenced due to high incidence of moose feeding along edge of highway.</p> |
| <p>It would be nice to do a survey on the moose in the area that I live in Gros Morne National Park and the West Coast of NL</p> |
| <p>It would be nice to know if simple things like deer whistles mounts on vehicles would help prevent moose wandering onto highways.</p> |
| <p>It’s not so much limiting the population of moose, but maintaining a cleared margin of visibility along the road; in Terra Nova Nat. Park, fences in some highly frequented areas.</p> |
| <p>It’s not the moose killing the young trees, the Rotton Fall Downs are stopping the young trees from growing. All those Fall downs don’t look good when driving through the park. Lets try to get it cleaned up. The park managers can’t say for sure how many moose is there? So don’t expect the public to know.</p> |
| <p>Look out to our moose and park, do what the public needs to be done</p> |
| <p>May of been a good idea to provide the moose population in Newfoundland and in the park!</p> |
| <p>Moderately like the moose...with potatoes & gravy, garlic and ginger</p> |
| <p>Moose accidents are 90% preventable – reduce speed to fit conditions and especially between sunset and full daylight – I feel moose populations have declined in recent years and will probably continue to decline as their territory is invaded by paper companies and loggers. It would be a shame to kill off our moose population as they are an important resource.</p> |
| <p>Moose are a problem with highway driving. Even one casualty or lost of human life is enough to have concern. I’m sure there are experts in knowing what measures should be taken. Talk to the people who know the most, like wildlife officers and conservationists.</p> |
| <p>Moose are beautiful, stately animals BUT they cause too many deaths and cause too much destruction to farmer’s crops and other gardens.</p> |
| <p>Moose are being made the bad guys but the truth is the Paper Companies are destroying their habitat and the moose are forced to live in the parks and along the highway where there is no cutting allowed. The government says they don’t understand why there is so many moose on the highways. I don’t believe this. They understand the problem as well as I do but don’t expect them to admit it.</p> |
| <p>Moose are not the problem. Humans need to be educated on their role in protective the</p> |

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| natural habitats of moose and understand that moose do also use the highways |
| <ol style="list-style-type: none"> 1. moose could be caught and transferred to other parts of the island with low moose population 2. My brother in law had a moose vehicle collision and broke his neck. It changed the lives of all our family members forever and ever. Would not want anyone else to ever have to experience this misfortune. Thanks |
| Moose fences along the road. Forest trimmed back 300 feet from the road. Reduce speed limit throughout park. More public education in the park. |
| <p>Moose here in NP should be protected more than they are. TNNP should be extended to be larger so moose have larger area to live.</p> <p>Thank you for your questionnaire. Anything to conserve moose population I want to help. More help and less hunters will help moose grow. (gave address)</p> <p>I will even volunteer to help the park at any time. Had licenses for 2003, 204. Didn't shoot moose. I ? for another day.</p> |
| Moose in the park should be thinned out. But not to fast. Shared to nearby communities |
| Moose in TNNP is not going to increase or decrease very much because the food supply to maintain more animals is not there it's all over mature trees which leaves the moose no other choice but to move off the park into greener postures where domestic cutting for firewood is permitted. |
| <p>Moose is a very important part of the outport hunters winter meat. Ever since moose have been introduced to the island, people have hunted it for food. Cut down on poaching by stiffer fines and never again to be issued a licence. Have a hunting season in TNNP and limited amount of licences and not the same person get the licence every year. I have been as long as 5 year between licence's and the guy next door gets one every year. This is not right. I enjoy hunting and enjoy the meat. We don't waste any part of the animal, roasts, steaks stewing meat, sausages, ground meat, we enjoy these. The last licence I had was 2002 and I had to wait 5 years to get it so I guess I'll have to wait until 2007 to get another. There is definitely some thing wrong with the system.</p> |
| <p>Moose meat is very good to eat. If cooked right. The best way out is drive the speed, watch both sides of the road, the moose are like children they do not know the cars and trucks are coming. The don't mean to hurt. I just purchased a dog whistle \$35 stainless steel. Put it on my truck. I think it helps. Moose have big ears.</p> |
| <p>Moose population should be monitored closely in the park. If the population gets too high we should put a bag limit on them and allow a hunt in the park to balance the population, but with government cuts I think this will be impossible. But should be considered this will be impossible. But should be considered. Why not anything goes this day and age. Don't you think.</p> |
| <p>Moose seek thick woods for shelter, over cutting in some areas cause moose to herd in timber, causing forest damage and to many moose in the one area. Parks offer moose protection.</p> |
| <p>Moose should be left alone in their natural habitat just be somewhat protected and kept off of highways on the island and trails in Terra Nova</p> |
| <p>Moose should be protected, but the more needs to be done to ensure highway safety</p> |
| <p>More control on highways. Too many people killed because of moose on highways.</p> |
| <p>more scientific study could help</p> |
| <p>More signs are required along the TCH in areas that have high record of moose crossings.</p> |

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| Maybe even caution lights in said area. |
| Most moose accidents occur, but nobody seems to be concerned about how fast the car was driven. All they talk about is the moose accident. Not the driver watching the view in front of him. |
| Motorists should reduce speeding |
| Move the tree line back in highly populated areas along the highway. |
| My accident with moose in park years ago say 10 to 15 years if there was plenty of moose in park there would be no problem of getting a moose outside when season would open. I hunted moose for a number of years say from (can't make out writing) |
| My biggest concern is ensuring no more families have to suffer from moose vehicle collisions and their effects hen solutions are available to maintain moose and protect human lives. |
| My biggest concern is keeping moose away from our roads so there are less moose vehicle accidents. |
| My comment is a very simple one, cause it makes very much sense to everyone to cut trees back on each side of road so you can see it quickly and apply the brake if crossing road, this action would save a lot of moose accidents. Why don't you protect management people send out a study and questions feelings on attitudes and concerns to wards. Having a winter ski-doo trail up to Terra Nova Road. Give us something to be glad about. |
| My daughter drives to Clarendville to College of the North Atlantic and she has to pass through the park each day I don't consider it any more of a risk than driving to Gander. We love the park. The fact that the park post the accidents makes people more aware of moose in the park. I'm sure there are as many accidents concerning moose in other parks of Newfoundland. We visit the park during the summer months and love to see the wildlife. We agree with conservation and hope that park employees will conserve and preserve it for our future and the future of our children. |
| My husband and I camped in Terra Nova Park with our six children and when they grew up we still camp. They often camp now that they are grown with their own children we always liked seeing moose and bears. You have to learn to respect those animals. PS I don't think I could shoot a moose they are just too majestic. |
| My husband hunts moose in this family |
| My wife and I do not remember receiving the phone cal to OK sending out this survey. It was addressed to *** but I ***** completed it. We do not hunt moose and we do not live near the park. We live near St. Phillips Conception Bay |
| Not as many moose on highway past 5 or 6 years as was past 5-15 years. I travel very often. all over NFLD. (about 200 trips across island past 15-20 years. |
| Park managers can not do anything about moose vehicle collisions that is the responsibility of the one who sits behind the wheel, with care and caution and reduced speed, most accidents can be avoided. Have a good season of camping. |
| <ol style="list-style-type: none"> 1. People driving in park between sunset and sunrise should reduce their speed 2. With moose eating young trees nature take care of itself 3. Park should cut the trees in their boundaries so hunters know where the park begins and ends |
| People residing in or near the park should have free access to the park. I think that moose-vehicle accidents are too high and something needs to be done about it |
| People's lives are more important than the moose. Hunting should be allowed in the parks in |

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| the very late fall to help decrease the number of moose, thereby helping to decrease the risk of moose-vehicle accidents. |
| Poorly worded questions/responses affect the accuracy of the information gathered for this survey |
| Reduce speed, make it one speed throughout the park. 70km per hour |
| Reduce the speed limit even more at night maybe say 80km/hr. |
| Regarding accidents in the park concerning moose the problem is people driving too fast and not enough signs. |
| Regards to moose on highway's people know they are there so slow down. |
| Seems to be assumptions that population levels are well known by the public in general when actually only those involved in various agencies are in the know. i.e. governments, possibly outfitters, trappers etc. |
| Slow down and drive – the moose means a lot of money in our province and provide a lot of jobs |
| Something definitely needs to be done. There are too many people being killed or injured by moose. Maybe hunting needs to be increased to keep the moose population under control. Maybe the shrub and tree line along the highways should be pushed back further, especially in areas where moose is plentiful. Maybe the guard rails should be put up higher. Maybe some kind of high frequency should be put in place where moose are plentiful, to discourage them from coming to the highway. Maybe the moose should be put in more remote places on the island. I don't know. I do know that something has to be done wo we can all travel our highways safely. There has been too many people who have died, because of moose. Thank you. |
| Something has to be done about the moose population to protect the driving public! |
| Sorry I can't be of much help to you. I know very little about moose anymore they destroy our fruit trees on our property. |
| Talking about Bay de Espoire to TCH years ago one could travel over the highway and see 40-50 animals now if one can see just 1 moose one would be very lucky. |
| The aging trees on the park are killing the moose population, but not the moose. Young growth, especially of birch and fir, create moose population growth. Selected cutting would do the job of increasing the moose population. |
| The best way to minimize moose/vehicle accidents is education to drivers, maybe even the elimination of night time driving for certain hours each day. Lets remember that <u>we</u> are invading <u>their</u> ground. |
| The big reason for moose vehicle accidents is because there is too much of our forest being harvested leaving very narrow strings of woods along our highways the moose feed in these areas, this is the reason we have so many accidents. |
| The brush should be cleared on both sides of the highway. You would see the moose before they come on the road. All the dead trees should be cut it looks awful driving through the park. |
| The fact that the trees are let grow to close to the highway and people cannot see the moose until its on the road in front of them is the suggest problem with moose and vehicle accidents. This problem is all the way across Newfoundland, not just in the park. |
| The main goals of my government action re: moose should be to reduce poaching and reduce the ever-increasing <u>coyote</u> population. Your next study should focus on the impact of coyotes to NL. My pleasure! (response to the thank you) |

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| The major problem with moose to vehicle accidents are the driver them self but not always |
| The moose population is a integral part of our province and park systems. Should be preserved in number that are safe to humans, the environment and themselves. There will always be moose-vehicle accidents due to over population and/or poor driving habits. |
| The moose/vehicle accidents in the park can be reduced by cutting back the trees from the highway in the park |
| The number of licences issued in Bonavista North should be reduced. |
| The number of moose in the Gander/Gambo area shows a steady decline. This decline is spread to Bonavista North and Glovertown area. Clear cut? A lot of winter travel in areas? Poaching? |
| The numbers of moose and other wild animals in the park seem to be low and we have had overseas visitors in the past few years that think there is no such thing as a moose!!! |
| The only concern I have is if moose are causing a great problem to the park. Then you should have an open season. When the park is closed, allow a certain number to be taken. |
| The problem with moose and moose vehicle accidents are people driving too fast. There are a lot less moose in the park and surrounding area than there use to be. Some people say reduce the number of moose to prevent accidents, that's the first "cry" maybe they should be more concerned about the speed they drive, and they should be more aware of moose. |
| The problem with moose driving across the island is the tree line is not cut back far enough to see them coming onto the road in many places. |
| The questions are reasonably set. The type of survey (Liekert Style) leaves doubt for the reader: simple response (1 or 2) (1 2 3 4) not (1 2 3 4 5 6 7) |
| The questions I have not answered are due to lack of knowledge. |
| <ol style="list-style-type: none"> 1. There are fewer moose now than there were back in the 1960's 2. There should be a wire fence along highway to keep the moose back off the road 3. Moose are headed for the park for food due to much forest is being completely cut out (clear cutting) for logging purposes. The trees are being completely destroyed. 4. The moose hunting season is open to early in most areas. |
| There are just as many moose killed on the roads other than TNNP they keep records. Moose in not the problem. <u>People are the problem.</u> |
| There are no doubt problems of poaching moose (not as much now as there were 4 or 3 years ago.) |
| There are probably more damage done in one fire than with moose with respect to tree damage. Extra lane on highway or at least have the trees cut back further from the road's shoulder. What is more important, human life or trees?? Gov. must be more reasonable/flexible on this. |
| There are too many moose and far too many moose-vehicle accidents. Moose numbers should be greatly reduced all over the island. |
| There are too many moose in Gros Morne National Park also! |
| There are too many moose-vehicle accidents, but, it's nice to see a moose now and then in the wild! If we can only keep the moose off our NL highways? |
| There are way to many moose on the park and I am sick of near misses every time that I drive. Cut back the trees 300m. |
| There has to be better ? moose management in the park |
| There should be a wider paved shoulder in the park so tourist can safely watch moose. But the numbers should be controlled by a controlled hunt. |

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| <p>There should be cutting permits on the park to cut wood. There for it would let young trees grow to feed moose resulting in an increase in the moose population. I also believe that there should be a moose hunting area so moose hunters can apply for a moose licence and hunt moose on the park. In my opinion 75% of moose collisions with vehicles is the drivers fault for driving too fast. If drivers slow down when it starts to get dark and when dark. This would not be a problem. Thank you.</p> |
| <p>There should be more moose licences issued. Four years is too long to wait for a moose licence. One moose don't last a family 4 years.</p> |
| <p>There should be more research on how to reduce moose vehicle accidents. Also the number of moose in the province should be reduced by increasing the quota each hunting season.</p> |
| <p>There should be more street lights going through the park. I have drove through the park several times. I think people are driving too fast. That is the cause of lots of accidents.</p> |
| <p>This is an excellent survey. Hopefully, you will get a high response. I was very glad to have the opportunity to participate. Thank you. (signed)</p> |
| <p>This is the second survey I have participated in, one on pine marten, another on the moose. Is it possible to get copies of your findings? As a hunter and trapper I have a keen interest in our animals of the island. Hoping to hear from you soon.</p> |
| <p>This survey was sent to me but I felt my husband would be able to complete this better than I could. His name is ***so if you have any questions please give him a call. Regards.</p> |
| <p>I haven't hunted moose for several years now, but have hunted caribou. I feel that moose are a beautiful animal whether being observed at a distance or being hunted and eaten. The problems that arise from moose in any part of the island should be dealt with by whatever means are available.</p> |
| <p>TNNP is not the only problem area they should also look at Gros Morne National Park. A couple of summers ago I counted 63 moose on the side of or in the road in this area.</p> |
| <p>To minimize moose vehicle accidents increase signage in heavy moose areas – although the traveling public might not adhere to them</p> |
| <p>Too many moose in Nfld. (period). To protect animals in parks is good but importantly people need to feel safe going to, through and in the park.</p> |
| <p>too many poachers</p> |
| <p>Tree line is growing too close to the side of the road. Cannot see the moose until they are on the road.</p> |
| <p>Trees are too close to highway. They should be cut back 100' on each side of highway and keep closed to advised moose vehicle accidents.</p> |
| <p>Trees, shrubs need to be cut away from road, so roadways are wider.</p> |
| <p>Unfortunately TNNP suffers higher than average destruction of vegetation due to the protective nature of the park. Moose are a very important component in the park, visitors love to see them plus it can be a valuable learning experience as visitors can be a valuable learning experience as visitors can see first hand, destruction caused by overgrazing and why its sometimes necessary to cull or remove animals from certain areas whether it be bears, elephants, snow geese or moose.</p> |
| <p>Use fences along roadways to stop moose from coming out on road. Drove tractor-trailer 35 years. Killed 196 moose with truck</p> |
| <p>We don't know much about the TNNP as we only go to St. John's every 5 to 10 years.</p> |
| <p>We had one collision with a moose and we have had several close calls and we no longer</p> |

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| drive on the TCH at night in summer and Fall because of this problem. |
| We regularly have moose passing through our property without any damage. |
| We were involved in a moose accident Aug. 1988 on our way home from Goose Bay after we left the boat at Lewis Porte after being delayed for 4 hours en route. We, my husband, 10 year old son and I stopped and filled the 1985 GMC Jimmy with gas at Gander. WE had just left the Pole lighting at 4:00 am when from nowhere the moose hit the drivers side causing severe damage to the vehicle and the drivers side causing my husband back injury and a lot of things before returning to his office job at Coley's Point. Unfortunately my don and I were not injured but quite a scare to this very day, we will not drive at night. We also experienced a lot of difficulty trying to get a rental car having the moose removed from the road after numerous calls to wildlife and the RCMP. Some of the other passengers from the boat that was going east as we were gave us a lot of help by putting reflectors by the moose so nobody else would hit the dead moose lying in the road. It was 10:00am in the morning when we finally got a rental at the airport. The cost of a towing back to Bay Roberts. Can go on and on. So as you can see we have no time for moose get rid of every one of them. There must be a better sport than moose hunting that has caused too many lives and injuries. Thanks for your interest and reading this. Yours truly |
| We witnessed a moose truck accident on the park in 2004. It was sad both for the moose and the driver of the truck. People should drive with caution on the park when they are aware that there are moose in the area. |
| When I first moved to NFLD in 1989 I used to drive the forest roads just to see how many moose I would see. Now I go in the same roads to see if I can see just one. Sad to say for the past four or five years I have seen none. Unfortunately the farmers in the Lethbridge area have destroyed too many of them. |
| When there was lots of moose in the park people didn't drive as fast, more aware they acted like speed bumps. |
| When you consider the amount of traffic that flows through TNNP, I think that the number of moose vehicle collisions are minimal |
| While moose do provide an inexpensive source of meat and are more ecologically low-impact than e.g. importing beef, but I'm concerned about their impact on the native caribou population |
| With logging contractors raking our forests, the two national parks in Nld. is the only safe haven for moose. There is no wonder that the moose population is increasing in those areas. To ease the over-population, wardens should be able to cull the population. Animals taken can be used to fill licences hunters have been awarded if they so desire. A lower population would reduce the strain on the young forest growth. |
| You should be able to hunt moose in TNNP this would cut back on moose-vehicle accidents. Also cut back on the little bit of forest that is destroyed. |

Appendix 4

Answers to the open-ended question:
 “If you feel the population inside the park should be decreased,
 what options would you suggest to achieve this?”

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| (Managed Hunting) for the purposes of food for many families – give back some control to why the moose were introduced in the first place. |
| 1. have open season on the park 2. put a fence all around the park |
| 2 week hunting season |
| A bigger hunt |
| A certain percentage should be taken by licenced hunters during regular season. |
| A controlled hunt |
| A controlled hunt |
| A controlled moose license issued. |
| A controlled, monitored, residential moose hunt between November and January. |
| A cull conducted by park wardens |
| a hunt |
| A hunt consisting of 300-400 animals to see the effect it has on the highways and moose. |
| A licenced hunt in the off season |
| a limited yearly hunt |
| a small cull |
| A special draw for a short season (10 days) for a limited no of animals. |
| A very limited hunt approximately 2 weeks for either sex, to remove some problem moose by highway |
| After careful measurement a tightly controlled cull |
| Allow a limited hunt |
| allow a limited, controlled hunt within the park |
| Allow hunting |
| Allow hunting away from campsites and hiking trails! |
| Allow hunting during moose season . # of licences can be controlled by # issued |
| Allow hunting in park or have a cull |
| Allow hunting to reduce the population |
| Allow moderate moose licence in the park. |
| Allow residence within Park boundaries to have a very limited hunt every so often. |
| assess population / set quota removal through hunting / set hunting date |
| Be cautious of them stay out of their way where they are wild animals. I don't think they would bother humans. |
| Because of the total of moose I think they should be put elsewhere in NL |
| Bigger bear and coyote population, moderate hunting season |
| By removing the moose by issuing more licences to hunt. |
| Catch and release, issue hunting permits for certain areas. |
| Close the park and allow hunting to occur for a couple of months |

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| Close the park say Nov. 1 st to Nov 30 th . Open it to moose hunters. 25 moose |
| Control hunting of problem moose with valid moose licences of surrounding area. |
| controlled cull |
| controlled cull |
| controlled hunt |
| Controlled hunt |
| controlled hunt |
| controlled hunt |
| Controlled hunt |
| Controlled hunting |
| controlled hunting during season |
| cull |
| Cull by wardens or qualified people |
| Culling or removal of young moose to more remote areas |
| culling, increase hunting quotas |
| Decrease moose for few years. Drive some moose from park area and remove some collars off the moose to allow them to be hunted. Yearlings to be not collared and not protected. |
| Disabled hunters, very late fall hunt. (anyone who has disabled parking permit and proper safety course could apply) |
| do not think moose are over populated in any part of NF and NL |
| Don't think they should decrease moose, they live and breathe the same as us |
| Don't think they should decrease moose, they live and breathe the same as us. |
| Drive them out with choppers or some other means |
| Erect barriers in the park where moose mostly have easy access |
| Extra hunting permits for that general area for a few years. |
| Fall hunt for licence holders |
| fence the park |
| Fencing and underpass to protect highway accidents |
| Find a way to reduce the risk of moose-vehicle accidents. It is my only concern regarding moose in NL or the Park. |
| For wildlife officials to cull moose along TCH & distribute meat to hospitals or needy people |
| Get a count if there is too many put an open licence on them. |
| Get them out or fence the TNNP highway |
| Give licences and shoot them all |
| Give out moose licences in park |
| Give out more licences for this area for 1 or 2 years. That will help decrease the moose population |
| give out more moose licences |
| Give out more moose licences |
| Give permission to licensed hunters under supervision |
| Have a controlled hunt at a time when there is no tourist activity in the park |
| Have a fall hunt, when park is closed |
| Have a hunt at a certain time of the year |
| Have a hunting season |
| have a hunting season on the park |

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| Have a licence issued for the people of Charlottetown which is the only town surrounded by the park |
| Have a licence quota (open season) |
| Have a moose hunt in this area during moose hunting season. |
| Have a moose hunting season for that area |
| Have a moose hunting season there like else where – too many moose – too dangerous on the roads |
| Have a regulated hunting season |
| Have a scheduled moose hunt with strict guidelines |
| Have a second hunt |
| Have a selected moose cull each fall moose and trees would benefit |
| Have a short hunting season for the park area |
| have a small hunt |
| Have a small hunt around that area once a year |
| have a small hunt to moderate the population |
| Have a two week winter hunt in Feb. that come under Black River area |
| Have a winter hunt with either a wildlife conservation officer or a park official present. |
| Have a winter or fall cull hunt |
| have an open moose season (draw) inside the park |
| Have an open season |
| Have an open season |
| Have an open season for a month or more if needed on to transfer some moose out to different areas. |
| Have an open season for moose hunting when park is closed |
| Have an open season in or near the park for a couple of weeks or more every year |
| Have an open season in the park |
| Have an open season in the park |
| Have an open season moose hunt. |
| Have an open season within the park |
| Have licences for that area; giving a certain amount for Terra Nova |
| Have limited open season, al hunters (licence holders) must be accompanied by park official while hunting. |
| Have open hunting season |
| Have open season every year to kill X number of animals. |
| Have seasonal hunting |
| Have some killed and give the meat to people that need it |
| Have wardens more closely monitor their location |
| having a limited amount of moose taken every year |
| higher fences to keep them off TCH |
| hunt |
| hunt |
| hunt them outside the park |
| hunting |
| hunting |
| Hunting at certain times |

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| hunting late in fall |
| Hunting quota |
| Hunting season during lower park human population |
| Hunting within the park |
| Hunting! |
| hunting, but strongly monitored |
| I am a senior. I don't have any idea why I received this form. |
| I am not entirely sure of population problem but maybe a controlled hunt by selected officials and have the meat donated to food shelters, needy, etc... |
| I believe fencing along most populated moose areas could help keep them off the roads which I feel is the biggest problem |
| I can't offer any options but I think something should be done. |
| I do not know anything about moose in the park I don't even go there. I cannot be of any help to you. |
| I do not think it should decrease |
| I don't know the levels in the park to make an informed opinion on this. |
| I don't think the population inside the park should be decreased |
| I don't think they should decrease but we should be able to hunt a certain amount of moose in the park, in certain areas. |
| I find this question difficult to answer |
| I have a comment on the back if this isn't feasible, maybe you could do a relocation program to re-locate the moose to areas on the island or Labrador where their numbers are down. I am a commuter every day from Glovertown to Gander and within the past 2 years I can honestly say I have only seen 3 moose. I don't know the reason for this – if more licenses are issued for this area, if the habitat has changed or if populations are down on the island. |
| I haven't been to TNNP in years so I do not know what damage they are doing. However it would be nice to have a few in a enclosed area for visitors to see like Salmonier Wild Life Park |
| I think a cull would work |
| I think that when or if already the moose population in the park is determined there should licences issued every year to hunt them. |
| I think the decrease in time due to food supplies become depleted |
| I think the only option is to allow hunters in the park |
| I think there should be a controlled hunt during the hunting season with a limited number of licences. |
| I think you should find a way to capture the moose and move them somewhere in Newfoundland where it would be safer for us and the moose. |
| I would have a hunting season for a few years until the moose level is down to a low level |
| I would like for the wildlife management to cull the cows in the park, in the rutting season. |
| I'm not convinced that numbers of moose cause accidents. They might cause damage to the environment, trees etc. |
| If a need for decrease, then they should be transferred to sparsely populated parts of the Island (08-06-07-11-09) etc. |
| If can be, removed and placed in less populated areas. |
| If evidence indicates too large a population, a fall and early winter hunt which is strictly |

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| controlled |
| If need to be you would have to closes down park activities during (1) open season |
| If possible to have the moose monitored better. It may not hurt to have a few killed |
| If there is a problem, have a controlled hunt, by hunters not wardens to keep numbers in check |
| If you ask a hunter the answer is shoot them. If you ask a hiker the answer would be to leave them alone. |
| In open season to kill a certain number or have a certain number removed other ways |
| Increase # of moose licences in every area |
| Increase hunting licences <u>outside</u> the park |
| Increase licences |
| Increase of licences issued for this specific area |
| Increase the amount of moose licences you pass out each year. |
| Increase the amount of tags given out slightly X 3 years and re-asses the situation after this time period |
| Increase the number of hunting licences |
| Increase the number of hunting licenses throughout the province |
| Issue a number of moose hunting, in side of the park |
| issue hunting license |
| Issue licence for so many each year until you can notice a decrease |
| issue licences |
| Issue licences for the park only |
| Issue licences to hunters to hunt moose when park is closed for the season. Concentrate the hunt within a mile of the transcanada. |
| Issue licences to local hunters |
| Issue licences to wildlife officers to remove moose and give to needed families |
| Issue licenses in the park |
| Issue management licences |
| Issue moose licence |
| issue moose licence for park than there won't be |
| Issue Moose license in the park (Maybe between 40-50 each year) |
| issue more licences |
| issue more licences |
| Issue more licences |
| issue more licences for area 28 |
| issue more licences in the surrounding areas |
| Issue more licences on each end of park boundaries |
| Issue more licences, lengthen the hunting seasons |
| Issue more moose licences |
| Issuing moose licence along with other areas. |
| It could be a good tourist attraction, of a higher rank of hunting. When the park is closed and a guiding service in place to help promote the safety. Some for the travelling public |
| Just grant a few licences to reduce the moose in the park |
| Keep trees out back give out licences to hunt moose in park |
| left as is |

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| Less MVA's |
| Let people hunt them |
| Let people hunt them and eat them |
| Let the community move most of the moose out |
| Let the hunter kill moose on the park |
| licence draw 1 week only |
| Licence hunters |
| Licences to take care of some of them |
| 1. limited access and area controlled hunt |
| 2. capture & release to other areas |
| limited hunt |
| Limited hunt with park guides |
| Limited hunting season |
| limited hunting season |
| Limited number of licences issued each year |
| Local quota increased during hunt – moose fences |
| locate them to another area in NL |
| management and population levels |
| Maybe every 2 nd or 3 rd year there could be an increase in licenced hunting for that area. |
| maybe have an open season |
| Maybe issue some licences to decreased the number of moose |
| Maybe so many licences should be issued with proper regulations regarding to parks. |
| moderate hunt |
| Monitor hunt let disabled people able to get licence to purchase from wildlife officials |
| Moose always go in one out of the park to middle ridge area. So this is a hunting area and some moose will get shot and some killed by poachers and cars so this keeps the population at a slightly sustainable level. |
| Moose hunt for a certain period of time when park is closed. |
| Moose hunt or draw |
| moose hunting licences |
| Moose hunting to people that are confined by the park boundaries |
| moose licence |
| Moose population to be controlled by park officials only |
| Moose relocated to different parts of island |
| more hunting allowed |
| more licence |
| More licence given out |
| More licences |
| More licences |
| more moose licence |
| More moose licence issued |
| More moose licences |
| More moose taken in hunting seasoned in area that border the park |
| Move moose to other underpopulated areas of the island |
| Move the moose to a different location |

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| move them elsewhere |
| Move them to remote areas |
| Move to less densely populated areas |
| Moving younger moose outside the park, because I think hunting would get out of control, people like to break rules! |
| None. Leave moose alone to grow. |
| Not qualified to comment |
| Offer moose to elderly moose applicants shot by park officials |
| offer more licences for moose hunters |
| Only that we grant more licenses outside the park area |
| Open a few licences in the park each year or a few more surrounding the park to reduce to population |
| Open a hunting season in the park |
| Open a hunting season near by |
| Open a small quota in park |
| open area adjacent to hunting around park borders |
| open hunt |
| Open hunting season |
| Open hunting season, monitored with appropriate suspension |
| open season |
| Open season |
| Open season |
| Open season |
| Open season |
| Open season |
| Open season every 10 years |
| Open season every two years to hunt |
| Open season for 2 weeks when the moose season is open. |
| Open season for disabled hunters |
| open season in the park for a short season and the park should only be accessible to hunters at that time. |
| Open season late fall in park |
| open season on hunting |
| Open season on Moose |
| Open season to kill *under managed rules and regulations by government* |
| Open short season to take 30 moose |
| Open the park for hunters during season |
| Open the park for hunting |
| Open the park to hunters with hunting guides |
| Open the season on them |
| open the season when the park is not in use (winter) (November) |
| open to hunt |
| Organized cull carried out by park conservation staff – no problem hunting to be part of the cull |
| park hunting |

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| Park management and staff should pay closer attention to help prevent |
| Park warden's should hunt the population near the TCH |
| People should be allowed to get a licence for the park |
| Permit hunting in certain sections of the highway |
| permit people to hunt there |
| Population should be carefully controlled. Large populations increase the possibility of human injury through accidents |
| Possibly allow hunting in the park to a maximum number of hunters and allow them to take a maximum number of moose. |
| Put up a fence on both sides of the road like they have in Nova Scotia the full length of the park actually from one end of Newfoundland to the other side. |
| Registered hunter outfitter go in and cull the herd |
| relocate a certain amount if possible |
| Relocate as many as possible. Increase hunting licences |
| Relocate some of the animals or allow limited hunting |
| Relocate them to other areas. |
| Re-locate to areas where moose are scarce |
| relocate to other areas |
| Relocate to other areas of province |
| relocated |
| Relocating some of the young and female moose population to another area (this is probably very costly). Another idea is to allow a short hunting season in the park each year until population is decreased enough |
| Relocation |
| Relocation but I realize this would be very costly |
| relocation, also more moose licences |
| Removal to another area of Nfld. |
| remove |
| Remove and put in other areas |
| Remove or allow hunting season under strict rules. |
| Remove or drive away from park |
| Restricted hunt |
| Road side hunt (very limited) "My observation – where hunted moose tend to move back to more protected areas |
| Road side hunt not interior. Not hunt from any vehicle, walking hunt |
| Road Side Hunt under park supervision |
| Selective cutting |
| selective hunt |
| Separating the males from the females would be a start |
| shoot them |
| Short hunt season at least busy period in problematic areas. |
| short hunting season |
| Short hunting season |
| Should be able to hunt them same amount per year. |
| Should have a moose season in the park when the park is closed. |

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| Should have an open season to keep numbers low |
| small hunt |
| Some area of the park may need to be decreased slightly. This may be achieved by having a winter hunt. |
| Some hunting in the dense parts of the park. If hunting already exists in the park, it should be increased so more hunters can get their moose. |
| special hunt |
| Special permits to people who have to wait 4 or 5 years to get another licence. |
| Special surveillance on number of moose there. |
| Special zone for hunting season |
| Supervised moose hunting period |
| Survey first, moose cull, find some measures to keep them down? |
| The ecology of the area will balance the numbers |
| The moose has decreased significantly in the last 20 years some one or something is after killing them. |
| The moose in TNNP seem to have declined naturally over the past couple of years, possibly due to habitat destruction (over eating) Nature usually takes care of itself. Moose/vehicle accidents are mostly a result of over speeding. Driver education is the best answer. |
| The park is too far away from me to have any concern. |
| These questions are not easy to answer as they don't tell you ? people see the moose. A hunt would help. |
| They have actually decreased in the last 10-15 years |
| This should be achieved by park management |
| Those with knowledge of the entire ecosystem inside the park should regulate numbers of these creatures (including humans) |
| To bow hunt during season |
| To have a hunt in the park but have a warden with you |
| To have a hunting season during the winter months |
| To issue a small amount of licences |
| Transfer in other areas |
| Transfer them to other parts of NL |
| Try to control the number of moose inside the park by either removing them or by increasing the number of moose killed around the perimeter of the park before or after the camping season |
| Use a barrier – shock alarm – wire fence |
| Very small amount of moose in the park now. |
| We don't have to worry about this because the <u>Coyotes</u> will destroy them |
| We should have a yearly hunt if a possible 50 licences for that area only |
| When I travel through park I don't see any |
| winter hunt |
| winter hunt |
| Winter hunt |
| Winter hunting season, with park shut down |
| yearly cull |
| You can have a moderate cull |

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| You could have a winter hunt – designated specifically for the park |
| You may issue licences for certain time of the year or catch and release them back in the wilderness |
| You should have a hunting season in October for a small amount |