

Can an Electric Bear Fence Allow Tent Users to Return to Congdon Creek Campground?



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Renewable Resources Management Program

Report to fulfill the requirement of NSCI 202

10 April 2018



Acknowledgments

This project was completed in the traditional territory of Kluane First Nation. It was made possible with the help of many Yukon Government staff and contractors. I obtained valuable feedback and information from many individuals including Barry Troke, Pamela Brown, Martin Jahr, Cameron Nelin, Evan Norlin, Sara Nielsen, and Rod Watson.. I would like to thank Scott Gilbert from Yukon College for answering numerous questions, providing background data, monitoring the survey data, and providing continuous feedback.

Funding for the electric bear fence trial was provided by Yukon Parks. I would like to thank the Association of Canadian Universities for Northern Studies for providing me with a Canadian North Studies Trust, POLAR Northern Resident Award, which also provided funds for this project.



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Introduction and Background

Conflict between humans and wildlife is a problem in North America (Benn and Herrero 2002; Maraj 2010). Human conflicts with Black and Grizzly bears (*Ursus americanus* and *Ursus arctos*) in North America have resulted in human injury and property damage (Singer and Bratton 1980; Herrero and Higgins 2003). Furthermore, bears that cause risk to human life or property are often destroyed (Kansas 2002; Government of Alberta 2015). Studies have shown that human caused pressure on bear populations is leading to changes in the species ecology within regions throughout North America (Maraj 2007, 2010). Due to this, human-bear conflict should be avoided as it often leads to negative impacts on both bears and people.

Human-bear interactions have historically been of concern at the Congdon Creek Campground in the Yukon Territory (McCann 2001; Maraj 2007, 2010; Gilbert 2014). Grizzly bear populations in the area in which the Congdon Creek Campground is located, known as the Kluane Region, are believed to be in a decline (Yukon Territorial Government 2003, cited in Maraj 2010). Bears have been known to frequently visit the campground and use the area as a natural corridor (McCann 2001). There are several natural attractants in the campground such as soapberry (*Shepherdia canadensis*) bushes and locoweed (*Oxytropis campestris*) vegetation (Gilbert 2014). Due to these attractants, many documented accounts of human-bear conflicts have led to the destruction of bears in the Congdon Creek Area (Maraj 2007; Gilbert 2014). This coincides with other research conducted in the Kluane region which concluded that bears that were previously destroyed were located in areas where there were high amounts of natural attractants present (Maraj 2010). It was noted that the bears could not inhabit these natural attractant areas due to human activity (Maraj 2010). In past years, this type of negative human-bear interactions in the campground and the surrounding area has led to campground closures (Gilbert 2014). In order to decrease this type of human-bear conflict and avoid full campground closures, a prohibition on tent camping within Congdon Creek Campground has been in effect since 2011 (Gilbert 2014). Effective management actions to mitigate human-bear conflict in the area are required (McCann 2001; Gilbert, 2014). The campground is adjacent to a major highway which receives a large amount of annual traffic to and from Alaska and due to the tenting prohibition in 2011, there are minimal campground tenting options available. Therefore, there may be an unmet need for tenting areas. In a joint project between Yukon Parks and Yukon College, an electric bear fence

trial began in 2017 to explore if this management approach to mitigate human-bear conflict would gain tent users' approval.

An evaluation of the electric bear fence project is necessary to measure the success of the management action. In this study, I will determine if an electric bear fence is a practical and publicly acceptable way to mitigate human-bear interactions. I will compile and analyze data regarding public usage, experience, and perception to evaluate the implementation of the electric bear fence within Congdon Creek Campground. The hope for this study is to evaluate the use of this approach and determine if it could be an effective tool to reduce negative human-bear interactions within territorial campgrounds.

Study Location

This study was completed at Congdon Creek Campground in a remote area of the southwest Yukon Territory, Canada (Figure 1). Congdon Creek Campground is located at Kilometer 1666 of the Alaska Highway. The campground is located within the traditional territory of Kluane First Nation and is bordered by Kluane Lake on the east and the Kluane National Park and Reserve to the west. The electric bear fence was installed in the southern area of the campground in an region that had a natural clearing as well as an already accessible road (Figure 2).

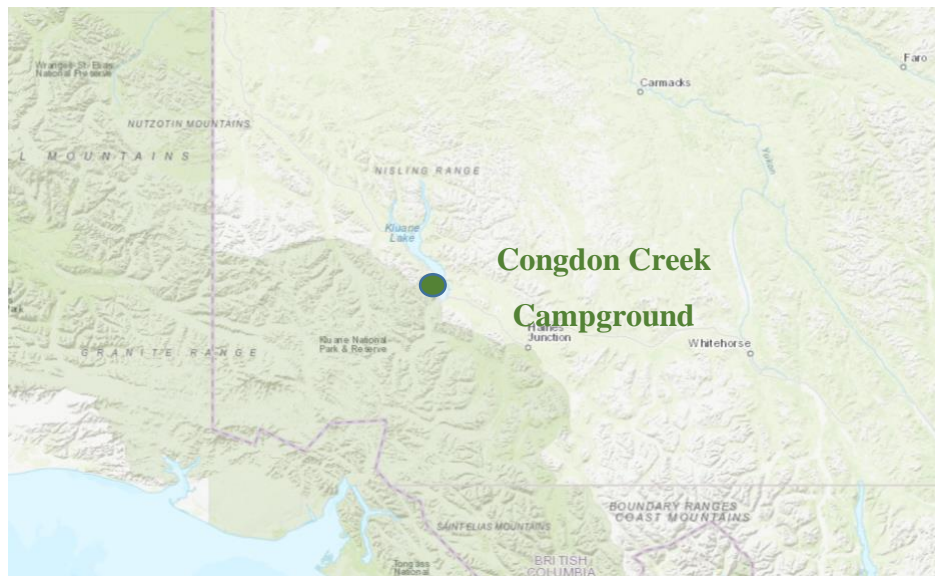


Figure 1 Congdon Creek Campground location in Yukon Territory, Canada (Yukon Government 2018).



Figure 2 Tenting enclosure location at Congdon Creek Campground (Yukon Government, 2018).

Methods

Project Preparation

The planning, construction, and operation of the electric bear fence was completed in the following stages:

- i. A survey of current signage in the campground was completed on the 17th of May 2017 and a report was prepared for Yukon Parks with recommendations for signage changes and additions prior to construction (Drost 2017). The signage changes and additions were installed at the time of construction on the 14th of July 2017.
- ii. The area intended for the electric fence was surveyed on the 4th of June 2017 and measurements were taken to prepare the required material order list. Yukon Parks cleared and prepared the site for construction
- iii. The fence material was ordered from Margo Supplies and shipped to the Yukon.
- iv. An anonymous survey question sheet for tenting area users was prepared (Appendix I) and was approved by the Yukon College Research Ethics Board (REB #: YC2017-04)
- v. Several supporting documents were created: a threefold, 8-inch by 11-inch educational pamphlet (Appendix II), a draft operations and maintenance manual (Gilbert and Drost 2018), and an electric fence inspection form (Appendix III)

The final stage of the project was construction of the fence and setting up a survey collection box. Once this was completed, survey responses and fence operation was monitored regularly until the campground closed on the 30th of September 2018.

Evaluation methods

Survey Analysis Methods

The primary evaluation method used was a voluntary survey that requested tent campers to provide feedback. The anonymous survey was a 1-page document printed on waterproof paper and made available at 2 locations in the campground (Figure 3); 1 clipboard with blank surveys was placed at the tenting site registration sign at the entrance to the tenting enclosure and another clipboard with surveys was placed on a post in the middle of the tenting enclosure. Respondents were provided a secure survey collection box at the entrance to drop their completed surveys in.

The survey was also available to users online by following a URL link or QR code which was provided in a brochure at the same locations.



Figure 3 Anonymous survey locations and secure drop box location beside registration sign.

Survey questions had multiple objectives (Appendix I). The first group of questions pertained to tenting enclosure use, experience, and preferences. The remainder of the questions aimed to categorize the type of respondent. The type of questions on the survey varied and included simple yes/no responses, multiple choice responses, short answer responses, and open ended questions. Questions in the survey aimed to answer key questions (Table 1).

Table 1 Summary of questions posed in the anonymous survey instrument.

Question aim	Response Type
➤ Did campground users tent inside the electric bear fence?	Yes/No
➤ Was the overall tenting experience inside the bear fence satisfactory?	Yes/No & short answer
➤ Were the signs for tenting easy to understand?	Yes/No
➤ Did users feel more comfortable tenting inside the bear fence compare to a regular camp site?	Yes/No & short answer
➤ Would users be willing to tent inside a similar bear fence in the future?	Yes/No
➤ What areas did users tent in the most and what was their preferred tenting medium?	Multiple choice
➤ Tenting enclosure user categories <ul style="list-style-type: none"> ○ Size of party ○ Residency ○ Camping experience and camping experience around bears ○ Experience around bears ○ Parking area usage 	Multiple choice & short answer

○ Bear safety knowledge	
➤ User feedback	Short answer & open ended

The public and tenting area users were also provided the option to contact Yukon College if they had any other questions or suggestions about the electric bear fence trial. The survey data was initially collected at weekly intervals to identify any immediate concerns with the operation; the preliminary scans of user feedback was shared with Yukon Parks staff.

Park Operations & Maintenance Data Analysis Methods

The secondary evaluation method used was gathering park management and maintenance personnel responses and feedback. This information was gathered primarily by a using the “Checklist for Congdon Creek Campground Bear Fence Inspection” document (Appendix III); inspections were completed 9 times during the fence operation. Yukon Government staff including Yukon Parks Officers, Park Maintenance Personal, and Yukon Environment Conservation Officers were also encouraged to submit responses and concerns by email or phone communication. Finally, data regarding the number of site night registrations in the tenting enclosure was obtained from Yukon Parks. These data provided site registration numbers and were used to estimate the compliance rate of park registration by comparing registrations to the fence inspection reports which recorded the number of tents inside the tenting enclosure.

Media Analysis Methods

The final evaluation method used was gathering comments from several online sources to evaluate public perception. This included monitoring news sites and Facebook periodically. Two methods of monitoring were used: the first method was reviewing media releases by news agencies and Yukon Government, the second method was by using key word searches for public posts involving the new tenting enclosure at Congdon Creek Campground. To ensure privacy of the online posters the names, dates, comment location, or other identifying information was not revealed. Comments were simply collected and grouped into positive comments, negative comments, and comments with suggestions. Comments that did not pertain to these 3 categories or contained identifying information were discarded.

Results and Discussion

Survey Analysis Results

Survey results were compiled from a total of 56 surveys obtained between the 15th of July and the 10th of September 2017 (57 days). The response rate was 29% of the predicted number of tenting enclosure user registrations (registrations may have multiple people in party).

Respondents did not always answer every question on the survey. This could be due to formatting that made certain questions easy to miss or it could be due to respondents choosing not to respond to the question. Most surveys were completed at the tenting enclosure and placed in the secure survey drop box with only 2 out of 56 surveys completed online.

Tent Camper Experience

Survey results found that 96% (54/56) of respondents tented inside the bear fence (Figure 4). This analysis is based on the 56 respondents who used the tenting enclosure.

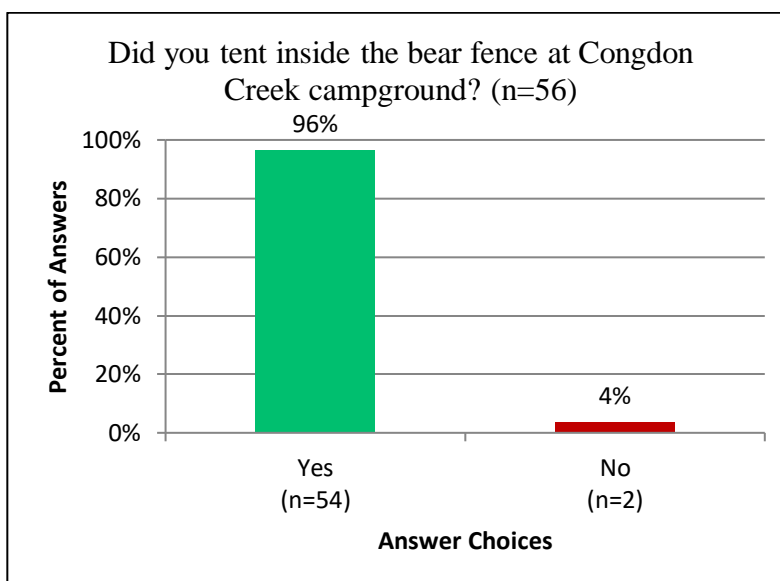


Figure 4 Bar graph showing the number of people tenting inside the bear fence.

Tenting experience inside the bear fence was satisfactory for 87% (46/53) of respondents (Figure 5). This survey question allowed for a short written response. Responses indicated that people were happy that tent camping was allowed in the park and made suggestions for improvements which included wanting picnic tables and fire pits inside the fence, more privacy, separated tent

sites, and closer toilet facilities. Additionally, out of the 13% (7/53) that indicated an unsatisfactory experience, 5 of the respondents indicated that this was due to a lack of privacy and the other 2 respondents did not think the fence was working. These may reflect a misunderstanding that there are alternating positive and negative wires on the fence and the respondents only touched the negative or positive wire. One respondent wrote “what’s the point of it all when there’s no power on the lines?!” which suggests that they touched the fence without receiving a shock, however, other tent enclosure users reported receiving accidental shocks but still found the experience satisfactory.

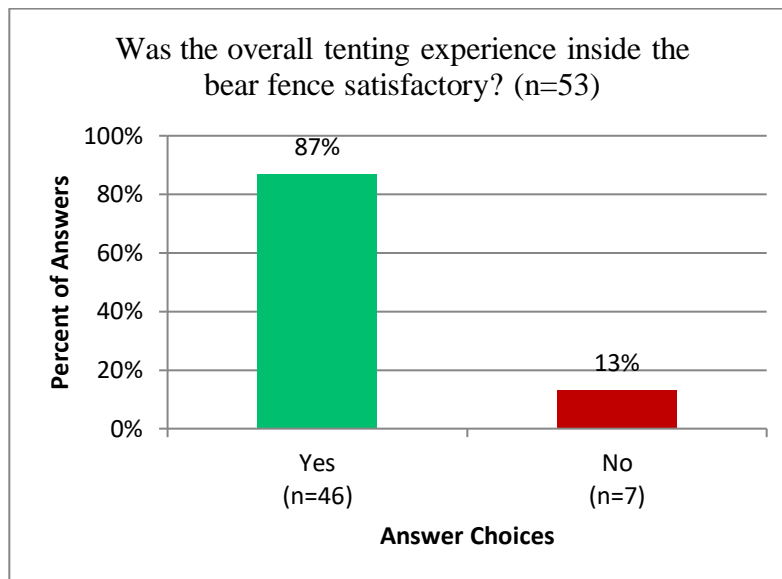


Figure 5 Bar graph showing if user tenting experience was satisfactory.

Signage for the tenting area was easy to understand for 80% (44/55) of respondents (Figure 6). A decision was made at the start of the trial which gave tent campers the opportunity to choose where to set up their tents. The map that was placed on display by the site registrations indicated vague locations for tent sites. Some tenting enclosure users commented that it was difficult to delineate where campsite locations were on the map. Additionally, one respondent dated in August noted that the sign displaying “tenting allowing in tenting enclosure only” had been covered with a recent “Bear Frequenting Area” sign (Figure 7). Ensuring that visitors are aware of the rules in place and easy understanding of tent site location is important and a solution for providing signage may need to be addressed for future seasons.

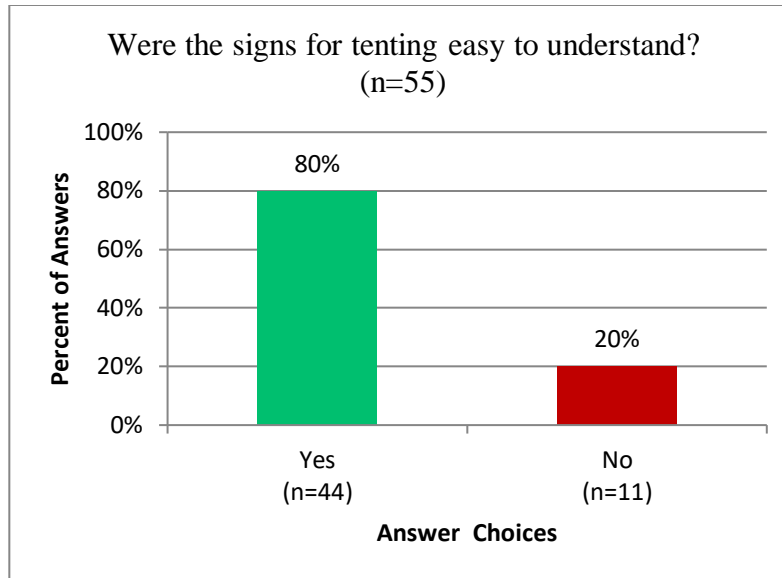


Figure 6 Bar graph showing if users found signs for tenting were easy to understand.

Most respondents, 82% (42/51), indicated that they felt more comfortable tenting inside the bear fence compared to a regular camp site (Figure 8). I suggest that these responses may be correlated to the amount of education and positive or negative experience that users have with bears in the past. Respondents who were familiar with bear fences and had previously used them in the past were impressed with the design and understood that they work well. The majority of respondents stated that they felt safer, with some stating that they are normally comfortable and prefer tenting without a bear fence, however, due to the bear activity in the area it was reassuring.



Figure 7 Sign covering tenting enclosure notice at registration booth.

With 82% of people feeling more comfortable the next question in the survey asked users if they would be willing to tent inside a similar enclosure in the future. Most respondents, 89% (42/47), would be willing to tent in a similar enclosure in the future (Figure 9). Some users did state in the comments that although they would be willing to use it, they would only want to use it if it was necessary in the area. They did not want to see the unnecessary use of electric fences in all campgrounds.

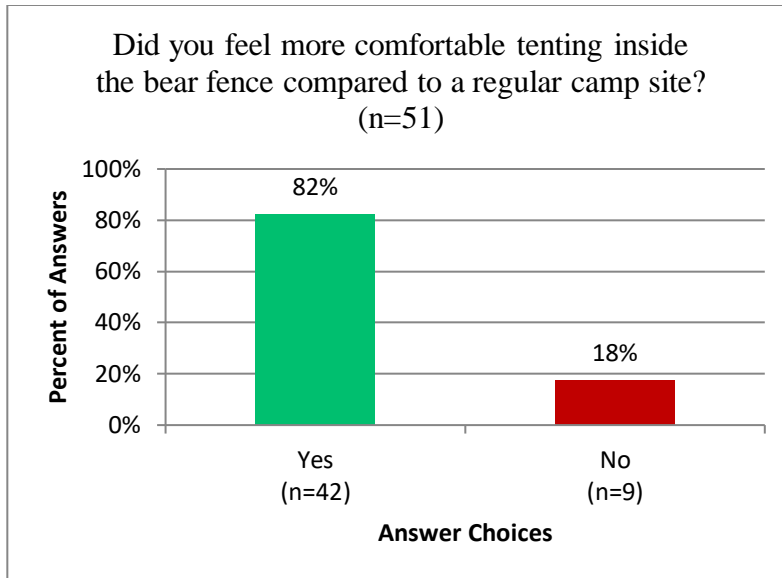


Figure 8 Bar graph showing if users felt more comfortable in the fence compared to a regular site.

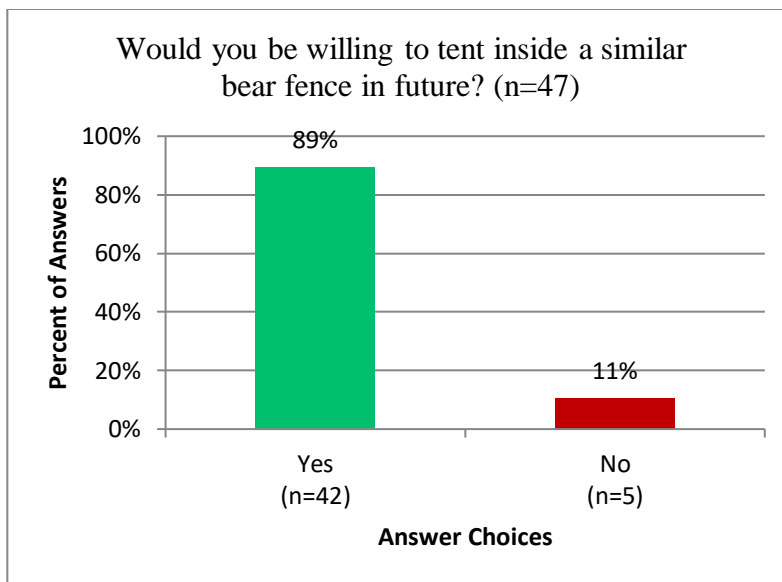


Figure 9 Bar graph showing if users would be willing to tent inside a similar fence in the future.

Users of the tenting enclosure had a choice to tent on the plain ground, a wooden platform, or a sand tent pad. Respondents indicated that 84% (41/49) tented on the ground (Figure 10) and 84% (41/49) stated that they would prefer to tent on plain ground (Figure 11). This is in comparison to the wooden platform and tent pad which ranged from 4 to 10 percent for both questions. Some respondents added that they would be more likely to choose the platform in rainy conditions, although they had no preference between the plain ground and wooden platform in other

conditions. Some respondents also commented that the experience might be better if the prickly rose bushes in the tenting enclosure were removed.

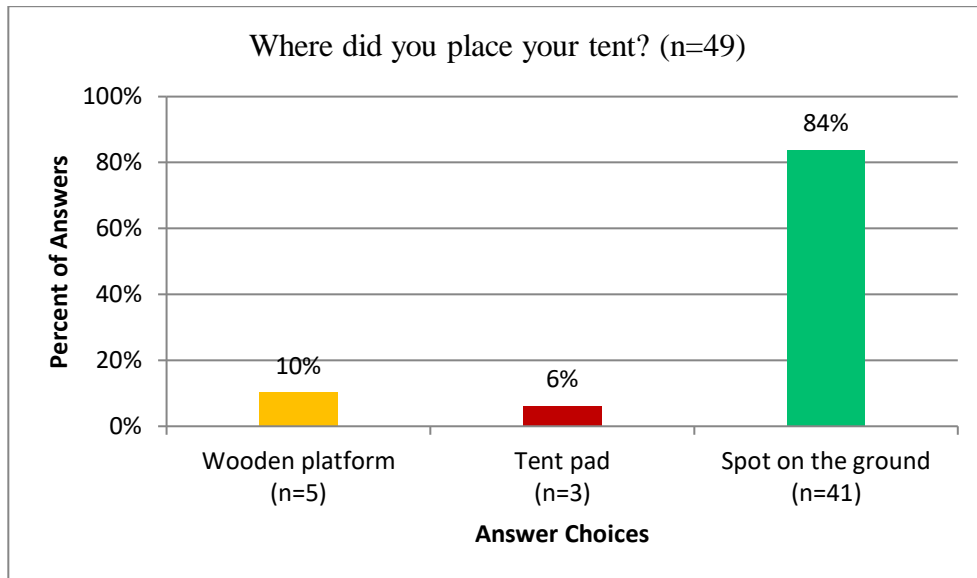


Figure 10 Bar graph showing where users placed their tent.

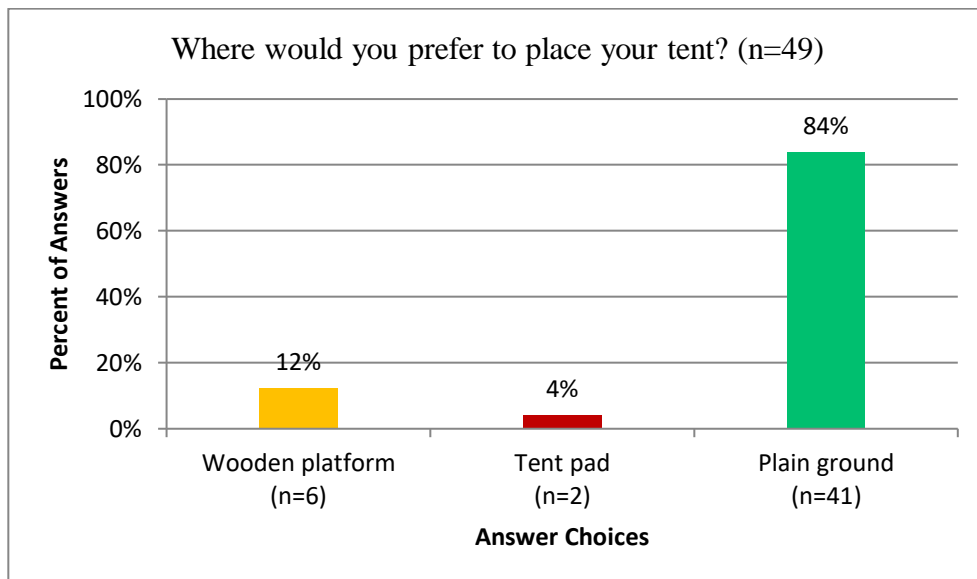


Figure 11 Bar graph showing where users would prefer to place their tent.

Along with this survey data, site registration data was used to track which tent sites were used. This data showed that 60% (49/81) of registrations were for bare ground (Figure 12). The wood and sand pad both had 15%. Although this appears as a preference for bare ground, there is a bias

in the registration data as only 1 wood site and 1 sand site were available each night compared to 6 or more ground sites available.

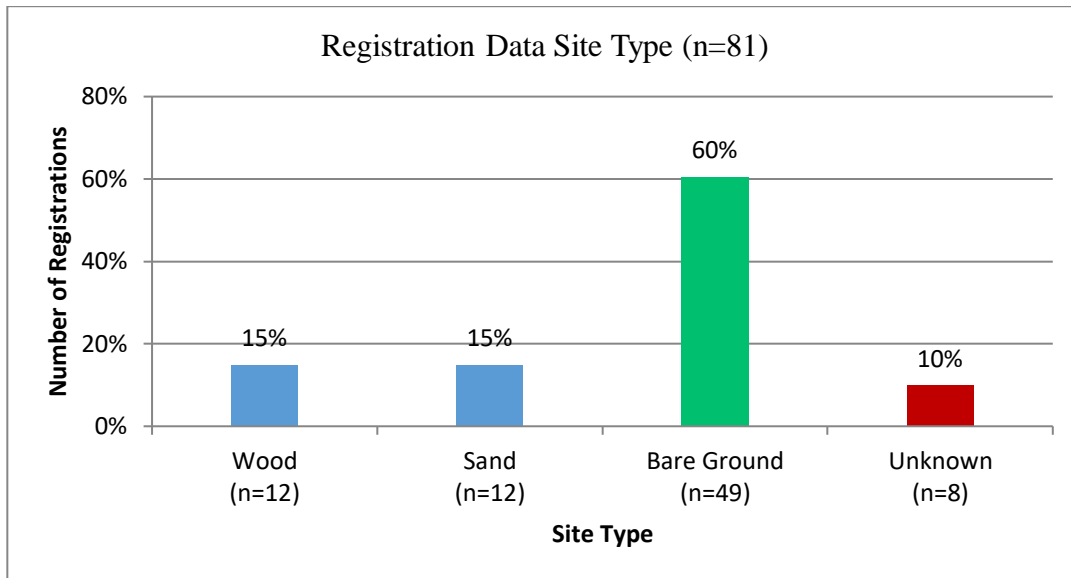


Figure 12 Bar graph showing site registration data from Yukon Park indicating which site types were used.

The final question that respondents were asked was if they had any feedback on the fence or area design that would improve their experience. The responses for this question were varying from positive to negative. The overall message was that the enclosure was a good idea but there were some suggestions that may make it better. Those suggestions included the following.

- Larger size
- More privacy
- Larger parking area
- Closer toilet facilities
- Grey water disposal option
- Remove prickly rose bushes
- Gate and lock mechanism improvement
- A method of showing users that the fence is functioning (other than touching it)

With the exception of the grey water disposal, I would consider most of these “convenience” items that would make tenting in the enclosure a better experience. These items could be

implemented at the current trial enclosure and should be a part of design if further tenting enclosures are constructed.

Characteristics of Tent Campers Surveyed

The next section of the survey identified some of the characteristics of the respondent population. The number of people per tenting party ranged from 1 to 9 people with a mode of 2 people (Figure 13). We used these statistics to estimate the total number of users for the period open to be 411 people (Table 3). With this information, future construction could be arranged to provide many sites with room for 2-person party sizes and a limited number of larger sites to accommodate groups with more people. This could allow for efficient space utilization by clearing only smaller tenting areas and providing more privacy to users.

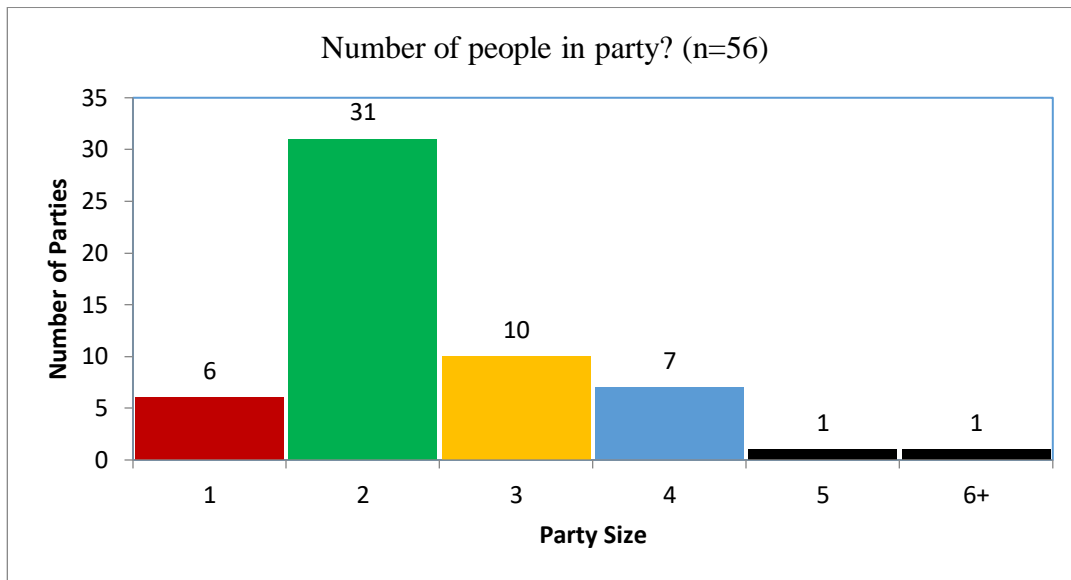


Figure 13 Histogram of party size from survey responses.

The majority of tent campers arrived by vehicle and 69% (25/36) required parking for a car or van sized vehicle (Figure 14). It also identified the need for a larger overflow parking area for trucks and 1 respondent commented that they had a car with a trailer. Motorbike and bicycle parking requirements made up 14% (5/36) of the total (Figure 14). In the future, vehicle parking can be tailored to suit the car/van size vehicle with a small number of oversize or overflow parking options available for larger size vehicles.

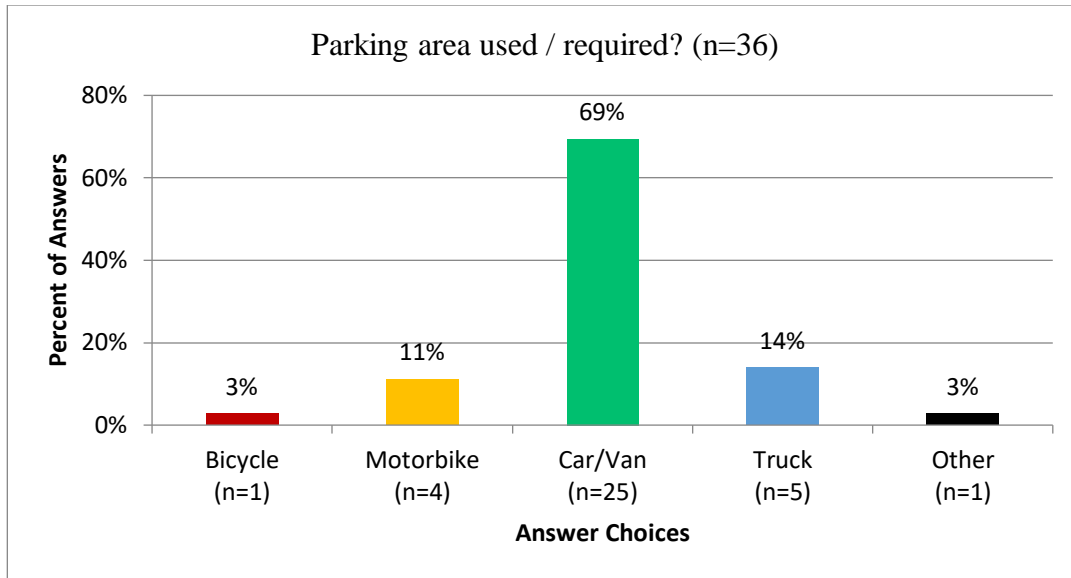


Figure 14 Bar graph showing parking area requirements for tent campers.

Residency information from the surveys identified that 84% (47/56) of respondents are not from the Yukon Territory and 44% (25/56) of those are from outside Canada (Figure 15). This information can be used to target specific user group preferences. Additionally, this may provide insight to where media reports and educational material should be targeted at. If users are not from the Yukon Territory they may not follow local media and other means of communication may be more effective.

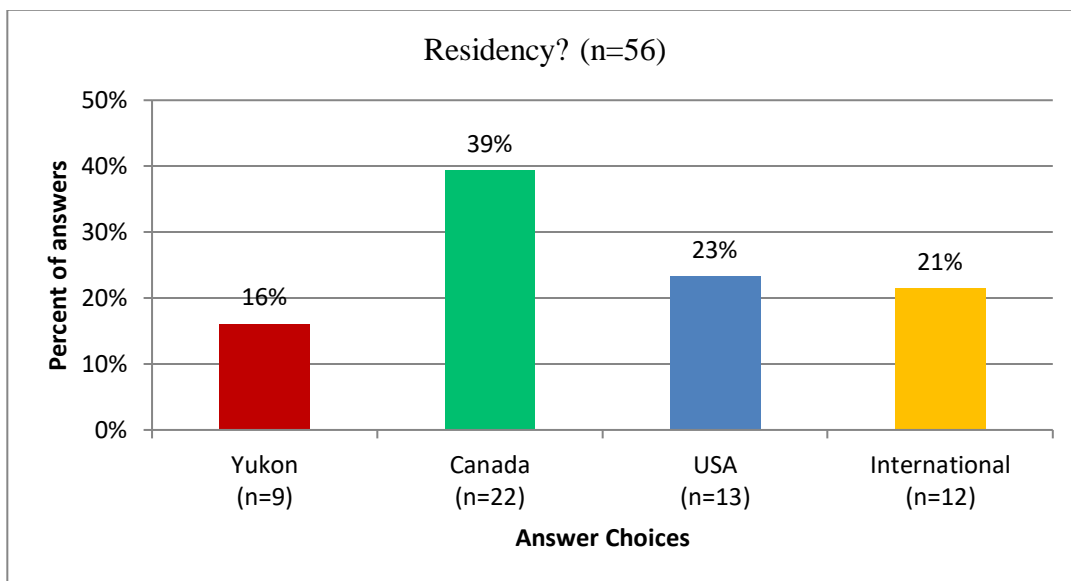


Figure 15 Bar graph showing residency of tent campers.

Survey respondents indicated that 84% (47/56) had extensive camping experience with all respondents having some level of camping experience (Figure 16). Only 34% (19/56) of respondents indicated they had an extensive level of experience camping in bear areas (Figure 17). This indicates that most users, 66% (37/56), have some or less experience camping in bear areas and may benefit from additional information on bear safe camping techniques (Figure 17). Furthermore, only 21% (12/56) indicated that they have extensive experience around bears (Figure 18). This again highlights the need for effective reminders and public education on ways to reduce human-bear interactions in the campground.

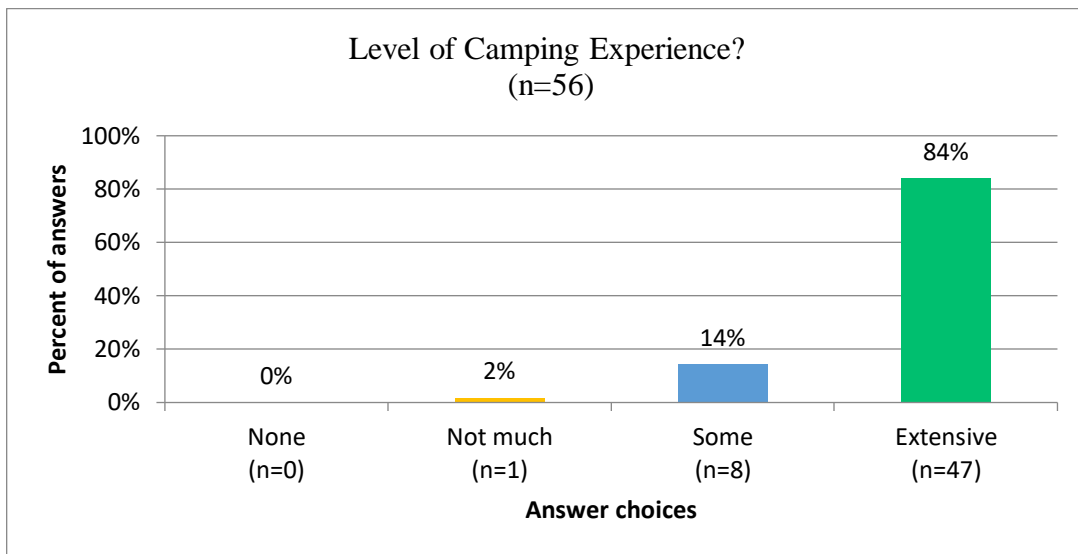


Figure 16 Bar graph showing camping experience in bear areas.

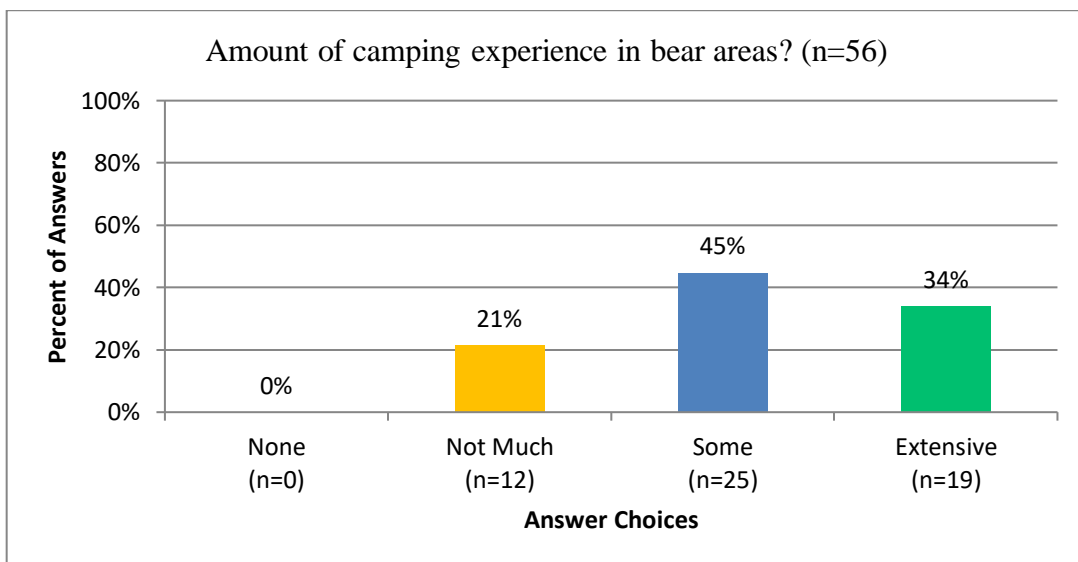


Figure 17 Bar graph showing the level of camping experience.

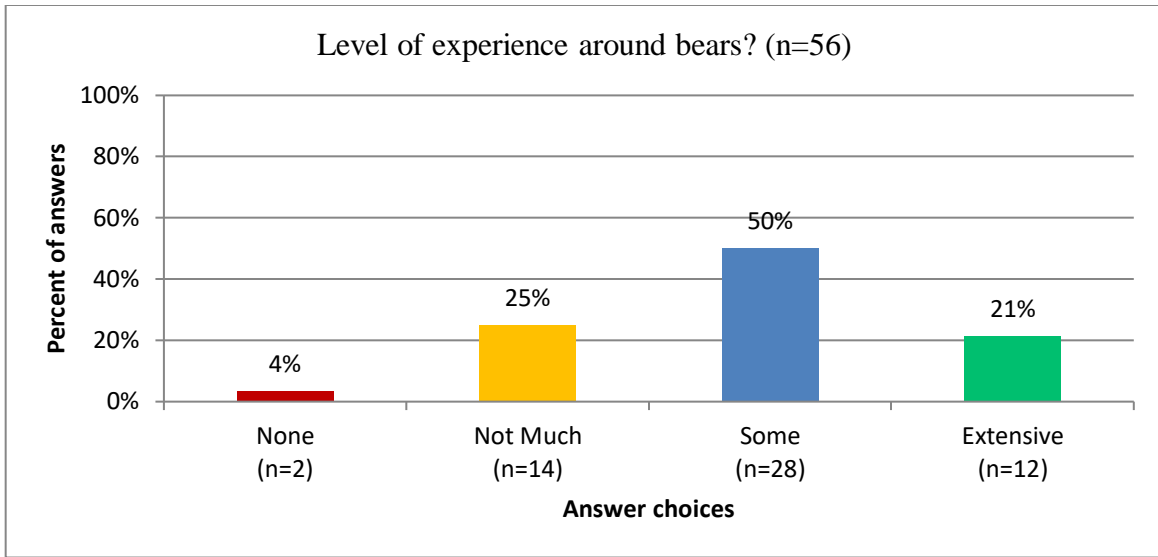


Figure 18 Bar graph showing level of user experience around bears

All respondents, 100% (56/56), indicated that they have read bear safety materials and 86% (48/56) indicated that they carry bear spray when camping or hiking (Figure 19). About half, 46% (26/56), indicated that they have had an actual bear encounter in the past and 30% (n=56) have had a hunting license either currently or in the past (Figure 19). A question that was not asked was whether this information was obtained through the efforts of Yukon Parks or other Yukon educational means. To ensure Yukon Parks is effectively providing bear safety information, future surveys could be adjusted to ask where the respondents are getting information on bear safety.

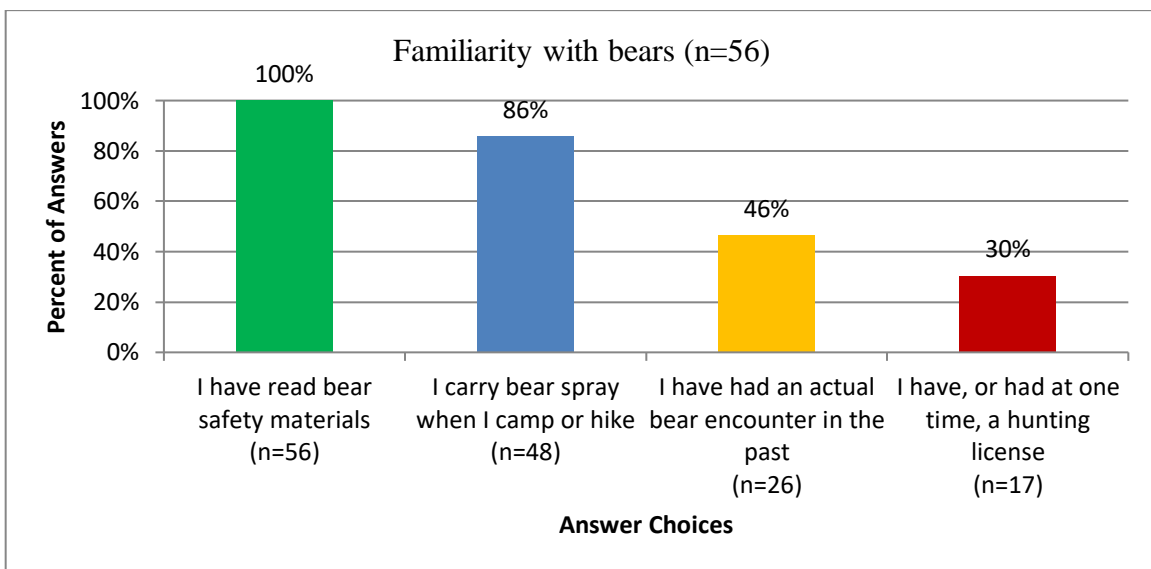


Figure 19 Bar graph showing bear safety statistics

Email Responses

One email was received in response to the invitation located on the educational brochure (Appendix II). The respondent had already filled out an anonymous survey and was very familiar with electric fences from their work as a guide in Alaska. The respondent stated that “[w]hen I pulled into the Congdon Creek Campground I was very surprised to find myself setting up a tent and sleeping in such a fantastic enclosure.” The respondent was eager to hear about the success or failure of the enclosure and hoped to receive a final project report.

Park Operations & Maintenance Data Analysis Results

Compliance Analysis

Compliance data was analyzed by comparing the site night registration tallies received from Yukon Parks to the 10 inspections that were completed during the operating season (Table 2). These inspections show registration compliance ranging from 0% up to 100% per night with an average rate of 42% compliance (Table 2, 3). On the 28th of August, the inspection at 20:10 indicated only two tents in the enclosure; another group may have registered after the inspection was completed. The total number of groups that should have registered is calculated from the compliance rate to be 194 registrations (Figure 20). Using the party size information from Figure 13 and the registration group to user ratio from Yukon Parks, the average user to registration group ratio was calculated to be 2.125 (Table 3). This allows us to predict the actual number of users for the tenting enclosure to be 411 (Table 3).

This information provides support for the hypothesis that there was an unmet need for tent camping at Congdon Creek Campground prior to the installation of the electric bear fence in the 2017 season. By allowing people to tent in this location, it may minimize impact to the wilderness areas surrounding Congdon Creek Campground. Furthermore, bear conflict and conflict caused bear destruction may be reduced by ensuring tent users in the area are mitigating the risk of a human-bear interactions.

Table 2 Registration and tent enclosure inspection data with compliance rate (note 2 inspections over the night of July 30-31 and only the early morning inspection on July 31 was used).

Campground night	Inspection Date	Time	# Reported	# Registered	% compliance
15/07/2017	15/07/2017	22:00	5	3	60%
20/07/2017	21/07/2017	10:20	4	0	0%
28/07/2017	28/07/2017	22:50	2	0	0%
30/07/2017	30/07/2017	18:30	4	4	N/A
30/07/2017	31/07/2017	7:30	8	4	50%
12/08/2017	12/08/2017	23:15	4	2	50%
18/08/2017	18/08/2017	21:29	6	2	33%
19/08/2017	19/08/2017	23:00	3	1	33%
26/08/2017	26/08/2017	20:10	2	3	100%
01/09/2017	01/09/2017	20:45	2	1	50%

Table 3 Compliance, registration, and user estimates.

Average Compliance rate (n=10 inspections)	42%
Max Compliance rate	100%
Min Compliance rate	0%
Actual Registrations to Predicted Registration Ratio	2.4
Total # of Registration Groups	81
Total # of Predicted Actual Group Users	194
Average User to Registration Group Ratio	2.125
Total # of Predicted Actual Users	411

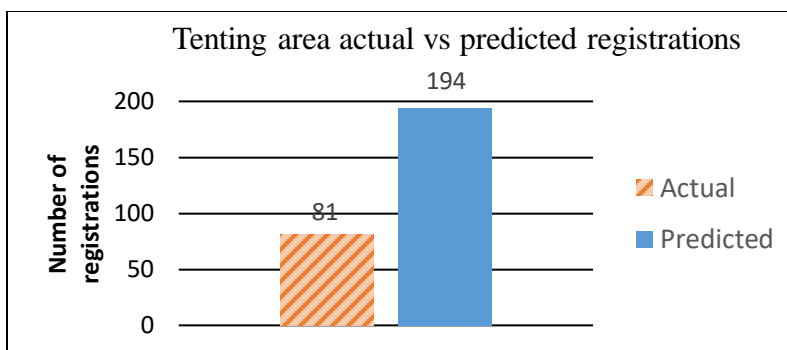


Figure 20 Bar graph showing the number of actual registrations compared to predicted number for full compliance

Yukon Environment Staff Responses

Responses from staff were received periodically throughout the operating season; 7 inspection forms were received; 4 email responses were received; and 1 phone interview response was received. This information was summarized and all suggestions or concerns are displayed in Table 4. For each response, I provided information and data from my study to provide additional context.

Table 4 Summary of Yukon Environment staff responses and relevant data

Staff Suggestions	Context
1. Installation of redundancies	<ul style="list-style-type: none"> • There were no reported outages of the fence this past season.
2. Protection of the On/Off switch	<ul style="list-style-type: none"> • There were no reported issues with the On/Off switch.
3. “Close & Secure Gate” signage	<ul style="list-style-type: none"> • Added in the form of a laminated sign • Swing gate suggested to fix problem
4. Safety barriers at gate to prevent shock	<ul style="list-style-type: none"> • This was noted on surveys as a common issue • Margo Supplies will provide a solution for the 2018 season
5. Provide more bear-proof food containers	<ul style="list-style-type: none"> • 86% of respondents indicated they had a vehicle • No reported issues with lack of space on surveys or on inspection reports
6. The tent pads seemed close	<ul style="list-style-type: none"> • This was a common feedback item in the survey
7. Place a sign at each road intersection guiding tenters to the Tenting Enclosure area	<ul style="list-style-type: none"> • 80% of respondents found signage easy to understand
8. “No Tenting Signs” placed on loops where tenting is not allowed	<ul style="list-style-type: none"> • 2 campers were reported tenting outside of the enclosure during 2017
9. Maps at each registration kiosk showing the location of tenting areas	<ul style="list-style-type: none"> • Installed on July 22. • 80% of respondents found signage easy to understand
10. Bear awareness signs at each site attached to picnic table	<ul style="list-style-type: none"> • 100% of respondents have read bear awareness material • Picnic reminders are standard signage at some campgrounds, e.g. Kathleen Lake Campground in Kluane National Park.

Media Analysis Results

Media analysis allowed us to gauge the public perception to indicate if future projects like this would have public support. During the operation of the fence there were media releases by Yukon Parks and CBC news that allowed public perception of the project to be evaluated. Public perception of the electric bear fence was variable and it was difficult to be objective with the information gathered.

Positive comments were the most numerous at 12 out of 17 comments (Table 5). Negative comments were low at 3 out of a total of 17. Comments with suggestions made up 2 out of 17 comments.

These comments had themes that lead us to believe that the public overall was happy that tenting was allowed at Congdon Creek Campground and they liked the idea of using an electric bear fence to mitigate the risks. The negative comments had the opinion that people should not be

camping at Congdon Creek Campground at all and people should be taught bear safety instead of using an electric fence. The suggestions were mostly positive and indicated it was a great idea for the specific campground (due to the high conflict rate) but that it is not necessary for all campgrounds. Additionally, suggestions indicated that an electric fence should not be put up in replacement of people being bear aware. Overall, public perception was positive and this is a good indicator that future projects may have positive public backing in locations the public understand that it is necessary to mitigate human-bear interactions.

Table 5 Summary of positive, negative, and suggestive comments from media data

<p>Positive Comments</p>	<ol style="list-style-type: none"> 1. “Very impressed with the new tent enclosure, but can’t figure out how it’s powered” 2. “a great idea to allow tents there FINALLY!” 3. “Agreed – it was well used over the weekend” 4. “That’s my kind of tenting in Bear country” 5. “Such an awesome idea. Love it” 6. “Amazing idea” 7. “Excellent idea” 8. “I thought it was great especially after having been told at the yukon gov info deck at da ku that tents were still not allowed at congdon. I’d rather be inside the wire than outside with possible habituated bears.” 9. “I would’ve loved that last night...hardly slept at all. I’m sure there was something roaming around the campground I was at in Alberta.” 10. “Putting the people in the zoo, what a great idea! Now the bears can come and view them safely!” 11. “We can camp at Congdon now!” 12. “...I’m not sure why more people don’t do it if they know there are bear in their area and want to avoid conflicts with these animals.”
<p>Negative Comments</p>	<ol style="list-style-type: none"> 1. “Maybe bear safety is what people should be taught. Electric fences in campgrounds only makes people lazy with their behaviours in nature. What next – electric fences on wilderness trails? So sad. Smarten up people !!!” 2. “Move the camp ground. Why do humans have more say over land use then wildlife that has been using it forever? How many bears have been shot so humans can recreate in this natural feeding area?” 3. “Since this has always been an area where the bears frequent why aren’t you people shutting this camping area down, for good? Humans do NOT need to be tenting/camping in this exact area. Seriously ☹”
<p>Suggestions</p>	<ol style="list-style-type: none"> 1. “Great idea for Congdon BUT we don’t need these in all campgrounds!!” 2. “Great idea! But it should not prevent people from being ‘bear aware’!”

Conclusion

Tent campers have been able to return to Congdon Creek Campground due to the installation and monitoring of the electric bear fence enclosure. Anonymous surveys from tent campers revealed they were overall pleased to be able to tent in the campground again, that the electric fence provided security, and that the provided information regarding the fence operation was effective. The staff I received feedback from also indicated that they thought the trial was a success and had suggestions to improve the operation for next year. I believe this study has shown that the introduction of an electric bear fence at the Congdon Creek Campground is a practical and effective way to mitigate human-bear interactions at this location.

The survey data also supported the suspicion that there was an unmet need for tent camping in the area surrounding Congdon Creek Campground prior to the tenting enclosure construction. With the history of human-bear interactions in the area and the concern for conflicts, the introduction of a management action was justified.

The ongoing success of the electric bear fence may be secured by small changes to the current design, operation, and continuing educational programs. Fence design and operation may be improved by providing a better gate, an easier gate locking mechanism, an intuitive way for users to view the status of the fence, and an adjusted parking area. The comfort of tent campers may be improved by providing increased privacy, a larger tenting area, closer outhouses and grey water facilities, and some brushing to remove rose bushes. Furthermore, educational programs may improve the efficient use of the tenting area and provide the public with an understanding of why the electric bear fence has a positive effect on human-bear interactions at Congdon Creek Campground. This educational programming at Congdon Creek Campground could include an educational poster/sign or a pamphlet that is on site to provide an explanation of the fence operation.

This study shows that an electric bear fence is a practical and publically acceptable way to mitigate human-bear interactions in a Yukon territorial campground with a history of conflicts. This trial may be used as a framework for future management action decisions in similar areas. Further studies will be required to observe if this type of management action will aid in lowering the number of human-bear interactions and bear deaths in the campground and surrounding Kluane region.

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Appendix I

How was your Tenting Experience at Congdon Creek Campground?

This is an anonymous survey being conducted by Brandon Drost, a student researcher at Yukon College, in collaboration with Yukon Parks. The purpose of this survey is to learn about the experience that tent campers have had while using the new bear fence at Congdon Creek Campground. Your feedback is appreciated and will be used to make improvements to the design and signage of the facility. You may choose not to participate in this survey.

The survey will take about 5 minutes. Please deposit your completed survey in the green box provided. If you have questions about the survey or research at Congdon Creek Campground please contact Scott Gilbert: sgilbert@yukoncollege.yk.ca ; 867-668-8776. By completing and submitting this survey, your free and informed consent is implied and shows that you understand the above conditions of participation in this study.

Did you tent inside the bear fence at Congdon Creek campground? Y / N

Was the overall tenting experience inside the bear fence satisfactory? Y / N

Comments:

Were the signs for tenting easy to understand? Y / N

Did you feel more comfortable tenting with a bear fence compared to a regular camp site? Y / N

Comments:

Would you be willing to tent inside a similar bear fence in future? Y / N

Where <i>did</i> you pitch your tent?	Where would you <i>prefer</i> to pitch your tent?
<input type="checkbox"/> On the wooden platform <input type="checkbox"/> On the tent pad ___ <input type="checkbox"/> Just a spot on the ground I chose	<input type="checkbox"/> On the wooden platform <input type="checkbox"/> On the tent pad <input type="checkbox"/> On the plain ground

Can you suggest any changes to the fence or area design that would improve your experience?

Comments:

The following questions will be used to classify the overall results of our survey:

Number in your party: _____

Residency	Level of Camping Experience	Level of experience around bears	Amount of camping experience in bear areas	Parking area used/required
<input type="checkbox"/> Yukon	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Bicycle
<input type="checkbox"/> Canadian	<input type="checkbox"/> Not much	<input type="checkbox"/> Not Much	<input type="checkbox"/> Not Much	<input type="checkbox"/> Motorbike
<input type="checkbox"/> USA	<input type="checkbox"/> Some	<input type="checkbox"/> Some	<input type="checkbox"/> Some	<input type="checkbox"/> Car/van
<input type="checkbox"/> International	<input type="checkbox"/> Extensive	<input type="checkbox"/> Extensive	<input type="checkbox"/> Extensive	<input type="checkbox"/> Truck

Please check all that apply:

- I have read bear safety materials (brochures, flyers, booklets etc.)
- I carry bear spray when I camp or hike
- I have had an actual bear encounter in the past (not including sightings)
- I have, or had at one time, a hunting license



Please write any other comments or concerns on the back of this page.

Research

Grizzly bears frequently travel through this area. They use the lake shore and Congdon Ck. as they move between feeding areas. In 2013 Yukon Parks joined with Yukon College to test various ways to try and reduce the number of human-bear conflicts.

In June, bears used to spend time feeding on yellow *Oxytropis* flowers in the meadow near to the cook shelter. We found that by simply mowing the meadow around June 21st removed this natural attractant.

In July-August bears feed heavily on red soapberries (*Shepherdia canadensis*). We reduced this *natural* bear attractant by pulling out ~4,500 kg of bushes in the 9 ha covered by campsites. Bears that may wander through the campground no longer have a reason to stop and feed.

The electric bear fence allows tent campers to return to the campground for the first time since 2011.

Please take our short 5 minute survey!



Available in print or online
www.surveymonkey.com/r/Bearfence

Contacts

To report a bear sighting:

Phone the TIPP line at 1800-661-0525

To report an issue with an the electric fence:

Contact Yukon Park officers by calling

867-456-3974

For any questions or suggestions related to the research trial please contact:

Brandon Drost

brandon.drost@yukoncollege.yk.ca

or Scott Gilbert

sgilbert@yukoncollege.yk.ca

867-668-8776

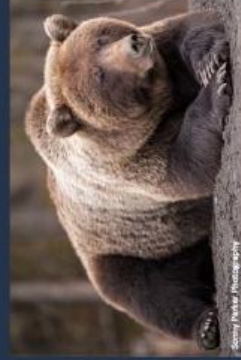
This research is funded by Yukon Parks, the Yukon College Faculty Research Fund, and Association of Canadian Universities for Northern Studies.



www.yukoncollege.yk.ca



Bear Fence Research Trial



Pet Safety

Keep Pets on a Leash!

In the fall of 2002 a dog jumped out of an RV that had just arrived at the campground. It ran a short ways through the brush, to the beach, where it surprised a grizzly bear. The bear, perhaps instinctively, swatted the small pet and killed it. The owners, horrified, left for help. When a conservation officer attended the scene, the bear was guarding the buried animal at the same site. The campground was closed and the grizzly bear was killed.



Please protect your pets by keeping them on a leash. Letting dogs run free can put everyone at risk...

Electric Bear Fence

This electric bear fence provides a safe place for tenting to minimize human-bear conflicts.



Tent Enclosure Tips!

- The tenting area is protected by an electric fence—do not touch the wires!
- Keep children away from the fence and pets on a leash
- The fence is always charged even when the gate is open
- Close the gate behind you

Bear Safety & Camping

General Bear Safety

- Be bear aware!
- Do not feed bears
- Make lots of noise and travel in groups
- Do not approach a bear for viewing or pictures
- Keep deterrents such as bear spray handy

Use the following guidelines to ensure safety while camping in bear areas

- Only camp in designated areas
- Keep your camp clean
- Use the bear-proof garbage cans
- When not in use, keep all food and attractants locked in your vehicle or the bear proof locker (e.g. coolers, dishes, pots, propane tanks)



Appendix III

Checklist for Congdon Ck Campground Bear Fence Inspection

Date: _____ Time: _____ Observer: _____

tents present in enclosure: _____

Bear attractants left unattended outside enclosure?

Yes: coolers _____ food bags _____ pots & dishes _____ garbage _____

No problem: all attractant are secure _____

Comment or Action Taken: _____

Gates? Front gate closed on arrival _____ Beach gate closed on arrival _____

Gate found open (details): _____

Solar Charger Performance Meter : *Green* (OK) _____

: *Yellow* (follow up) _____

: *Red* (repair or close enclosure) _____

Fence wires? OK _____

Concerns: _____

Fence perimeter? OK _____

Concerns: (windfall, vegetation, bear digging) _____

Corrective Action Required? _____

Date for follow up (if required): _____

Comments: _____

