

**CONFLICT ATTRIBUTED TO SNOWMOBILES IN A SAMPLE OF
BACKCOUNTRY, NON-MOTORIZED YURT USERS IN THE WASATCH-
CACHE NATIONAL FOREST, LOGAN RANGER DISTRICT**

Submitted to
The Institute for Outdoor Recreation and Tourism
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Introduction

Overview and Administration

This report provides analysis of data collected from the Outdoor Recreation Center (ORC) backcountry yurt rental program at Utah State University (USU) during the spring semester 2008 (January through April). The primary investigator in this study was J.C. Norling, Ph.D. Edward J. Ruddell, Ph.D. of the University of Utah advised regarding the measurement of recreation conflict. The USU-ORC program manager involved with the data collection was Paul Bowman. Stephanie White, a graduate student at USU, also assisted with data collection.

Background

Winter recreation conflict issues have gained increasing importance for public land managers as competition has intensified between non-motorized and motorized backcountry enthusiasts for access to high quality winter recreation areas (Gibbons & Ruddell, 1995; Vaske, Carothers, Donnelly, & Baird, 2000; Vaske, Dyar, & Timmons, 2004). The Logan Ranger District (LRD) of northern Utah's Wasatch-Cache National Forest¹ is characterized by just this sort of conflict in its winter recreational use. Due to convenient access via U.S. Highway 89 from Logan, Utah, (population approximately 45,000) and the surrounding Logan Metropolitan Area (Cache Valley, population approximately 100,000), and the presence of choice winter backcountry locations, the Tony Grove/Franklin Basin Winter Recreation Use Area has witnessed sustained visitation as a popular recreation resource.

In 2003, the Wasatch-Cache National Forest issued a winter travel management plan for the Tony Grove/Franklin Basin Winter Recreation Use Area (USDA Forest Service, 2003). This area includes approximately 9,500 acres and the access points to upper elevation to the north and east of Logan Canyon beginning at the terminus of Green Canyon, to the boundary at Beaver Mountain Ski Resort, and extending to the Mount Naomi Wilderness Area boundary. The revised plan sought to separate competing user groups and provided non-motorized access and zones to several backcountry yurts.

During spring of 2005, LRD winter recreation stakeholders worked through a collaborative process to more precisely define the boundaries of motorized and non-motorized winter areas and travel routes. The boundaries proposed through this process deviated from the boundaries in the 2003 winter travel plan. In May of 2006, a scoping document invited comments on a proposal to adjust the boundaries of areas open and closed to winter motorized use in the Tony Grove/Franklin Basin area in Logan Canyon and to construct an over-the-snow trail between the Franklin Basin and Tony Grove parking areas (USDA Forest Service, 2006a). This resulted in the updated Tony Grove/Franklin Basin area Forest Plan map (USDA Forest Service, 2006b). According to the Logan Ranger District:

¹ *Editor's note:* Now administered as the Uinta-Wasatch-Cache National Forest

The decision memo was signed by the Forest Supervisor in December 2006, but because there was a 45 day appeal period, we [U.S. Forest Service] did not implement the current zoning decision in Jan/Feb/March 2007, but instead, stuck with the existing plan. In winter 2007/2008 we began implementation of the current plan, i.e., marking boundaries, posting current maps, patrolling non-motorized areas for motorized intrusion, etc. (C. McCaughey, 2008, personal communication)

This study was prompted by a number of discussions between the researchers and avid backcountry non-motorized recreationists (skiers, snowboarders, snowshoers) and ORC yurt users, all of whom suggested that they experienced conflict with snowmobile users at or near the yurts. The travel management planning process did not directly assess the prevalence of on-site conflict between non-motorized groups accessing and using the yurts and adjacent motorized users. The present study sought to identify whether or not the winter recreation travel plan for the Tony Grove/Franklin Basin area had effectively zoned out conflict by successfully separating the user groups.

The common definition of recreation conflict for an individual assumes that people recreate in order to achieve certain goals, and defines conflict as “goal interference attributed to another's behavior” (Jacob & Schreyer, 1980, p. 369). Therefore, conflict as goal interference is not an objective state, but is an individual's appraisal of past and future social contacts that influences either direct or indirect conflict. It is important to note that the absence of recreational goal attainment alone is insufficient to denote the presence of conflict. The perceived source of this goal interference must be identified as other individuals.

Also, goal interference can occur based on both setting-based and activity-based goals, as described by Gibbons and Ruddell (1995) who studied interferences between backcountry skiers and heli-skiers in the Wasatch Mountains. In other words, goal interference may be oriented more towards desired goals based on a recreational activity (e.g., experiencing excitement or getting exercise) or based on characteristics of the surrounding setting in which the activity takes place (e.g., to find solitude or to be in nature). Often conflict occurs between participants in different types of activities, such as between skiers and snowboarders (Vaske et al., 2000), or between non-motorized winter backcountry recreationists and snowmobilers (Vittersø, Chipeniuk, Skår, & Vistad, 2004). Often, conflict between groups is asymmetrical, meaning that one out group may perceive conflict while the other more dominant group does not (Vaske, Needham, & Cline, 2007).

The following research questions guided this study:

- What were the demographics of this sample of ORC yurt users?
- What were the recreational goals of the yurt users?
- Was there a difference in respondents' reported levels of goal interference attributed to snowmobiles at different yurt locations?

- Did respondents' activity goals while participating in their yurt trip predict setting-based and activity-based goal interference.

Method

The USU Outdoor Recreation Center and Yurt Program

The ORC's mission statement is "To enable USU and community members to experience the physical and mental benefits of safe, fun outdoor recreation by providing them with excellent equipment, instruction, and resources" (ORC, 2006) The ORC provides an equipment rental program, trips and activities, a resource center, sponsors the Banff Mountain Film Festival, and manages the yurt rental program. More information is available online at <http://www.usu.edu/orc/>.

Setting

The ORC has partnered with Powder Ridge Ski Touring to expand its Yurt Rental Program to USU students and the general public. There are now four yurts being managed by the ORC in some of the best ski terrain Utah has to offer. The Mongolian-style yurts are outfitted with wooden floors, wood burning stoves, kitchens, and bunks for 6-12 people depending on the yurt. The four yurts are located in backcountry areas in Logan Canyon.

- The Blind Hollow yurt is located at 8,200 feet. The surrounding terrain is advanced-expert. The trailhead is located at mile marker 476 in Logan Canyon at 5,798 feet. The approach is approximately 4.3 miles, with a 2,400 foot gain in elevation.
- The Bunchgrass yurt is located at 8,400 feet. The trailhead is located approximately 0.1 miles past the Tony Grove Lake turn-off on the south side of U.S. Highway 89. The approach ascends 2,089 feet over 3.8 miles. The terrain surrounding the yurt is novice-expert.
- The Green Canyon yurt is located at 6,121 feet. The trailhead is at the base of Green Canyon and the approach ascends 1,275 feet over 3.75 miles. The terrain surrounding the yurt is novice-expert.
- The Steam Mill yurt is located at 8,100 feet. The approach ascends 1,500 feet over 3.5 miles. The trailhead is located at the Franklin Basin parking lot on the north side of U.S. Highway 89. The terrain surrounding the yurt is novice-expert.

Sample

The sample consisted of non-motorized winter recreationists between 18 and 65 years of age, including Nordic track or skate skiers, backcountry telemark skiers, backcountry alpine touring skiers, backcountry snowboarders, and backcountry snowshoers. All respondents were patrons of the ORC yurt program during the winter of 2008.

Sampling Procedures

Users of the ORC backcountry yurts were invited to fill out a contact information form located at each yurt and at the ORC in order to be included in a one-time survey (see Appendix A). All participation in the study was voluntary. It was explained to respondents that by participating they would be eligible to win a free yurt weekend courtesy of the ORC. Completed contact forms were placed in a drop box attached to the inside of the yurt and collected by ORC staff and returned to the primary investigator. One-hundred and eleven yurt patrons indicated they were interested in participating in the study and were mailed the survey questionnaire along with a postage-paid envelope. One week after the mail-back survey was sent a follow-up phone call and/or email was sent to verify that the respondent received the survey. The number of surveys returned was 54 out of 111, for a response rate of 48.6%. No assessment of non-response bias was conducted. At the conclusion of the study, a randomly selected respondent was notified that he/she had won the yurt weekend prize.

Measurement

A ten-page survey questionnaire was used to obtain data (see Appendix B). The following discussion headings explain the variables and measurement.

Demographics

Demographic items consist of primary winter activity type (cross-country skier, alpine touring/telemark backcountry skier, snowboarder, snowshoer, snowmobiler), number of years participating in that activity, level of expertise, number of years recreating in the Bear River Range (the mountain range in which the LRD is located), yurt location, age, sex, level of education, and income level.

Goal Interference

The conflict measure used was adapted from the work of Gibbons and Ruddell (1995) in which respondents were asked to rate the degree to which various possible goals were interfered with by other recreationists. In the present study, 5 snowmobile or snowmobiler behavioral interference items were measured on a scale of 1 to 5 (never interferes to interfere very much). Each of these items was measured relative to two setting-based goals (enjoy nature, experience solitude) and two activity-based goals (ski/snowboard on untracked powder, make turns on steep terrain).

From these four measures of goal interference, two composite variables were created for use in the analyses: *setting-based goal interference* (Table 1) and *activity-based goal interference* (Table 2). First, factor analysis was conducted on each set of 10 behavioral interference items for both setting based and activity-based goal interference. Principal components analysis and Varimax rotation were used to determine factor loadings.² The ten

² *Editor's note:* Due to this study's small sample size, results from this type of statistical analysis should be treated cautiously and may not be widely generalizable.

items all loaded on the first factor. A reliability analysis was conducted and the Cronbach's alpha value was 0.96 for *setting-based goal interference* attributed to snowmobiles. The *activity-based goal interference* attributed to snowmobiles was a composite of goals to ski/snowboard untracked powder and make turns on steep terrain and the attributions associated with the 10 types of activity-based goal interference attributed to snowmobiles. All 10 items were selected because they loaded on factor one. Reliability analysis resulted in a Cronbach's alpha value of 0.97.

Table 1 Setting-based Goal Interferences Attributed to Snowmobiles

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Fast snowmobiles interfere with enjoying nature	1.79	1.32	53
Snowmobile tracks interfere with enjoying nature	1.92	1.47	53
Presence of snowmobiles interferes with enjoying nature	2.36	1.59	53
Snowmobile noise interferes with enjoying nature	2.42	1.68	53
Snowmobiles interfere with enjoying nature	2.13	1.51	53
Snowmobile tracks interfere with experiencing solitude	1.81	1.41	53
Fast snowmobiles interfere with experiencing solitude	1.75	1.36	53
Presence of snowmobiles interferes with experiencing solitude	2.32	1.58	53
Noise of snowmobiles interferes with experiencing solitude	2.36	1.69	53
Snowmobiles interfere with experiencing solitude	2.47	1.68	53
Grand Mean	2.13		

*All items were measured on a scale from 1 (never interferes) to 5 (interferes very much)
Cronbach's Alpha = 0.96*

Table 2 Activity-based Goal Interference Attributed to Snowmobiles

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Fast snowmobiles interfere with powder snowriding	1.66	1.34	53
Snowmobile tracks interfere with powder snowriding	1.98	1.59	53
Presence of snowmobiles interferes with powder skiing	1.94	1.52	53
Noise of snowmobiles interfere with powder snowriding	1.81	1.46	53
Snowmobiles interfere with powder snowriding	2.00	1.61	53
Fast snowmobiles interfere with skiing steep terrain	1.43	1.18	53
Snowmobile tracks interfere with skiing steep terrain	1.68	1.45	53
Presence of snowmobiles interferes with skiing steep terrain	1.66	1.41	53
Noise of snowmobiles interferes with skiing steep terrain	1.58	1.34	53
Snowmobiles interfere with skiing steep terrain	1.77	1.44	53
Grand Mean	1.75		

*All items were measured on a scale from 1 (never interferes) to 5 (interferes very much).
Cronbach's Alpha = 0.97.*

Goal Variables

Using an adapted version of the Gibbons and Ruddell (1995) measure of reasons why people participate in their selected winter activity, 18 recreation experience items were measured using a five-point Likert-type scale (not at all important to extremely important). The items asked respondents about the importance of various aspects of their favorite activity (e.g., to experience nature, to get exercise, or to ski on untracked powder). Factor analysis indicated that the items loaded on four different factors. These factors were used in the analysis to represent the goals associated with respondents' yurt experiences (Tables 3, 4, 5, and 6). An index, for use in regression analyses, was created for each factor using the variables that had loaded. The grand mean for the *being away* goal was the highest (4.35), followed by the *exercise* goal (4.26), *new experience* (3.74), and *excitement* (3.47). The corresponding Chronbach's alpha coefficients were *being away* (0.88), *new experience* (0.84), *excitement* (0.84), and *exercise* (0.86).

Table 3 Being Away Goal

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Change of routine	4.24	1.01	54
Change from life	4.02	1.05	54
Enjoy nature	4.70	0.60	54
Close to Nature	4.56	0.72	54
Solitude	4.19	0.99	54
Tranquility	4.41	0.92	54
Grand Mean	4.35		

Measured on a Likert-type scale from 1 (not at all important) to 5 (extremely important).

The being away variable was defined as disengaging psychologically from everyday thoughts and experiences; this definition is based on the work of Kaplan et al. (1989).

Cronbach's Alpha = 0.88.

Table 4 New Experience Goal

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Something new	3.78	1.10	55
Experience new things	3.64	1.08	55
Snowriding skills	3.80	1.08	55
Grand Mean	3.74		

Measured on a Likert-type scale from 1 (not at all important) to 5 (extremely important).

Cronbach's Alpha = 0.84.

Table 5 Excitement Goal

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Thrills	3.20	1.12	54
Ride Steep Terrain	3.25	1.40	54
Excitement	3.38	1.07	54
Ride Untracked Powder	4.01	1.20	54
Grand Mean	3.46		

*Measured on a Likert-type scale from 1 (not at all important) to 5 (extremely important).
Cronbach's Alpha = 0.84.*

Table 6 Exercise Goal

	<i>Mean</i>	<i>SD</i>	<i>n</i>
Exercise	4.23	0.71	54
Fitness goal	4.27	.61	54
Grand Mean	4.25		

*Measured on a Likert-type scale from 1 (not at all important) to 5 (extremely important).
Cronbach's Alpha = 0.86.*

Data Analysis

Frequencies, means, and standard deviations were calculated for interval and ratio level data. An Omnibus *F* test through one-way analysis of variance (ANOVA) tested the relationship between (a) yurt location and (b) nature-based and activity-based goal interferences attributed to snowmobiles. Ordinary least squares regression was used to examine the relative contribution of each selected predictor to explaining goal interference and place attachment dimensions.

The following hypotheses were tested in this study:

H1: Yurt location will be related to nature-based goal interferences attributed to snowmobiles.

H2: Yurt location will be related to activity-based goal interferences attributed to snowmobiles.

H3: Setting-based goal interferences attributed to snowmobiles will be predicted by recreation experience goals (exercise goals, excitement goals, new experience goals, being away goals).

H4: Activity-based goal interferences attributed to snowmobiles will be predicted by recreation experience goals (exercise goals, excitement goals, new experience goals, being away goals).

Results

Demographics

Thirty-eight percent of the sample ($n = 54$) reported making \$70,000 or more per year, 16.7% made \$60,000 to 69,999, 13% made \$50,000 to 59,999, 11.2% made \$40,000 to 49,999, 5.6% made \$20,000 to 39,999, 9.3% made \$10,000 to 19,999, and 5.6% reported making under \$10,000. The sample consisted of 41 males (74.5%) and 14 females (25.5%). Forty-two of the respondents were employed (76.4%), 9.1% were USU students, 9.1% were students from other schools, and three (9.1%) were unemployed.

Respondents were asked to report the number of years participating in their primary winter sport activity: 26.9% percent reported zero to six years experience, 22.2% from six to 10 years, 24.1% from 11 to 20 years, and 27.8 percent reported greater than 21 years of experience.

As noted in Table 7, the average group size was 6.31 and the number of adults in each group was 5.76. The average age was 41.24 years old. The average education level was 17 (1st year graduate studies level). The sample reported an average of 15 years participating in the primary winter sports activity. The respondents' reported average number of years visiting the Bear River Range was 7.51 and their average length of time participating in their reported primary winter sports activity in the Bear River Range was 1.81 years. The percentages of respondents who visited each yurt were: 20% at the Green Canyon yurt, 25.5% at Blind Hollow, 29.1% at the Bunchgrass yurt, and 25.5% at the Steam Mill yurt.

Table 7 Descriptive Statistics

	Mean	SD	<i>n</i>
Number in group	6.31	2.52	55
Number adults in group	5.76	2.61	54
Number Youth <18 in group	.58	1.70	55
Age	41.24	11.38	54
Education grade level (e.g., 16 = college senior)	17.35	2.25	55
Number of years participating in primary winter sports activity	15.13	11.04	54
Number of years participating in winter sports activity in the Bear River Range	1.81	1.15	53
Number of years visiting the Bear River Range	7.51	7.28	53

Hypothesis Testing:

H1: *Yurt location will be related to setting-based goal interference attributed to snowmobiles.*

The grand mean for scale items representing *setting-based goal interference* attributed to snowmobiles was 2.13, and the grand mean for *activity-based goal interference* attributed to snowmobiles was 1.75 (Table 8). In other words, respondents in this study reported

relatively low levels of goal interferences associated with snowmobiles. As displayed in Table 9, patrons at the Steam Mill yurt reported somewhat higher levels of setting-based goal interference associated with snowmobiles (mean = 2.62), followed by Bunchgrass (2.56), Blind Hollow (2.07), and the lowest mean was for Green Canyon (1.08).

A one-way Analysis of Variance (ANOVA) was conducted to assess the statistical significance of yurt location as a contributor to setting-based goal interference associated with snowmobiles.³ As displayed in Table 10, the model was significant ($F = 3.907, p = .014$). A Tukey post hoc analysis was conducted to identify statistically significant mean differences across yurt location (Table 11). Statistically significantly different levels of goal interference were reported by users of the Bunchgrass yurt compared to Green Canyon (mean difference = 1.48), and Steam Mill respondents reported statistically significantly more conflict than Green Canyon users (mean difference = 1.54).

Table 8 Goal Interference Associated with Setting-based and Activity-based Goals Attributed to Snowmobiles

	Mean
Setting-based goal interference attributed to snowmobiles	2.13
Activity-based goal interference attributed to snowmobiles	1.75

Five-point Likert-type scale (strongly disagree, disagree, neutral, agree, strongly agree)

Table 9 Setting-based Goal Interference Attributed to Snowmobiles by Yurt Location

	<i>n</i>	Mean	<i>SD</i>
Green Canyon	12	1.08	.16
Blind Hollow	14	2.07	1.26
Bunchgrass	16	2.56	1.53
Steam Mill	12	2.62	1.34

Five-point Likert-type scale (strongly disagree, disagree, neutral, agree, strongly agree)

³ *Editor's note:* Due to this study's small sample size, results from this type of statistical analysis should be treated cautiously and may not be widely generalizable.

Table 10 Setting-based Goal Interference Attributed to Snowmobiles by Yurt Location—ANOVA Model Results

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>Sig.</i>
Between Groups	18.09	3	6.03	3.907*	.014*
Within Groups	75.63	49	1.54		
Total	93.72	52			

* *The mean difference is significant at the 0.05 level*

Table 11 Setting-based Goal Interference Attributed to Snowmobiles by Yurt Location: Multiple Comparison of Means

Yurt Destination (i)	Yurt Destination (j)	Mean Difference		<i>Sig.</i>
		$(\bar{A}_i - \bar{A}_j)$	<i>SE</i>	
Green Canyon	Blind Hollow	-1.00	.50	.204
	Bunchgrass	-1.48*	.49	.019*
	Steam Mill	-1.54*	.52	.023*
Blind Hollow	Green Canyon	1.00	.50	.204
	Bunchgrass	-.49	.46	.711
	Steam Mill	-.55	.49	.682
Bunchgrass	Green Canyon	1.48*	.49	.019*
	Blind Hollow	.49	.46	.711
	Steam Mill	-.06	.47	.999
Steam Mill	Green Canyon	1.54*	.52	.023*
	Blind Hollow	.55	.49	.682
	Bunchgrass	.06	.47	.999

* $p < .05$ level

H2: *Yurt location will be related to activity-based goal interference attributed to snowmobiles.*

A one-way ANOVA tested the significance of *yurt location* on *activity-based goal interference attributed to snowmobiles*. The test failed to reject the null hypothesis that activity-based goal interference was independent of location: $F(3,49) = 1.672, p = 0.185$.

H3: *Setting-based goal interference attributed to snowmobiles will be predicted by recreation experience goals (exercise, excitement, new experience, being away).*

A least squares regression model tested hypothesis 3. The test failed to reject the null hypothesis that setting-based goal interference is independent of recreation experience goals: $F(4,46) = .686, p = .605$.

H4: *Activity-based goal interference attributed to snowmobiles will be predicted by recreation experience goals (exercise, excitement, new experience, being away).*

A least squares regression model tested hypothesis 4. The test failed to reject the null hypothesis that activity-based goal interference is independent of recreation experience goals: $F(4,46) = .1.327, p = .274$.

Discussion

Conflict between motorized and non-motorized winter recreation users in the Bear River Range of Northern Utah has been a point of contention for snowmobilers and self-propelled backcountry users alike particularly in and around access points along U.S. Highway 89 in Logan Canyon. Several revisions of the Tony Grove/Franklin Basin Winter Recreation Use Area resulted in the current boundaries in the Revised Forest Plan. Therefore, the purpose of this study was to explore relationships between yurt locations and perceptions of conflict, and goal orientation as a predictor of conflict perceptions.

This study used Goal Interference Theory (Jacob & Schreyer, 1980) as a conceptual framework. Generally, the theory assumes that people recreate to achieve certain outcomes or goals. Conflict for an individual is defined as goal interference attributed to another's behavior. Conflict between out groups is often asymmetrical (Gibbons & Ruddell, 1995; Vaske et al., 2007). For example, Gibbons and Ruddell (1995) found an asymmetrical relationship between out group conflict, i.e., individuals in the more dominant group do not experience conflict, while the less dominant group may experience conflict attributed to the behavior or presence of the dominant group. Specifically, Gibbons and Ruddell found that self-propelled backcountry users experienced a higher level of goal interferences attributed to the behavior of the heli-skiers group, than was true of the reverse. Therefore, to understand the non-motorized group's perception of behavioral conflict on the LRD, the sample in this study was taken from non-motorized, backcountry patrons of ORC yurts.

Although informal pre-study interviews informed the researcher that conflict with snowmobiles was a problem for backcountry skiers while accessing or snowriding near the yurts, the results suggest that this was not the case. The descriptive findings indicate that setting-based interference and activity-based interference scores attributed to snowmobiles by respondents (non-motorized patrons of the ORC yurts) were relatively low. These unexpected findings may be associated with the difference between behavioral and social values conflict. Social values conflict suggests that conflict may ensue without any direct contact between groups, and is based more on philosophical differences than actual encounters (Carothers, Vaske, & Donnelly, 2001; Vaske et al., 2007).

However, statistically significant mean differences were found between Steam Mill yurt and Green Canyon yurt, and between Bunchgrass yurt and Green Canyon yurt user responses on the *setting-based goal interference* variable.⁴

Uniquely, the Steam Mill yurt parking lot is used primarily by snowmobilers and trucks and trailers. This location is the major gateway to Franklin Basin snowmobile trails, and the weekends provide a high level of motorized activity. The shared road and close proximity of the yurt to the motorized boundary may have contributed to the statistically significant mean difference with Green Canyon.

Furthermore, no statistically significant relationships were found between user goal orientations (exercise goals, excitement goals, new experience goals, being away goals) and conflict variables (setting-based and activity-based conflict). These results may be associated with the lack of variability in responses to the perceived goal interference variable (conflict with snowmobiles).

There are several limitations in this study. First, the sample size (54 respondents) is relatively small. Second, the convenience sample may have provided a biased view. Both issues contribute to questions of validity. Third, the questionnaire was rather long. Respondents may have been confused by the methodology, as noted by comments on some of the questionnaires. Future use of such goal interference items should include a more parsimonious and more user-friendly questionnaire. Furthermore, the operationalization of the descriptors may have not adequately captured other dimensions of setting-based or activity-based interference. Future research could include a sample of snowmobile users for comparison between motorized and non-motorized groups, and could include measures of social values conflict. These suggestions could potentially broaden the scope of similar studies and offer more information for land and program managers.

The results of this study do suggest that the Wasatch-Cache National Forest, Logan Ranger District rezoning process may have contributed to the limited levels of behavioral conflict experienced by non-motorized, backcountry patrons of ORC yurts. The good news for yurt users is that the presence of snowmobiles in the Tony Grove-Franklin Basin area may not significantly detract from solitude and nature appreciation, or from a desire to ski or ride on steep terrain and in untracked powder. The yurts are within the non-motorized zone, and this may contribute to conflict-free fulfillment of yurt user's goals and strong emphasis on being away, finding excitement, exercising, or experiencing something new.

⁴ *Editor's note:* Green Canyon is completely within a winter non-motorized area and surrounded on three sides by designated wilderness. The only use of snowmobile in the vicinity of the Green Canyon yurt is by managers for trail grooming for the non-motorized trail. Therefore, it seems likely that a total lack of contact between Green Canyon yurt visitors and snowmobilers may be the reason for lower mean conflict perceptions.

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Appendix A Contact Recruitment Form

On-site Contact Form: Winter Recreation Conflict in a Backcountry Yurt Setting

This survey research is being conducted to better understand your backcountry, winter *recreation experience* and to inform outdoor recreation management regarding:

- **Conflicts with other users**
- **Winter recreation goals**
- **Yurt amenities and service**
- **Your experience at or near the Yurt**
- **Your feelings and thoughts about the Bear River Range**

Your participation in the following questionnaire is voluntary. This survey is being conducted by Jonathan C. Norling, Ph.D., Assistant Professor of Recreation of the Department of Health, Physical Education, and Recreation at Utah State University (USU) in cooperation with the USU Outdoor Recreation Center (ORC). All answers will be kept confidential under provision of the Utah State University Institutional Review Board and the provisions of the privacy act.

Please participate in a one-time survey and you will have a chance to win a Free Yurt Weekend courtesy of the outdoor recreation center.

Note: After the conclusion of the research a name will be randomly drawn and that person will be notified that they have won the yurt weekend prize.

Please fill out your contact information below (must be over 18 years of age) to be contacted to take part in a one-time, mail-back survey research. All answers will be kept confidential under provision of the Utah State University Institutional Review Board and the provisions of the privacy act. Your participation in the following questionnaire is voluntary.

Thank you for participating!

Date: _____
 Yurt Location: _____
 Name: _____
 Mailing Address: _____
 City: _____ State: _____ Zip Code: _____
 Phone: (_____) _____ Cell: (_____) _____
 Email (Capital letters please!): _____@_____

*Please place the contact sheet in the drop box provided at the yurt.
 You will be contacted within the next 2-3 weeks. Thank you for participating!*

Appendix B Mailback Survey

This survey research is being conducted to better understand your winter recreation goals, conflicts with other users, and to better inform management of your backcountry, winter recreation experience in the Bear River Range at or near select yurt locations. Your participation in the following questionnaire is voluntary. Your participation in the following questionnaire is voluntary. This survey is being conducted by Jonathan C. Norling, Ph.D., Assistant Professor of Recreation of the Department of Health, Physical Education, and Recreation at Utah State University (USU) in cooperation with the USU Outdoor Recreation Center (ORC). All answers will be kept confidential under provision of the Utah State University Institutional Review Board and the provisions of the privacy act.

1. Yurt destination (Check only one, for the most recent trip):

- Green Canyon Blind Hollow Bunchgrass Steam mill

2. Number of people in your party?: _____

3. Adults (over 18 years of age): _____ Youth (under 18 years of age): _____

4. What is your level of Avalanche certification/training?

- Level 1 Level 2 Level 3 Other Training (specify) _____

5. Where do you live? (Please check only one).

- Logan, Utah
 Cache Valley, UT (not Logan): If so, what City: _____
 Utah (not Cache Valley): If so, what City: _____
 OTHER State: If so, what (State): _____ (City): _____

6. If No where (city, state, zip code)? _____

7. What is your age? _____

8. Are you:

- Male
 Female

9. Are you presently?

- A student
 USU Student
 Employed
 Unemployed

10. How confident do you feel in your winter backcountry avalanche skills?
 (Circle only one number per item).

	Not Confident	Somewhat confident	Very Confident
Avalanche.....	1	2	3
First Aid.....	1	2	3
Navigation.....	1	2	3

11. Please circle the highest grade of school you have completed (circle only one).

- 9
 - 10
 - 11
 - 12
 - 13
 - 14
 - 15
 - 16
 - 17
 - 18
 - 19
 - 20
- High School
College
Post Graduate

12. What is your approximate household income before taxes (Check only one).

- Under \$10,000 \$40,000 to \$49,999
- \$10,000 to \$19,999 \$50,000 to \$ 59,999
- \$20,000 to \$29,999 \$60,000 to \$69,999
- \$30,000 to \$39,999 \$70,000 and above

13. What was your experience with the Outdoor Recreation Center Yurt & Services?
 (Circle one # per question).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The reservation process was efficient.....	1	2	3	4	5
The ORC staff was pleasant.....	1	2	3	4	5
The yurt was clean.....	1	2	3	4	5
The kitchen had adequate cooking equipment..	1	2	3	4	5
There was enough firewood.....	1	2	3	4	5
The toilet facility was clean.....	1	2	3	4	5
The yurt was in good repair.....	1	2	3	4	5

Please check the following winter activities that you have engaged in:

14. **Cross Country Skiing** (this is defined as skiing on groomed track or gently sloping terrain with light touring gear):

- Yes
 No

If you checked “Yes” please check the appropriate box to show how often you participate in this activity in a given year:

- Have participated in the past, but don’t continue to do so
 1 to 5 times per year
 6 to 10 times per year
 11 to 20 times per year
 21 to 40 times per year
 Over 40 times per year

15. **Backcountry Skiing** (this is defined as climbing with skins and skiing steep slopes using heavier equipment designed primarily for downhill turns, either Telemark or Alpine Touring):

- Yes
 No

If you checked “Yes” please check the appropriate box to show how often you participate in this activity in a given year:

- Have participated in the past, but don’t continue to do so
 1 to 5 times per year
 6 to 10 times per year
 11 to 20 times per year
 21 to 40 times per year
 Over 40 times per year

16. **Backcountry Snowboarding** (this is defined as climbing with split board/skins, or other modes, and snowboarding down steep slopes):

- Yes
 No

If you checked “Yes” please check the appropriate box to show how often you participate in this activity in a given year:

- Have participated in the past, but don’t continue to do so
 1 to 5 times per year
 6 to 10 times per year
 11 to 20 times per year
 21 to 40 times per year
 Over 40 times per year

17. **Snowshoeing:**

- Yes
 No

If you checked “Yes” please check the appropriate box to show how often you participate in this activity in a given year:

- Have participated in the past, but don’t continue to do so
 1 to 5 times per year
 6 to 10 times per year
 11 to 20 times per year
 21 to 40 times per year
 Over 40 times per year

18. **Snowmobiling:**

- Yes
- No

If you checked "Yes" please check the appropriate box to show how often you participate in this activity in a given year:

- Have participated in the past, but don't continue to do so
- 1 to 5 times per year
- 6 to 10 times per year
- 11 to 20 times per year
- 21 to 40 times per year
- Over 40 times per year

19. Out of the five activities listed above, which group do you most strongly identify yourself with? (**Check only one! – Your primary mode of travel in backcountry settings**).

- Cross-country Skier
 - Backcountry Skier -- Telemark or Alpine Touring (AT)
 - Snowboarder
 - Snowshoer
 - Snowmobiler
-

The remainder of the questionnaire is designed to be answered with regard to the activity you most strongly identify with. Please answer the questions with this activity in mind. For example, if you identified yourself as a backcountry skier above, please answer the following questions with regard to what is important to you when you are backcountry skiing.

20. At which of the following ability levels would you classify yourself? (Check only one).

- Beginner
- Intermediate
- Advanced
- Expert

21. How many years have you been participating in your identified activity? _____

22. How often do you engage in your identified winter activity in the Bear River Range during a typical year?

- 1 to 5 times per year
- 6 to 10 times per year
- 11 to 20 times per year
- 21 to 40 times per year
- Over 40 times per year

23. How many years have you been using the Bear River Range for your identified winter activity? _____

24. Below is a list of experiences people seek in winter recreation. Please circle the number that indicates how important each experience is to you as a reason why you participate in your **identified activity** you listed in Question 19.

REASON FOR FAVORITE ACTIVITY

	Not at all important	Slightly important	Moderately important	Very Important	Extremely Important
To experience excitement.....	1	2	3	4	5
To get exercise.....	1	2	3	4	5
To be with people who have similar values.....	1	2	3	4	5
To enjoy nature.....	1	2	3	4	5
To experience tranquility.....	1	2	3	4	5
To have thrills.....	1	2	3	4	5
To discover something new.....	1	2	3	4	5
To keep physically fit.....	1	2	3	4	5
To develop your outdoor skills.....	1	2	3	4	5
To be close to nature.....	1	2	3	4	5
To have a change from your daily routine.....	1	2	3	4	5
To experience solitude.....	1	2	3	4	5
To have a change from everyday life.....	1	2	3	4	5
To (ski, snowboard) on untracked snow.....	1	2	3	4	5
To make turns on steep terrain.....	1	2	3	4	5
To become better at my snowriding activity.....	1	2	3	4	5
To experience new things.....	1	2	3	4	5
To be with people who enjoy the same things you do.....	1	2	3	4	5

25. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to [**Experience Tranquility**] when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups.....	1	2	3	4	5
Loud radios/music.....	1	2	3	4	5
Unruly dogs.....	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

26. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Enjoy Nature]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups.....	1	2	3	4	5
Loud radios/music.....	1	2	3	4	5
Unruly dogs.....	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

27. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Experience Solitude]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups.....	1	2	3	4	5
Loud radios/music.....	1	2	3	4	5
Unruly dogs.....	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

28. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Experience Something New]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups	1	2	3	4	5
Loud radios/music	1	2	3	4	5
Unruly dogs	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

29. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Ski/Snowboard on Untracked Powder]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups	1	2	3	4	5
Loud radios/music	1	2	3	4	5
Unruly dogs	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

30. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Make Turns on Steep Terrain]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups	1	2	3	4	5
Loud radios/music	1	2	3	4	5
Unruly dogs	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5

31. Please indicate how much each of the following activities or behaviors **interfered** (during the yurt trip) with your ability to **[Be with People Who Enjoy the Same Thing I do]** when participating in your selected activity?

	Never Interfere	Interfere a little	Interfere somewhat	Interfere a lot	Interfere very much
Snowmobiling.....	1	2	3	4	5
Snowboarding (backcountry).....	1	2	3	4	5
Skiing (backcountry).....	1	2	3	4	5
Snowshoeing.....	1	2	3	4	5
Crosscountry skiing.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Yelling by other groups	1	2	3	4	5
Loud radios/music	1	2	3	4	5
Unruly dogs	1	2	3	4	5
Groups of eight or more people.....	1	2	3	4	5
The presence of nearby snowmobiles.....	1	2	3	4	5
Snowmobiles driving too fast when they pass me.....	1	2	3	4	5
The noise from snowmobiles near the yurt.....	1	2	3	4	5
Snowmobiles tracking out intended steep snowriding terrain.....	1	2	3	4	5
Non-motorized users tracking out intended steep snowriding terrain	1	2	3	4	5