Project Completion Report
Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)

Project Title: Winter Visitor Experiences: Roles of Natural Quiet & Wildlife

Project Code: UMT-156 (UMT-89, 102, 104, 132) J1571060508

Type of Project : Research

Funding Agency: National Park Service

Partner University: University of Montana

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Start Date of Project: February 1, 2006

End Date of Project: December 31, 2010

Funding Amount: $107,683.92.

Project Summary

In 2004, Yellowstone National Park implemented a managed winter use program, which required visitors travelling in oversnow vehicles (snowmobiles and snowcoaches) to be led by a commercial guide. In addition, daily use limits were put in place, restricting the number of oversnow vehicles that could enter the park. Also, snowmobiles were required to be the

cleanest and quietest commercially available machines (referred to as Best Available Technology). Other restrictions, such as speed limit reductions and a nighttime closure, were put in place. These changes were intended to address historic winter use issues related to air quality, wildlife harassment, and safety and soundscapes impacts. Monitoring showed dramatic improvements in the park resource conditions. However, we did not know the visitors' perceptions of park resource conditions in the managed era.

A number of visitor surveys had occurred in the late-1990s and early 2000s, prior to the management program being put in place. Although they asked visitors their reaction to possible, future management actions, no visitor surveys had occurred since 2004 asking visitor's reaction to management actions that had been implemented and whether they found resource conditions satisfactory. To address these concepts, park management commissioned the research to better understand the visitor or human dimensions of park resources, specifically wildlife and soundscapes. Park management also wished to better understand the effectiveness of the guiding requirement.

The 2008 study was designed as three sub-studies (soundscapes, wildlife, and guiding) to address the following four general objectives.

- To better understand the actual dynamics of the visitor experience of natural sounds.
- To better understand visitor perceptions of the practical need for mechanical sound presence during a park visit.
- To better understand visitor appraisals of human-bison interactions associated with mechanized winter use in YNP.
- To gain insight into guides' perceptions of the effectiveness of new winter visitor management policies in Yellowstone National Park.

Soundscape Sub-study

Surveys were conducted on twenty days spread across the winter season, eleven of which were weekdays and nine of which were weekend days. The potential respondent universe for the soundscape survey was all visitors, eighteen years of age or older, stopping at Snow Lodge and Old Faithful from 1/02/08 to 3/09/08. Four of hundred-thirteen of four hundred twenty-seven visitors approached agreed to participate. Forty-five interviews ranging in length from fifteen to twenty-five minutes each were also conducted during this time.

The soundscape sub-study results:

- Winter visitors to Old Faithful agree that Yellowstone is a place for natural quiet, to hear natural sounds and a quiet place.
- There is less agreement among winter visitors that Yellowstone is a place free of motorized noise.
- The opportunity to experience natural sounds is perceived by winter visitors to be important to both the value of Yellowstone and visitors' experiences.
- While there are some variations in the importance when activity type is considered, those differences are within the degree of support for Yellowstone as a place for natural quiet, to hear natural sounds.
- Visitors who participated in snowmobiling or snow coach touring were somewhat less likely than other winter visitors to agree that Yellowstone is a "place free of motorized noise."
- Eighty-one percent of the respondents indicated that the park's natural sounds had a positive effect on their experience.

- Satisfaction with the natural sounds within their experience remained high and seventy one percent of the visitors suggested they found the level of natural sound they desired for half or more of the time they desired it. Eighty-seven percent of the respondents were "very satisfied" with their overall park experience and the remaining thirteen percent were "satisfied."
- Respondents were asked about their support for a variety of management actions "to protect opportunities to experience natural sounds." Requiring best available technology (defined as clean, quiet snowmobiles), continuing to require guides, limiting the total number of snow machines in the park per day and limiting group sizes to 11 per guide were strongly supported by a minimum of sixty-eight percent of the respondents. Closing the roads to all over snow vehicles or to snowmobiles only was opposed or strongly opposed by a majority of the respondents. Plowing the roads for automobile access was strongly opposed by seventy-one percent of the respondents and opposed by another nine percent.
- In-depth interviews illustrate that the natural soundscape assists in providing a deep connection to nature that is restorative and even spiritual for some visitors. Natural sounds influenced respondents' motivation to visit Yellowstone and were an unexpected yet significant part of the experience for over a third of the interviewees. All interviewees indicated that the natural sounds they heard are part of what makes the park special.
- While interviewees predominantly accept mechanical sounds in the park, especially near developed areas they generally wanted some time in their experience to be quiet and natural.

Bison Interaction Sub-study

- The opportunity to view bison was very important to winter visitors (71% very important) and 87percent of the visitors were very satisfied with their encounters with bison.
- When asked to describe their bison interactions:
  - Ninety-nine percent of the visitors had seen bison by the time they reached Old Faithful. On average, visitors had seen bison 8 times when they arrived at Old Faithful.
  - Of these interactions, 99 percent of the visitors had at least one encounter when the bison appeared not to react to the oversnow vehicles and only 21% indicated witnessing an encounter when the bison appeared hurried, took flight, or was defensive (the three most intense reactions examined in the survey).
- When asked to assess the intense bison reaction witnessed, those seeing the most intense responses from bison (hurried, took flight, or were defensive):
  - Are more likely than statistically expected to describe the bison in the specific incident as agitated (37% vs. 2% for the "no response" visitors) and are more likely to describe the bison in the park overall as stressed (32% vs. 11%) and dangerous (56% vs. 33%).
  - There is a relationship between intensity of bison response to humans and normative judgments about acceptability/appropriateness of those specific interactions (as a group those who witness the most intense bison response are less likely to find them very acceptable/appropriate and more likely characterize them as somewhat inappropriate).
  - Nonetheless, the majority of visitors who witnessed the most intense bison responses described the situations as acceptable/appropriate (72-78%).
- Influence of primary activity:
  - Primary activity type was not a major influence on winter visitors' appraisals of specific bison interactions.

- However, activity type had a slight influence over winter visitors' perceptions of bison – most notably skiers are more likely than snowmobilers to see bison as dangerous (60% vs. 23.2%) and more likely to describe bison as stressed rather than peaceful (28% vs.6%).

Guide Sub-study

The data collection component of the guide sub-study was carried out in January of 2008 in the Old Faithful area. This area acts as a collection point for both snowmobile and snow coach tours as most come for lunch and to watch the geysers. Guides were approached in various places such as the parking lot, Visitor's Center, lodge and gas station. Twenty-two guides were approached for interviews and all agreed to be participants. Of the twenty-two respondents, nine were working as snowmobile guides, ten were snowcoach guides' and three were working as both. Six of the guides interviewed were female and sixteen were male. Guide sub-study results:

- Unanimity in opinion that Best Available Technology (BAT) requirements and guiding have improved conditions in the park.
- There were mixed results on opinions regarding BAT effects on wildlife.
- The guides focus heavily on education and interpretation and try to transfer the values of the park as a place to experience natural beauty to their clients.
- Guides viewed their responsibility of enforcing park regulations as a high priority.
- There was some perception that visitor characteristics are changing. Particularly snowmobilers who are now coming to experience the park on a snowmobile rather than using the park to experience a snowmobile.
- Some guides were opposed to the guiding requirement because they felt it inhibited people's freedom to experience the park on their own terms. Also, a few commented that the requirement has kept local snowmobilers and others out because of high costs.
- Many snowmobile guides commented that they observed changes in their clients' attitudes towards the guiding requirement through the course of a visit from negative to positive, particularly due to the education and interpretation provided.
- Snowmobile guides wanted smaller group sizes because they perceive smaller group sizes to enhance visitors' experiences and safety.
- Suggestions for improvement were minimal and most thought that NPS was doing a good job with the current regulations.
- Philosophically, a few guides commented that having winter visitors helps create advocates for the park.

Four products were produced:

Bosak, Keith, and W. Freimund. In review. Winter Guide Perceptions of Visitor Management Policies in Yellowstone National Park. Submitted to *The Journal of Park and Recreation Administration*.

Freimund, Wayne, M. Patterson, K. Bosak, S. Walker-Saxen. 2009. Winter Experiences of Old Faithful Visitors in Yellowstone National Park. University of Montana, Missoula, Montana. Available at: http://www.nps.gov/yell/parkmgmt/upload/8_2009final_winter_experiences.pdf Accessed April 7, 2011.

Freimund, Wayne, J. Sacklin, M. Patterson, and K. Bosak. In press. Soundscapes and the Yellowstone Winter Experience. Accepted by *Yellowstone Science*. Yellowstone National Park, Wyoming.

Saxen, Shelley Walker. 2008. Park Visitors and the Natural Soundscapes: Winter Experience Dimensions in Yellowstone National Park. PhD. Dissertation. University of Montana, Missoula, Montana. Available at: http://etd.lib.umt.edu/theses/available/etd-12112008-123204/unrestricted/umi-umt-1108.pdf Accessed April 7, 2011.

Number of students participating in this project: undergraduates, graduate students, degrees conferred.

This project provided the central topic for Shelly Saxen's Ph.D. dissertation. She completed her degree the summer of 2008. It also contributed to the development of Melissa Baker, who also completed her Ph.D. in 2008. Two additional M.S. students assisted in data collection on this project and were involved in the development of the proposal. One international Ph.D. student participated in project development and scoping. Her insights were invaluable and contributed.

Lessons Learned from this project.

This project was originally intended to help inform development of the 2007 winter use plan. Due to National Park Service and Office of Management and Budget visitor survey approval requirements under the Paperwork Reduction Act, full, formal review of the survey instrument and methodologies was required. In addition, the NPS Social Science program and the Office of Management and Budget did not initially agree on portions of the survey that dealt with characterizing respondents. Completing the formal reviews and reaching agreement on demographic questions delayed implementation of the survey by more than one full year (from December 2006 to January 2008).

Rather than informing the 2007 EIS, the 2008 survey became a way to measure the success of the managed winter use program. As the subsequent 2008 and now 2011 winter use plans were (and are being) prepared, the survey results have been a helpful input to these planning processes. The lesson learned is to begin planning at least two full years ahead of the intended start date for a survey. However, such long-lead times make it almost impossible for graduate students, especially in Master's programs, but also Doctoral candidates, to plan a thesis project around a park-based survey.

The results of the research do demonstrate that the visitors who have decided to visit the park under the current management structure are very satisfied with their experience. This study demonstrated that the Yellowstone winter experience is multidimensional and that policies that affect the natural soundscape will have a clear connection to the quality of the visitor experience. Visitors highly value the natural soundscape. From the perspective of guides who have seen the changes in policy over time, they believe the type of visitor may have changed somewhat and that the current visitor goals and values are somewhat more consistent with the management purpose and goals for the park. The managed winter use framework makes education a more prominent feature of the experience and has the potential to stabilize and minimize the impacts of visitor interactions with bison.