



Programmatic Review and Clearance Process for NPS-Sponsored Public Surveys

The scope of the Programmatic Review and Clearance Process for NPS-Sponsored Public Surveys is limited and will only include individual surveys of park visitors, potential park visitors, and residents of communities near parks. Use of the programmatic review will be limited to non-controversial surveys of park visitors, potential park visitors, and/or residents of communities near parks that are not likely to include topics of significant interest in the review process. Additionally, this process is limited to non-controversial information collections that do not attract attention to significant, sensitive, or political issues. Examples of significant, sensitive, or political issues include: seeking opinions regarding political figures; obtaining citizen feedback related to high-visibility or high-impact issues like the reintroduction of wolves in Yellowstone National Park, the delisting of specific Endangered Species, or drilling in the Arctic National Wildlife Refuge.

Submission Date: 12/15/2015

Project Title: Improving communications with day hikers about bear-safety in Yellowstone National Park.

Abstract (not to exceed 150 words)

This proposed study is designed to improve communications with day hikers about bear-safety in Yellowstone National Park (YELL). A measure of bear-safety behaviors was developed from a content analysis of YELL information sources. The theory of planned behavior is used to reveal leverage points that can be targeted to influence day hikers' bear-safety behaviors. The elaboration likelihood model is used to understand how to influence the leverage points, as well as how to evaluate bear-safety communication sources. Audience characteristics, like wildlife value orientations, are also used to understand how managers can increase the importance of messages about bear-safety while hiking in YELL, which increases the likelihood that visitors will process information provided to them. Day hikers on two well-used trails in Yellowstone National Park will be sampled to help managers understand how to effectively persuade day hikers in adopting bear-safety behaviors.

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Project Information

Where will the collection take place? (Name of NPS Site) : Yellowstone National Park

Sampling Period

Start Date: 07/01/2016

End Date: 08/31/2016

Type of Information Collection Instrument (Check ALL that Apply)

Mail-Back Questionnaire

Face-to-Face Interview

Focus Groups

On-Site Questionnaire

Telephone Survey

Other (list)

Will an electronic device be used to collect information?

No

Yes - iPad tablet

Survey Justification:

Social science research in support of park planning and management is mandated in the NPS Management Policies 2006 (Section 8.11.1, "Social Science Studies"). The NPS pursues a policy that facilitates social science studies in support of the NPS mission to protect resources and enhance the enjoyment of present and future generations (National Park Service Act of 1916, 38 Stat 535, 16 USC 1, et seq.). NPS policy mandates that social science research will be used to provide an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Such studies are needed to provide a scientific basis for park planning and development.

This research seeks to improve communication with day hikers about bear-safety. In recent years, human-bear incidents have been of particular concern to YELL managers. Most of these incidents are driven by inappropriate visitor behaviors around wildlife. Human-bear incidents in YELL occur almost exclusively in the backcountry (Olliff & Caslick, 2003) at a rate of about 1 attack per year (NPS, 2015a). Three fatalities due to grizzly bears in YELL since 2011 have placed further emphasis on the need to increase the adoption of bear-safety behaviors by hikers in YELL (NPS, 2015a). Day hikers are of particular concern to YELL managers because they lack a point of mandatory contact, are more numerous than overnight backcountry users, and are likely to have less experience in the backcountry than overnight users. Additionally, the three recent deaths in YELL all involved day hikers. In a large wilderness park like YELL, effective communication strategies play a major role in persuading park visitors to adopt appropriate behaviors related to bear-safety while hiking. With growing visitation (NPS, 2015b), rebounding grizzly bear populations in the Greater Yellowstone Ecosystem (NPS 2016c), and the recent fatalities in YELL due to grizzly bears, it is essential that communication techniques be designed to be effective as possible. This project was requested because: 1) significant resources have been devoted to developing safety messages regarding day hikers and bear-safety in YELL, 2) compliance with bear-safety behaviors by day hikers is quite low in YELL, 3) bear incidents have resulted in the deaths of both visitors and bears over the past four years (after decades of no deaths in YELL from bears), and 4) increasing visitation may increase human-bear incidents in YELL.

Bear-safety behaviors (question six) were developed from a content analysis of different information sources regarding bear-safety from YELL. These are malleable behaviors (e.g. not hiking alone, carrying bear spray, etc.) that day hikers can adopt to increase their safety while hiking in grizzly bear country. Collectively, these are identified as the behavior of interest in this study.

The theory of planned behavior (TPB) is a useful tool in predicting human behaviors. According to TPB, attitudes (question seven), subjective norms (question eight), and perceived behavioral control (question nine) all influence a person's behavior. These three components act as leverage points that help managers understand why visitors are (or are not) adopting bear-safety behaviors. From this, effective communication

efforts can be targeted based on these components, to influence visitor bear-safety behaviors.

Managers have requested this survey to evaluate the effectiveness of their bear safety communications. This effort is needed to better understand how in-park messages about bear-safety impact visitors' behavior. This information will reveal how park communications could be improved by incorporating information that would affect visitor's attitudes, social norms, and behaviors which is not the focus of the existing park communications.

People are motivated to process a message when they identify it as important to them. Wildlife value orientations (WVOs) (question ten) are used to understand the different ways that visitors relate to wildlife, and how different messages (question 11) about bear-safety may be more or less important to different groups of visitors. Park managers can use this information to create information sources that match visitors' interests and increase the likelihood that visitors take the time to process the information.

Other characteristics, such as previous visitation to YELL (question one) and previous experience hiking in the presence of grizzly bears (question two), may also be important characteristics to understand the types of visitors that are or are not engaging in bear-safety behaviors.

In summary, this data collection will help YELL by:

- Developing a tool for evaluating communications about bear-safety (elaboration: interest, awareness, cognitive engagement)
 - Understanding why or why not visitors engage in bear-safety behaviors (as viewed through the theory of planned behavior)
 - Understanding how park communications are affecting visitor behaviors (connecting elaboration and the theory of planned behavior) in order to incorporate new information that would increase the effectiveness of communications
 - Increase the likelihood that visitors will process the information provided to them by incorporating messages that visitors find important (WVOs and message importance measure)
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Survey Methodology

(a) Respondent Universe:

Day hikers (18 years of age and older) hiking at two popular high use areas (Mt. Washburn and Fairy Falls) during daylight hours from 07/01/2016 to 08/31/2016 in Yellowstone National Park.

(b) Sampling Plan/Procedures:

Sampling will occur at two different trailheads in Yellowstone National Park (Mt. Washburn and Fairy Falls trails). We will develop a systematically random schedule based upon potential sampling days during the sampling period (July 1, 2016 to August 31, 2016). Sampling will occur between the hours of 9:00 AM and 5:00 PM.

(c) Instrument Administration:

Day hikers will be intercepted by trained researchers associated with the study as they are ending their hike. The instrument will consist of a self-administered electronic questionnaire (approximately 10 minutes in length) and will be distributed based upon a pre- designed systematic schedule starting with the first available group during the sampling period. Visitors who are in groups will be asked to present the individual with the most recent birthday for participation to randomize the selection process. After the first group of the sampling period is selected, every n^{th} group or person exiting the trail will be selected to participate in the survey. Questionnaires will be completed on site.

(d) Expected Response Rate/Confidence Levels:

We expect an 85% response rate will be achieved due to the researchers' recent experience in intercept surveys in national parks (85% response rate in Yellowstone National Park in 2015 using intercept survey techniques). In order to achieve this response rate, we will ensure that research staff is well trained and has the necessary skills and experience for success. In case this response rate is not achieved, we will collect observational data as well as ask two quick questions to non-respondents to check for any non-response bias

Location	Number of Initial Contacts	Expected Response Rate	Expected Number of Responses	Margin of Error +/- %	Confidence Level
Fairy Falls	500	85%	425	5%	95%
Mt. Washburn	500	85%	425	5%	95%
TOTAL	1000	85%	850	5%	95%

(e) Strategies for dealing with potential non-response bias:

During the initial contact, the interviewer will ask hikers who refuse to take the full survey two questions taken from the survey. These questions will be used in a non-response bias analysis.

1) *Have you visited Yellowstone before today?*

2) *What is your state of residence?*

Additionally, we will maintain a log of observational data that will include group size and gender for all intercepted hikers. Comparisons of observations between respondents and non-respondents will be performed. Collectively, observational and survey data will be used to check for non-response bias.

(f) Description of any pre-testing and peer review of the methods and/or instrument (recommended):

The survey has been pre-tested by 9 University of Montana faculty members and graduate students familiar with YELL and survey research to assure quality of questions and wording.

The scales used in the questionnaire have been rooted in valid, reliable, peer-reviewed research. Scales used to measure interest, awareness, and cognitive engagement (elaboration) were adapted from previous research to fit this context (Vezeau, 2014; Vezeau et al., in press). TPB measures were adapted from several studies to ensure the best measurement of constructs (attitudes, subjective norms, perceived behavioral control) (Hrubes, Ajzen, & Daigle, 2001; Shrestha et al., 2012). WVOs measures were taken from Teel and Manfredo (2009).

The questions are within the scope of the NPS programmatic approval in that they reflect the pre-approved topic areas. Variation of the questions within the Pool of Known Questions are noted and justified on the survey instrument.

Burden Estimates

This research plans to contact 1000 visitors in the park during the sampling period. With a response rate of 85%, we expect to receive 850 responses for this collection.

We expect the initial contact time to be 1 minute per person (1000 X 1 minute = 16.7 hours). We expect that 15% (150) of visitors will refuse to participate during the initial on-site contact. For those individuals who do refuse, we will record their refusal and ask them to answer the two questions that will be used for a non-response bias check. This is estimated to take no more than 2 minutes per person (150 X 2 = 5 hours).

For those who agree to participate (n=850), we expect that 850 people will complete the survey adding an additional 10 minutes that will be required. (850 X 10 = 141.7 hours).

The burden total for this collection is estimated to be 164 hours.

Estimated Total Number		Estimation of Time (minutes)		Estimation of Burden (hours)	
Initial Contacts	1000	Initial Contact	1	Initial Contact	17
On-site Refusal/ nonresponse	150	On-site Refusal/ nonresponse	2	On-site Refusal/ nonresponse	5
Responses	850	To complete response	10	To complete response	142
Total	850			Total	164

Reporting Plan

Data from the survey will be analyzed using descriptive statistics, structural equation modeling (SEM), and hypothesis testing (ANOVAs) for differences (e.g. levels of importance of messages) among groups of interest (e.g. wildlife value orientation groups).

A series of technical reports will be submitted to YELL. If requested by park managers, a workshop will be held in the fall following data collection. Finally, we will submit copies of the technical reports, as required, to the NPS Social Science Program for inclusion in the Social Science Studies Conclusion.

References

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