



**PROJECT INFORMATION:**

**Where will the collection take place?** Grand Teton National Park and Yellowstone National Park

**Sampling Period Start Date:** 6/1/2021

**Sampling Period End Date:** 8/31/2021

**Type of Information Collection Instrument: (Check ALL that Apply)**

- Mail-Back Questionnaire       On-Site Questionnaire       Telephone Survey  
 Face-to-Face Interview       Focus Groups       Other (List)

Will an electronic device be used to collect information?       No       Yes - iPad

**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.*

Parks and protected areas are important for modern ungulate conservation. The Greater Yellowstone Ecosystem (GYE), which includes Yellowstone (YELL) and Grand Teton (GRTE) National Parks, boasts some of the largest, free-roaming conservation herds within their native, historic range. GYE managers report cases of undesirable interactions between people and wildlife including grizzly and black bears, bison, moose, elk, and pronghorn. However, bison are involved in more dangerous interactions than any other species in the GYE. Furthermore, conflicts between people and elk are becoming more prominent, especially in Mammoth in YELL. This study will be conducted in GRTE and YELL and will focus on the effectiveness of communication strategies for encouraging appropriate distance-related visitor-wildlife interactions. More specifically, this study focuses on human-bison interactions in GRTE (Sample Area A) and human-elk interactions in YELL (Sample Area B).

On average, bison injure approximately four people per year in this region, and elk incidents are becoming increasingly concerning. Most of these incidents occur when people approach ungulates at proximities less than the GYE regulation of 25 yards. Facilitating high-quality wildlife viewing experiences while minimizing negative wildlife and visitor impacts is complicated by people's desire for proximity, often reported as an indicator of visitor satisfaction (Pearce & Wilson, 1995; Schänzel & McIntosh, 2000; Verbos, Zajchowski, Brownlee, & Skibins, 2018). A number of factors may contribute to wildlife-related decision-making, such as the efficacy of communication efforts (Miller & Freimund, 2018) and human emotion (Jacobs, 2012). Wildlife-related decision-making can also be understood as a function of people's mental and emotional responses to wildlife (Hudenko, 2012; Jacobs, 2012; Jochum et al., 2014). Cognitive theories postulate that decision making and behavior are logical, deliberative, and rational. In contrast, human-wildlife interactions are often emotionally charged events, and the worry, fear, pleasure, or other highly valenced emotions people experience during

a wildlife encounter might drive subsequent conflict (Hudenko, 2012; Jochum et al., 2014). Integrative theories and frameworks that consider both cognitions and emotions are relevant in the discussion of human-wildlife conflict. Park managers are seeking information on the effectiveness of the current messaging strategies designed to help visitors estimate distances between themselves and wildlife, and if messaging could be improved by using emotional appeals versus visual cues (i.e., maintain a minimum of 25 yards from bison/elk; maintain a minimum of 2 bus lengths from bison/elk). Park managers are currently using two different messages, using visual cues, to encourage appropriate viewing behavior around ungulates. Regulations require visitors stay (1) 25 yards, or (2) 2 school bus lengths away from bison/elk. No research has been conducted to test the efficacy of the current messages in assisting visitors to correctly estimate distances between themselves and wildlife. Furthermore, there is a gap in understanding the effect that emotions might have on distance-related decision making. With that, this study will test the efficacy of four messaging strategies: (two distance messages currently employed by the NPS, one control message that does not offer a distance recommendation, and one emotionally-charged message):

- 1) “The National Park Service recommends you stay a minimum distance of 25 yards from [INSERT WILDLIFE SPECIES HERE]. Please move to the point that best represents the recommended distance.”;
- 2) “The National Park Service recommends you stay a minimum distance of 2 bus lengths from [INSERT WILDLIFE SPECIES HERE]. Please move to the point that best represents the recommended distance.”;
- 3) “Please move to the point that best represents the minimum distance a person stay away from [INSERT WILDLIFE SPECIES HERE].”; and
- 4) “Don’t steal someone else’s ‘Wow moment!’ Please move to the point that best represents the distance from [INSERT WILDLIFE SPECIES HERE] a person should stay to avoid stealing someone’s Wow moment.

Study participants will complete a survey as well as a distance exercise. They will be given one of four different treatment messages and then asked to walk a transect towards a wildlife cutout (i.e., bison in GRTE, elk in YELL), choosing what they perceive to be the most appropriate distance given the message they received. This survey and walking exercise will benefit park managers by revealing the most effective message strategy in aiding visitors’ distance estimations during a wildlife watching experience. The second benefit will provide information related to visitors’ previous wildlife experiences, emotional dispositions, perceptions of wildlife encounters, knowledge and perceptions of GYE management’s distance recommendations, social media use, and demographic information that will be useful for understanding the factors that contribute to visitors’ abilities to effectively estimate distances between themselves and wildlife.

## SURVEY METHODOLOGY

### (A) Respondent Universe:

All adults (18 years of age and older) visiting the Taggart Lake Trail and Antelope Flats areas of GRTE (Sample Area A), as well as the Mammoth area of YELL (Sample Area B), from June 1, 2021 to August 31, 2021.

### (B) Sampling Plan / Procedures:

The proposed study will use an on-site survey to examine emotional and distance-related decisions visitors make when viewing bison and elk in the GYE. A random sample of potential respondents will be intercepted as they exit Sample Area A (Taggart Lake Trail and Antelope Flats) in GRTE and Sample Area B (Mammoth) in YELL at the end of their visit. These locations will allow researchers to capture individuals who are hiking in GRTE and YELL as well as others who are scenic driving. At Sampling Area A, there will be a total of 15 sampling days in each location (i.e., Taggart Lake Trail, Antelope Flats) that will be stratified by day of the week, time (7AM to 7PM), and location, for a total of 30 sampling days. At Sampling Area B, there will be 30 days of data collection at one location (i.e., Mammoth).

Sampling Period A:    Start Date: June 1, 2021                      End Date: August 31, 2021

Sampling Period B:    Start Date: June 1, 2021                      End Date: August 31, 2021

It is anticipated that 24 sampling contacts will be made per day during the sampling period. An estimated 360 visitor contacts will be made at Taggart Lake Trail, and an additional 360 visitor contacts will be made at Antelope Flats for a total of 720 visitor contacts at Sampling Area A. An estimated 720 visitor contacts will be made at Sampling Area B. Sampling and recruiting efforts will conclude at the end of the sampling period.

### (C) Instrument Administration:

Technicians will employ random sampling methods using a random number generator. At the beginning of their shift, they will randomly generate 3 numbers between 0 and 60, resulting in the three times on each hour that they will intercept a visitor. Each person will be approached and asked to complete an on-site survey regarding human-wildlife conflicts in the GYE. All visitors agreeing to participate will be asked to complete an on-site survey and walking exercise. The surveyor will provide the instructions for completing the survey, asking the respondent to follow along using a paper copy of the survey while the technician records their answers electronically via iPad.

Individuals or groups who are unwilling, unable, or refusing to complete the full survey will be asked if they would be willing to answer 3 questions that will be used to check for non-response bias. In addition to the responses to the

non-response bias questions, additional characteristics (i.e., gender, activity, group size, number of adults and children in group, and potential language barrier, time, location) will be documented in a study log.

The researchers will use the following script during the initial contact with potential respondents:

*Hello, my name is \_\_\_\_\_. I am a student at Penn State University, and I am conducting a short interview for [INSERT PARK NAME HERE] to better understand visitors' experiences in [INSERT STUDY LOCATION HERE]. The purpose of this research is to explore the effectiveness of the current communication messages used to inform visitors about distance in relation to human-wildlife interactions here in the Greater Yellowstone Ecosystem. Your participation is voluntary, and your responses will be anonymous. Your responses will help the managers to understand if the current messaging is effectively helping visitors estimate the regulated distances between themselves and wildlife, to determine if the current messaging needs to be updated based upon visitor's emotions related to viewing wildlife. It should take no more than 10 minutes to complete a short survey and a short walking exercise used to determine your estimation of distance away from a from [INSERT WILDLIFE SPECIES HERE]. Would you be willing to participate?"*

**If NO:** Do you mind if I ask you a few questions?

- "Are you a first-time visitor to this park?"
- "On this visit to [INSERT PARK NAME HERE], have you seen any [INSERT WILDLIFE SPECIES HERE]?"
- "Are you aware that there are regulations regarding the recommended distance individuals should stay away from [INSERT WILDLIFE SPECIES HERE]?"

*Thank you for your time and consideration. I hope you enjoy your visit.*

**If YES:** "Thank you. Before we start, who in your group is at least 18 years old and has the closest birthday? Would you be willing to participate in the study? "

The technician will start by administering survey questions #1-9 to the participant Next, the technician will proceed with the walking exercise. Respondents will then be administered one of the four following treatment messages:

- 1) "The National Park Service recommends you stay a minimum distance of 25 yards from [INSERT WILDLIFE SPECIES HERE]. Please move to the point that best represents the recommended distance"
- 2) "The National Park Service recommends you stay a minimum distance of 2 bus lengths from [INSERT WILDLIFE SPECIES HERE]. Please move to the point that best represents the recommended distance"
- 3) "Please move to the point that best represents the minimum distance a person stay away from [INSERT WILDLIFE SPECIES HERE]"
- 4) "Don't steal someone else's 'Wow!' Please move to the point that best represents the minimum distance a person should stay away from [INSERT WILDLIFE SPECIES HERE]"

The respondent will then walk a 50-yard transect towards a [INSERT WILDLIFE SPECIES HERE] cutout. Once they stop at their chosen proximity, the researcher will use a range finder to record the selected distance. Finally, after the exercise is complete, the technician will resume the survey and administer question #10-22.

Furthermore, due to the COVID-19 pandemic, extra safety precautions will be set in place. All surveyors will wear masks. Surveyors will administer surveys via a tablet and enter responses for respondents at a distance between each other of at least 6 feet. Study participants will not come into contact with any survey equipment. Survey equipment will be regularly wiped down. Temperature monitoring of technicians will occur before each shift, and COVID-19 symptom screening questions will be employed to each participant before surveying begins. Surveyors will deploy a temporary/portable sign at sampling locations notifying potential respondents of recommended distancing protocols should they volunteer to participate in the study.

**(D) Expected Response Rate / Confidence Level:**

It is expected that a total of 1,440 visitors will be contacted during the sampling period. A 2017 study conducted with visitors at the String and Leigh Lakes area using a similar on-site survey sampling method and received a response rate of 87.1%. (D’Antonio, et al., 2018). Based on these results we are estimating that at least 80% (n=1,152) of all visitors contacted, in sample areas A and B, will agree to participate in this study. Of all visitors refusing to participate (n=288), we will ask those to complete the non-response bias check. From that number, we anticipate that 80% (n=232) will agree to answer the non-response bias questions when prompted. However, of the remaining visitors refusing to participate (n=48), we will thank them for their time and discontinue the contact. For quantitative outdoor recreation-related surveys, Vaske (2008), recommends that the sample size be approximately 400 respondents, therefore the sample estimates for this study are considered acceptable. The results of this collection will not be used to generalize any population beyond the individuals participating in this study during this sampling period.

**Table 1. Anticipated Onsite Survey Response Rates**

Location	Total Number of Visitor Contacts	Completed Onsite Surveys (80% of contacts)	Soft Refusals (20% of contacts)	Completed Non-Response Surveys (80% of soft refusals)	Hard Refusals (20% of soft refusals)
<b>Sample Area A</b>					
Taggart Lake Trail	360	288	72	58	12
Antelope Flats	360	288	72	58	12
<b>Sample Area B</b>					
Mammoth	720	576	144	116	24
<b>Total</b>	<b>1,440</b>	<b>1,152</b>	<b>288</b>	<b>232</b>	<b>48</b>

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

The number of refusals will be recorded, reported, and screened for non-response bias using three non-response questions taken from the survey:

- “Are you a first-time visitor to this park?”
- “On this visit to [INSERT PARK NAME HERE], have you seen any [INSERT WILDLIFE SPECIES HERE]?”
- “Are you aware that there are regulations regarding the recommended distance individuals should stay away from [INSERT WILDLIFE SPECIES HERE]?”

The non-response bias questions will be combined with other observed visitor information. Data from the study will be analyzed for non-response bias by comparing participating groups’ characteristics to non-participating groups’ characteristics gathered on the corresponding surveyor’s log sheets. Any implications of non-response bias for park planning and management will be reported.

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

This research uses similar methods and questions that have been used in other NPS visitor use studies, and the survey questions are specifically from the NPS Pool of Known Questions. The questions are adapted for the appropriate context in the GYE. The questions included in the survey instrument were designed, reviewed, and pretested by the following: PI, research staff and graduate students, scientists in the Recreation, Park, and Tourism Management Department at Pennsylvania State University with expertise in social science research, and park staff. Interview style pre-testing for clarity and estimated burden time was conducted with graduate students at Pennsylvania State University. A few suggestions regarding survey question clarity were taken into account, and the survey was modified accordingly. Pre-test respondents felt the survey and walking exercise adhered to the estimated burden. Furthermore, a small pre-test with two people was conducted to rehearse the method for switching from the survey questions to the walking exercise, and then back to the survey. This pre-test confirmed that the walking exercise was easily understandable.

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**BURDEN ESTIMATES**

During the sample period, we plan to approach 1,440 visitors while on site in sample areas A and B. We expect that the initial contact time for all visitors will take at least one minute per person. We expect 80% (n=1,152) will agree to complete the survey. We estimate that it will take an additional 10 minutes per person to complete the survey (1,152 x 11 minutes = 211 hours). Of all the visitors contacted, we anticipate that 20% (n=288) will refuse to participate in the study, of those, 80% (n=232) will complete the non-response check, and the remaining 20% (n=56) will give a “hard refusal” and walk away. We anticipate that it will take an additional minute to complete the non-response bias questions (232 x 2 minute = 8 hours). The total estimated annual burden for this collection is 215 hours.

**Table 2. Estimated Annual Burden Hours**

	Completed Responses	Completion Time * (minutes)	Burden Hours (rounded up)
On-site Survey*	1,152	11	211
On-site non-response survey	232	2	8
Total burden requested under this ICR:	<b>1,384</b>	<b>13</b>	<b>2190</b>

\* Initial contact time of one minute is added to the time to complete the surveys

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**REPORTING PLAN:**

A final technical report will be delivered to the park managers and staff at Grand Teton National Park and Yellowstone National Park. The report will contain a description of the study purpose and key findings. The final report will include frequency distributions and descriptive statistics, where appropriate.

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**References**

- D'Antonio, A., Taff, B.D., Monz, C., Newman, P., Baker, J., Rice, W., Freeman, S., & Miller, Z.D. (2018). Leigh and String Lake Visitor Use Study at Grand Teton National Park: 2018 Data Collection Summary. *Report prepared for the National Park Service*. The Pennsylvania State University.
- Hudenko, H. W. (2012). Exploring the influence of emotion on human decision making in human-wildlife conflict. *Human Dimensions of Wildlife*, 17(1), 16–28. <https://doi.org/10.1080/10871209.2012.623262>
- Jochum, K. A., Kliskey, A. A., Hundertmark, K. J., & Alessa, L. (2014). Integrating complexity in the management of human-wildlife encounters. *Global Environmental Change*, 26(1), 73–86. <https://doi.org/10.1016/j.gloenvcha.2014.03.011>
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- Pearce, D. G., & Wilson, P. M. (1995). Wildlife-viewing tourists in New Zealand. *Journal of Travel Research*, 34(2), 19–26. <https://doi.org/10.1177/004728759503400205>
- Schänzel, H. A., & McIntosh, A. J. (2000). An insight into the personal and emotive context of wildlife viewing at the penguin place, otago peninsula, New Zealand. *Journal of Sustainable Tourism*, 8(1), 36–52. <https://doi.org/10.1080/09669580008667348>
- Verbos, R. I., Zajchowski, C. A. B., Brownlee, M. T. J., & Skibins, J. C. (2018). 'I'd like to be just a bit closer': Wildlife viewing proximity preferences at Denali National Park & Preserve. *Journal of Ecotourism*, 17(4), 409–424. <https://doi.org/10.1080/14724049.2017.1410551>
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## NOTICES

### Privacy Act Statement

**General:** This information is provided pursuant to Public Law 93-579 (Privacy Act of 1974), December 21, 1984, for individuals completing this form.

**Authority:** National Park Service Research mandate (54 USC 100702)

**Purpose and Uses:** This information will be used by The NPS Information Collections Coordinator to ensure appropriate documentation of information collections conducted in areas managed by or that are sponsored by the National Park Service.

**Effects of Nondisclosure:** Providing information is mandatory to submit Information Collection Requests to Programmatic Review Process.

### Paperwork Reduction Act Statement

We are collecting this information subject to the Paperwork Reduction Act (44 U.S.C. 3501) and is authorized by the National Park Service Research mandate (54 USC 100702). This information will be used by The NPS Information Collections Coordinator to ensure appropriate documentation of information collections conducted in areas managed by or that are sponsored by the National Park Service. All parts of the form must be completed in order for your request to be considered. We may not conduct or sponsor and you are not required to respond to, this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number. OMB has reviewed and approved The National Park Service Programmatic Review Process and assigned OMB Control Number 1024-0224.

### Estimated Burden Statement

Public Reporting burden for this form is estimated to average 60 minutes per collection, including the time it takes for reviewing instructions, gathering information and completing and reviewing the form. This time does not include the editorial time required to finalize the submission. Comments regarding this burden estimate or any aspect of this form should be sent to the Information Collection Clearance Coordinator, National Park Service, 1201 Oakridge Dr., Fort Collins, CO 80525.

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