Climate Change Education Partnership Visitor Survey Technical Report: Harpers Ferry National Historic Park

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Project Introduction

The Climate Change Education Partnership (CCEP) is a National Science Foundation funded research project involving Colorado State University, the National Park Service, the U.S. Fish and Wildlife Service, and the National Parks Conservation Association. The purpose of this nationwide, collaborative effort is to scope the communication challenges, opportunities, and needs among park and refuge staff when discussing climate change impacts on America's public lands. This effort is funded as a "Phase 1 Project", and the data we have gathered regarding our regional site partners and site-specific information will inform a "Phase 2 Proposal" to be submitted in March 2012. If funded, Phase 2 of the CCEP would provide the resources to implement ideas generated through our Phase 1 research at your site.

Including your region, we have five pilot site areas across the country (northern Colorado, southern Florida, Puget Sound in western Washington, and Kenai Fjords in Alaska). We have engaged each region in a similar process, beginning in late March 2011 and continuing through January of 2012. Your site is one of three protected areas in the District of Columbia area that was selected because agency leadership at the Washington office highlighted your Park as an important place to invest resources in building capacity or enhancing ongoing efforts to communicate about climate change in your region.

Because our goal is to engage you, your staff, managers, volunteers and partners at adjacent public lands in a "landscape-scale" approach to climate change education, a significant part of our effort to achieve this goal has been to collect quantitative and qualitative data regarding national park and wildlife refuge visitor perceptions of specific effects of climate change on America's public lands. During our visit to your site, we conducted 203 surveys. This report provides a short description of our visitor survey and a summary of our results from your site. The survey data we have collected at each park or refuge within our pilot site locations is very important as we begin to brainstorm and collaboratively develop education tools for your unique visitor population.

Introduction of Study

Methods

The CCEP core team developed an on-site visitor survey to assess national park and wildlife refuge visitors' awareness and knowledge of place-specific climate change impacts, as well as their level of concern and willingness to act in response to these impacts. Over a six month period, our survey team administered this visitor survey at each park and refuge within our five pilot site locations, and each of these national parks and refuges are listed in the table below.

Figure 1. *Participating parks and refuges in the 2011 Visitor Concerns about Climate Change Survey*

Rocky Mountain Region
Rocky Mountain Arsenal National Wildlife Refuge (CO)
Rocky Mountain National Park (CO)
Southern Florida and the Keys
Biscayne National Park (FL)
Everglades National Park (FL)
National Key Deer Refuge (FL)
Ten Thousand Islands National Wildlife Refuge (FL)
Washington D.C. Area
Harpers Ferry National Historic Park (WV)
National Capital Parks-East (DC)
Prince William Forest Park (VA)
Southern Alaska
Kenai Fjords National Park (AK)
Kenai National Wildlife Refuge (AK)
Puget Sound Area
Dungeness National Wildlife Refuge (WA)
Mount Rainier National Park (WA)
Nisqually National Wildlife Refuge (WA)
North Cascades National Park (WA)
Olympic National Park (WA)

Survey Development. The survey used in this study was first created in paper form using basic word processing software, and was later converted into an electronic form using an online template from iSURVEY and an accompanying app for Apple iPads. The iSURVEY app allows for the electronic survey to be presented on iPads as well as other handheld electronic devices. Following the purchase of this app, the survey team was able to administer the survey on each of 10 iPads and gather an unlimited number of responses within the allowable one-month license period, which we renewed as necessary. All of the results are saved, synced and uploaded to an automatically generated data file, accessed on the iSURVEY password protected website.

Procedure. Over three thousand (3118) surveys were administered in 11 different refuges and parks from May 6, 2011 to September 11, 2011, using a convenience sampling method. The total response rate for the sample was 68%. The survey team for recruiting participants used the following script:

> Hello, we are students from Colorado State University conducting visitor surveys at [this Park/Refuge]. Would you like to take our survey about landscape changes at this [Park/Refuge]? The survey takes about five to ten minutes to complete. Your participation is completely voluntary and you can stop taking the survey at any time.

The survey team protocol for answering participants' questions during the course of the survey was to answer any question that pertained to technical operation of the iPads and to supply any needed clarification regarding questions and response options. The survey team was not to offer any opinions or facts pertaining to specific questions while the surveys were in progress. When all of the iPads were in use, the survey team protocol was to administer paper versions of the same survey. Most visitors surveyed (71%) completed the electronic version of the survey on the iPad while the remaining 203 participants (29%) completed the survey on paper.

Survey Sites. On-site survey administration locations were unique at each refuge and park, though the team targeted popular trailheads, visitor centers, campsites, and viewpoints. Recommendations were sought and followed from managers at each site for popular and diversified locations for surveying. Most surveys were collected during the weekends for greater visitor numbers and convenience; however, efforts were made to have both weekends and weekdays represented at each site. The specific locations where we administered surveys in your site were the Harper's Ferry Potomac and Shenandoah River lookout areas.

Response Rates and Confidence Level. The survey team collected a total of 203 surveys at Harper's Ferry National Historical Park. The response rate for this sample was 68%. The sample from your site reflects the total population of visitors at a 95% confidence level with $\pm$7% margin of error using a 50/50 split.

Visitor Survey Results

Visitor Demographics

The following demographic characteristics were gathered from respondents: age, gender, education, ethnicity, political affiliation, and frequency of visits. Most visitors surveyed were in the age bracket of age 46-55 (31%). The highest percentage of visitors surveyed were male (58%). Most respondents had completed a four-year college degree (35%). Most visitors surveyed self-identified as white or Caucasain (88%), and the highest percentage of respondents' political affiliation was Independent (27%, Table 1). On average, visitors surveyed have visited the park one time. Many visitors indicated that this was their first visit (27%).

Table 1

Demographic Characteristics of Participants

Characteristic	*n*	%
Age at time of survey (years) (N=191)		
10 – 17	2	1
18 – 25	17	9
26 – 35	24	11
36 – 45	33	17
46 – 55	59	31
56 – 65	41	21
66 – 75	12	6
76 – 85	3	2
86 – 95	0	0
Gender (N =199)		
Male	116	58
Female	83	42

Demographic Characteristics of Participants

Characteristic	*n*	%
Highest education level completed (N=200)		
Less than high school	2	1
Some high school	3	2
High school graduate	11	6
Some college	29	15
Two-year college degree	17	9
Four-year college degree	70	35
Graduate or professional degree	68	34
Ethnicity (N=199)		
American Indian or Alaska Native	3	2
Asian	2	1
Black or African American	5	3
Hawaiian or Pacific Islander	1	1
Hispanic or Latino/Latina	2	1
White or Caucasian	176	88
Other	10	5
Political Affiliation (N=200)		
Republican	38	19
Democrat	45	23
Independent	53	27
No affiliation	23	12
Other	41	21

Visitor Opinions on Parks/Refuges

The following eight statements are 'sense of place' variables employed to assess visitor levels of place attachment and place dependence (Table 2). The first four statements listed are scalable items for the concept of place attachment while the last four statements are for the concept of place dependence. The more visitors agree with these statements, the more attached to and dependent upon the park they are respectively.

Table 2
How much do you agree or disagree with the following statements?

	Response Percentage (%)				
Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
This Park/Refuge is very special to me (*n*=198)	34	38	27	1	0
I identify strongly with this Park/Refuge (*n*=198)	22	38	36	4	0
I am very attached to this Park/Refuge (*n*=197)	21	27	43	7	1
This Park/Refuge means a lot to me (*n*=196)	25	34	38	3	0
This Park/Refuge is the best place for what I like to do (*n*=196)	14	36	43	5	2
No other place can compare to this Park/Refuge (*n*=195)	8	26	42	21	4
I get more satisfaction out of visiting this Park/Refuge than any other (*n*=197)	4	16	52	23	5

Respondents were asked to rate the importance of the National Park System, the National Wildlife Refuge System, and Harper's Ferry National Historical Park. Many respondents thought that both the National Park System and the National Wildlife Refuge System were extremely important (82% and 72% respectively). Most respondents stated that Harpers Ferry NHP is extremely important to themselves and their family (53%, Table 3).

Table 3
Please rate the importance of the following to you and your family.

	Response Percentage (%)				
Categories	Extremely important	Very important	Somewhat important	Slightly important	Not important
Our National Parks System (*n*=201)	82	17	1	0	0
Our National Wildlife Refuge System (*n*=199)	72	23	5	0	0
This Park/Refuge (*n*=198)	53	40	6	1	0

Respondents were asked to rate a number of different threats to parks and refuges as a whole and to Harpers Ferry NHP. Most respondents thought lack of funding was the greatest threat to national parks and refuges (59%). Visitors perceived that the greatest threat to Harpers Ferry NHP was also lack of funding (52%, Table 4).

Table 4
What do you think is the greatest threat to the following?

	Response Percentage (%)							
Categories	Lack of funding	Natural disasters	Invasive species	Pollution within the area	Pollution from nearby sources	Climate change	Overuse	Other
Our National Parks and Refuges (*n*=199)	59	5	4	5	13	6	7	3
This Park or Refuge (*n*=191)	52	10	3	8	15	3	7	2

Respondents were asked to rate their level of concern for the future of the National Park System, the National Wildlife Refuge System, and Harpers Ferry National Historic Park. Many respondents were very concerned about the future of the National Park System (44%) and were also very concerned for the future of the National Wildlife Refuge System (40%). Most respondents were somewhat concerned about the future of Harpers Ferry NHP (46%, Table 5).

Table 5
How concerned are you about the future of the following?

	Response Percentage (%)				
Categories	Extremely concerned	Very concerned	Somewhat concerned	Slightly concerned	Not concerned
Our National Park System (*n* =202)	47	41	10	3	0
Our National Wildlife Refuge System (*n* =200)	46	40	12	3	0
This Park/Refuge (*n* =200)	28	41	27	5	0

Visitor Knowledge and Opinions on Climate Change

Respondents were asked to select a degree to which they thought climate change was or was not happening. Current scientific consensus indicates that climate change is occurring. Most visitors surveyed were very sure that climate change is happening (26%, Table 6).

Table 6
Do you think climate change is happening? (*n*=202)

Categories	Response Percentage (%)
Extremely sure it is happening	25
Very sure climate change is happening	26
Somewhat sure climate change is happening	18
Not Sure	14
Somewhat sure climate change is not happening	8
Very sure climate change is not happening	3
Extremely sure it is not happening	6

Respondents were asked how well informed they felt about the causes, consequences, and mitigation of climate change. Many visitors felt very informed about the causes of climate change (48%) and the consequences of climate change (50%). Most visitors also felt very informed about ways in which we can mitigate climate change (46%, Table 7).

Table 7
Personally, how well informed do you feel about the following?

	Response Percentage (%)				
Categories	Extremely informed	Very informed	Somewhat informed	Slightly informed	Not informed
The different causes of climate change (*n*=199)	20	48	0	28	5
The different consequences of climate change (*n*=198)	20	50	0	26	4
Ways in which we can reduce climate change (*n*=197)	18	46	0	34	3

Respondents were asked to indicate the causes of climate change. Current scientific consensus is that climate change is mostly caused by human activities. Most visitors surveyed indicated that climate change was caused by both human activities and natural changes in the environment (38%, Table 8).

Table 8
Assuming climate change is happening, do you think it is… (*n*=200)

Categories	Response Percentage (%)
Caused mostly by human activities	33
Caused mostly by natural changes in the environment	17
Caused by both human activities and natural changes in the environment	38
None of the above because climate change isn't happening	5
Don't Know	5
Other	3

Respondents were asked to indicate how worried they are about climate change. This item, when combined with the following two items regarding importance and prevalence of thought, may be interpreted as visitor level of concern about climate change. Most visitors surveyed indicated they were very worried about climate change (40%, Table 9).

Table 9
How worried are you about climate change? (*n*=200)

Categories	Response Percentage (%)
Extremely worried	30
Very worried	40
Somewhat worried	30
Slightly worried	2
Not worried	0

Respondents were asked to rate how important the issue of climate change is to them. Most visitors surveyed indicated that climate change was somewhat important to them (38%, Table 10).

Table 10
How important is the issue of climate change to you personally? (*n*=200)

Categories	Response Percentage (%)
Extremely important	21
Very important	26
Somewhat important	38
Slightly important	10
Not important	6

Respondents were asked how often they think about climate change. Most visitors surveyed indicated they thought about climate change frequently (37%, Table 11).

Table 11
How often do you think about climate change? (*n*=200)

Categories	Response Percentage (%)
All the time	27
Frequently	37
Occasionally	30
Rarely	7
Never	1

Respondents were asked to indicate how responsible they felt for climate change. The three statements in Table 8 are scalable items for the concept on responsibility for climate change. The first statement, 'Because my contribution is very small I do not feel responsible for climate change', should be reverse coded when creating a scale as it is negatively worded comparative to the other two items. Therefore, visitors who feel responsible for climate change would generally disagree with the first statement and agree with the last two statements (Table 12).

Table 12
How much do you agree or disagree with the following statements?

	Response Percentage (%)				
Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Because my contribution is very small I do not feel responsible for climate change (*n*=188)	4	15	31	35	14
I feel somewhat responsible for the presently occurring environmental problems (*n*=190)	7	38	30	16	8
I feel responsible for contributing to the condition of the climate (*n*=134)	6	25	36	25	8

Respondents were asked to indicate the extent to which climate change would harm future generations, themselves, and Harpers Ferry National Historical Park. Of particular interest is how much visitors believe climate change is harming the Park. Most visitors surveyed indicated that they believe climate change will harm this Park a moderate amount (39%, Table 13).

Table 13

How much do you think climate change will harm the following?

	Response Percentage (%)				
Categories	A great deal	A moderate amount	Only a little	Not at all	Don't know
Future generations of people (*n*=197)	53	28	11	5	3
You personally (*n*=192)	13	43	29	12	3
This Park/Refuge (*n*=192)	31	39	17	7	6

Visitor Willingness to Help Mitigate Climate Change

Visitors were asked "*How much money, in addition to the entrance fees you currently pay, would you be willing to pay per visit to support additional conservation efforts related to climate change at this Park/Refuge?"* (*n*=184). The average amount of additional fees respondents were willing to pay was up to $5.00 per visit (see Table 14 for an alternative data representation). Similarly, visitors were asked "*How much time, in days per year, would you be willing to volunteer at this Park/Refuge to support additional conservation efforts related to climate change?"* (*n*=184). Respondents gave an average of zero days they would be willing to volunteer. Finally, visitors were asked how willing they were to change their behaviors to help reduce the impacts of climate change. Most respondents answered very willing (45%, Table 15).

Table 14
How much money, in addition to the entrance fees you currently pay, would you be willing to pay per visit to support additional conservation efforts related to climate change at this Park/Refuge? (*n*=184)

U.S. Dollars	Response Percentage (%)
0	17
1-5	33
6-10	27
11-15	5
16-20	6
> 21	15

Table 15
How willing are you to change your behaviors in this Park/Refuge to help reduce the impacts of climate change? (*n*=201)

Categories	Response Percentage (%)
Extremely willing	33
Very willing	45
Somewhat willing	18
Slightly willing	3
Not willing	1

Visitor Perception of Climate Change Impacts and Education

Respondents were asked to agree or disagree with four statements involving their desire to learn about climate change impacts and visible effects of climate change. Most respondents agree that they would like to learn more about climate change at Harpers Ferry NHP (44%). Many of the visitors surveyed were neutral that the effects of climate change can already be seen at this Park (39%, Table 16).

Table 16
How much do you agree or disagree with the following statements?

	Response Percentage (%)				
Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I would like to learn more about climate change impacts in our national parks/refuges (*n*=192)	15	51	24	7	3
I would like to learn more about climate change impacts in this Park/Refuge (*n*=188)	13	44	30	9	3
I believe that some of the effects of climate change can already be seen at our national parks/refuges (*n*=190)	23	45	23	6	4
I believe that some of the effects of climate change can already be seen at this Park/Refuge (*n*=188)	13	37	39	7	4

Respondents were asked what specific effects of climate change they have seen at Harpers Ferry National Historical Park. Some options will not apply to Harpers Ferry NHP, as the list is comprehensive of all areas included in the study. Most visitors reported seeing an increased number of flood events at this Park (45%, Table 17).

Table 17
What specific effects of climate change have you seen at this Park/Refuge? (*n* =149)

Effects of climate change	Response Percentages (%)
Increasing ocean temperature	7
Increasing areas affected by drought	15
Increasing air temperature	28
Thawing of permanently frozen soil	5
Loss of snow and/or ice	13
Increasing number of flooding events	45
Rising sea level	11
Coral bleaching on reefs	4
Change in plant and animal populations	26
More intense storms	14
None of the above	20
Other	4

Respondents were asked what climate change mitigation efforts they have seen employed by Harpers Ferry NHP. The effort most visitors surveyed recalled seeing was recycling (66%, Table 18).

Table 18
What specific efforts to reduce impacts of climate change have you seen employed at this Park/Refuge? (*n*=184)

Efforts to reduce impacts	Response Percentage (%)
Use of hybrid or electric vehicles	15
Energy efficient or LEED certified buildings	10
Use of alternative renewable energy (ex: wind turbines, solar panels)	11
Recycling	66
None of the above	22
Other	7

Note. Percentages do not sum to 100 as multiple selections were allowed.

Respondents were asked to indicate how they have received information on climate change at Harpers Ferry National Historical Park as well as how they would like to receive information on climate change in the future. Most visitors surveyed indicated that they have not received any information on climate change (73%). Many visitors indicated they would like to learn about climate change in Harpers Ferry NHP via the Park website (50%, Table 19).

Table 19

How have you received information on climate change at this Park/Refuge and how would you like to receive information on climate change in the future?

	Response Percentages (%)	
Ways of receiving information	How have you received information about climate change at this Park/Refuge? (*n*=197)	In the future, how would you like to learn about climate change impacts and solutions at this Park/Refuge? (*n*=191)
Have not received any information on climate change from this Park/Refuge.	73	-
I do not want to learn about climate change impacts and solutions at this Park/Refuge	-	20
Indoor exhibits	1	8
Roadside exhibits	3	16
Trailside exhibits	3	33
Films, movies, videos	4	20
Living history/costumed interpretive programs	2	13
Park website	7	50
Printed materials (brochures, books, maps, etc.)	8	27
Electronic media/devices available to visitors	5	23
As a volunteer in the park	5	5
Children's activities	0	8
Ranger guided walks/talks	2	10
Self-guided tours	3	8
Other	3	3

Note. Response percentages do not sum to 100 as multiple selections were allowed.

Respondents were asked to comment on their satisfaction with the quality and quantity of climate change education in Harpers Ferry NHP. Most visitors surveyed indicated that the quality and quantity of climate change education in Harpers Ferry NHP were average (49% and 50% respectively, Table 20).

Table 20

Please rate your satisfaction with the current climate change education at this Park/Refuge.

	Response Percentages (%)				
Categories	Very good	Good	Average	Poor	Very poor
Quality of education (*n*=186)	7	19	49	20	6
Quantity of education (*n*=184)	7	19	50	19	6

Respondents were asked to agree or disagree with statements regarding how the survey was employed. The three statements listed scale into the concept of survey preference. Higher percentages in agree categories refer to a greater visitor preference for using an iPad in taking surveys rather than paper (Table 21). Most visitors surveyed were neutral when asked if they enjoyed taking the survey on an iPad (50%), and most were also neutral about taking surveys on an iPad rather than paper (30%). Visitors were also neutral when asked if they would enjoy taking future surveys on an iPad (43%).

Table 21

How much do you agree or disagree with the following statements?

	Response Percentages (%)				
Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I enjoyed taking this survey on an iPad (*n*=56)	5	30	50	11	4
I would rather take surveys on an iPad than paper (*n* =53)	19	23	30	21	8
I would enjoy taking future surveys on an iPad (*n* =53)	4	21	43	25	8

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