

Baxter State Park 2014 Research Summary Report

“Understanding the Role of Climate Change on Guiding Maine’s Tourism Industry”



*Photo Courtesy of Emily Wilkins-University of Maine*

Matt D. Scaccia: M.S. Graduate Research Assistant

Dr. Sandra De Urioste-Stone: Assistant Professor

University of Maine

School of Forest Resources

5755 Nutting Hall

Orono, ME 04469-5755

1/12/2015

***This work is supported by the USDA National Institute of Food and Agriculture, Hatch/Multi State project ME031424 and McIntire Stennis project ME041504.***

## Table of Contents

Summary of 2014 Park Research Activities.....	Page 1
Research Limitations.....	Page 2
Results/Discussion.....	Page 2
Concluding Remarks.....	Page 7
Appendix: 2014 Front-End Maine Visitors' Survey Instrument.....	Page 8

Tables

Table 1. Sampling locations used for this study.....Page 1

Table 2. The top eight most important reasons that participants chose to visit the Katahdin Region.....Page 2

Table 3. Open Ended Responses for Katahdin Region Visitors Who Believed that Climate Change **Would** Affect the local Recreation and Tourism industry.....Page 5

Table 4. Open Ended Responses for Katahdin Region Visitors Who Believed that Climate Change **Would Not** Affect the local Recreation and Tourism industry.....Page 6

Table 5. Open Ended Responses for Katahdin Region Visitors Who Were **Unsure** if Climate Change would affect the local Recreation and Tourism industry.....Page 7

Figures

Figure 1. The relative importance of the weather for participants while visiting the Katahdin Region.....Page 3

Figure 2. Beliefs regarding climate change affecting recreation and/or tourism in the Katahdin Region.....Page 4

**Summary of 2014 Park Research Activities:**

Between July 6 and August 15, 2014, a team of University of Maine students conducted a social science research study within Baxter State Park to gain a better understanding of visitors’ travel behavior and their attitudes toward the effects of climate change on the tourism industry in Maine’s Katahdin Region. The field research team, led by Matt D. Scaccia, sampled visitors at approximately two-week intervals at the following locations: Roaring Brook Campground, Abol Campground, Katahdin Stream Campground, Daicey Pond Campground, Kidney Pond Campground, and the Togue Pond Day Use Area. Dr. Sandra De Urioste-Stone was the principal investigator for this study. The other members of the research team included Jacob Foster, Dimitrije Howe-Poteet, and Amy E. Scaccia who were each trained as data collection research assistants. Data was also collected for visitors outside of Baxter State Park at various campgrounds and recreational areas throughout the Katahdin Region (defined as Millinocket, East Millinocket, Medway, and surrounding Unorganized Territories).

Visitors were requested to participate on randomly selected dates and times (between 9am and 4pm) in order to capture a range of visitors to the Park and the greater Katahdin Region. This was also to ensure that the research team would be able to interact with visitors during a variety of weather/atmospheric conditions. All adults (18 and older) that were encountered at each of the sampling sites were asked to participate in the brief (3-5 minute) travel survey interview being conducted. The front-end survey included questions about the participants’ purpose of travel, demographic background, and their beliefs about the effects that climate change may have on the tourism industry in the Katahdin Region (See appendix for a full example of the survey instrument used). Members of the research team did not openly reveal their attitudes about climate change in order to not bias any responses regarding the topic. Nearly all visitors that were approached gladly participated in the study. Data was collected using I-Pad devices and analyzed using the SPSS statistical software.

Different sampling locations were selected based on their visitor traffic. We used a one-stage cluster probability sampling design, to randomly select sampling location-dates in the Katahdin Region. Table 1 illustrates the locations where individuals were sampled how the number of responses were collected at each location.

Table 1. Sampling locations used for this study.

<b>SAMPLING LOCATION</b>	<b>NUMBER OF RESPONSES COLLECTED</b>
Baxter State Park (Non-specific/permitted location)	10
Daicey Pond	8
Katahdin Stream Campground	6
Roaring Brook Campground	5
Kidney Pond Campground	2
Katahdin Shadows Campground (Medway, ME)	9
	Total=40

### **Research Limitations:**

Due to restrictions with sampling locations, dates and time to conduct the front-end survey, and unique travel behavior of visitors to the region, data was collected from 40 participants throughout the entire Katahdin Region; 31 of which were obtained within Baxter State Park. This small sample size restricts our ability to generalize our results to the population of visitors to the region. Since campgrounds were used as the main type of sampling site, there was very little visitor turnover during site visits. It was also difficult to sample visitors in Baxter State Park due to the size of the park and restrictions of the sampling times and locations to conduct the research. As a result, we cannot analyze responses from the self-administered survey that included more in-depth questions on travel behavior and climate change.

### **Results/Discussion:**

As noted previously, a total of 40 visitors to the Katahdin Region were willing to participate in this study. Of the 40 visitors that were sampled, 31 participants were contacted within Baxter State Park. Given the relatively small overall sample size that was achieved, the results detailed within this report include both visitors contacted within Baxter State Park as well as outside of the park.

The main purpose participants reported for choosing to visit the Katahdin Region was for vacation/recreation/pleasure (85.0%) while the remaining participants reported that they live and recreate in the area (12.5%) or they were simply just passing through the region (2.5%).

Participants were asked to list their top 3-4 most important reasons for choosing to visit the Katahdin Region (not in a specific order). A total of 27 unique reasons were given for visiting the region. Table 2 lists the top eight most frequently mentioned important reasons that participants chose to visit the region. Clearly, most participants chose to visit the Katahdin Region for its natural characteristics and the recreational opportunities that are associated with Baxter State Park.

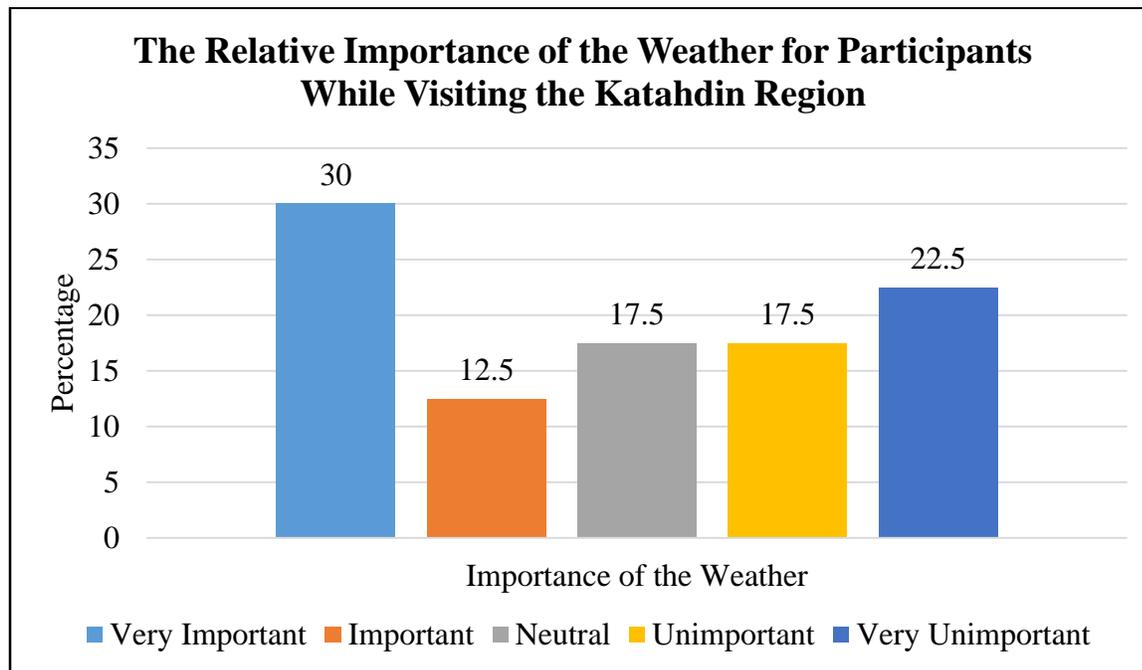
Table 2. The top eight most important reasons that participants chose to visit the Katahdin Region.

<b>ORDER</b>	<b>MOST IMPORTANT REASONS</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENT (%)</b>
1	Hiking	13	32.5%
2	Katahdin	12	30%
3	Nature/Woods/Outdoors	11	27.5%
4	Camping	10	25%
5	Simple Living/Peace/Quiet	9	22.5%
6	Beauty/Scenery	7	17.5%
7	Family Time	6	15%
8	Baxter State Park	4	10%

The demographic characteristics of participants were collected including their age, level of education, residency status, and how frequently they have visited the Katahdin Region in the past. The age of participants was relatively young with 70% being <50 years old. Participants also appeared to be well educated with 65% having earned a four-year college degree or higher. The majority of participants were Maine residents (57.5%) and most individuals in this study had visited the Katahdin Region previously (61.5%).

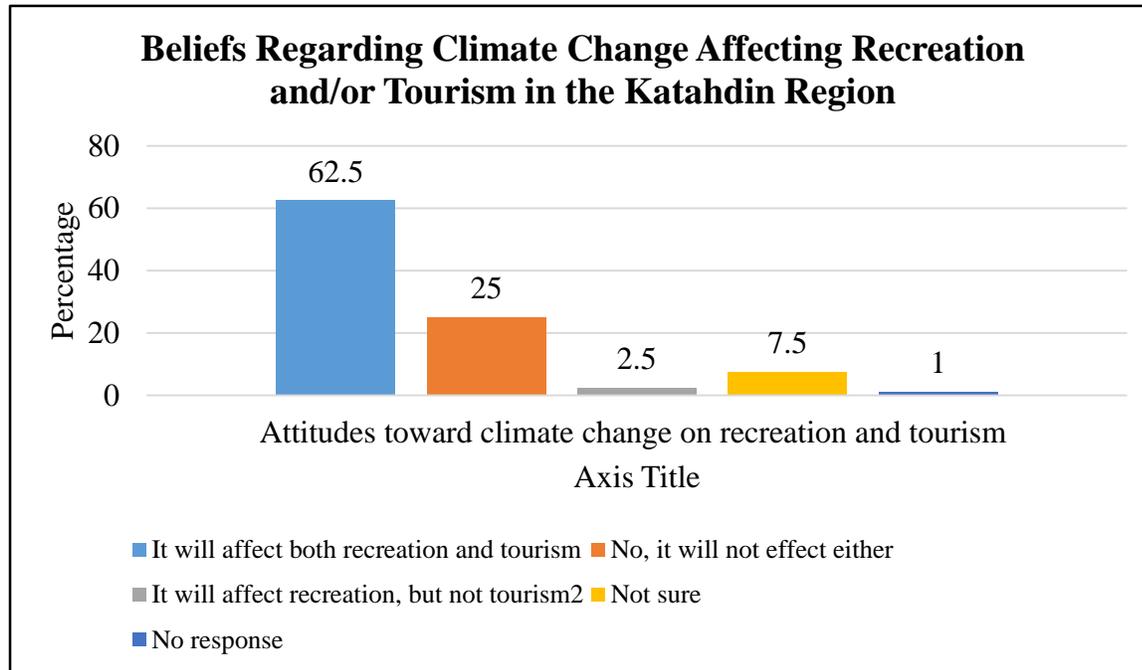
In order to gauge how likely changes in weather might affect visitation to the Katahdin Region, participants were asked how relatively important the weather was to them while taking their trip to the area. Responses were nearly split evenly between those who felt that the weather was either ‘very important’ or ‘important’ and those who felt it was ‘unimportant’ or ‘very unimportant’ (Fig. 1). In many cases people who felt that the weather was relatively unimportant to them noted that they had planned their visit to the area well in advance and could not predict the weather that they were going to encounter. Individuals who reported that the weather was important to them typically said they would not want to participate in certain activities (such as camping, hiking, etc.) if it was rainy or too hot. Given that Maine is expected to see wetter summers as a result of climate change, this may affect some of the visitors to the Katahdin Region.

Figure 1. The relative importance of the weather for participants while visiting the Katahdin Region.



Participants were asked directly about whether or not they believed that climate change will affect recreation and tourism in the Katahdin Region. The large majority (62.5%) believed that it would have some type of impact on the industry (Fig. 2).

Figure 2. Beliefs regarding climate change affecting recreation and/or tourism in the Katahdin Region.



Once participants were asked about their beliefs regarding climate change, they were asked to openly explain their beliefs in two or three sentences. These open-ended responses were recorded in order to obtain a fuller understanding of their beliefs about the topic. Perceptions of potential impacts to recreation and tourism included: recreation seasons and activities will change, ecosystems and habits will be affected (Table 3). Several participants were especially concerned with the likely impact to snowmobiling activities in the region. It appears that the majority of participants who believe that climate change will affect recreation and tourism in the Katahdin Region will be due to changes in the natural environment. Some of the key affects that participants cited as concerns included forest fires, tree diseases, changes in current timberline, droughts, and seasonal/weather related problems. Several comments mentioned that winter recreation would be negatively affected and that opportunities for mountaineering, winter camping, and snowmobiling will change. A common concern among participants was that various forms of harsher weather will affect people visiting because it may become too hot to recreate and that storms could affect when hiking trails are usable. A couple of participants did not cite specific reasons for *how* climate change will affect recreation and tourism, but still felt that it would affect them because they expect that climate change will affect everything.

Table 3. Open Ended Responses for Katahdin Region Visitors Who Believed that Climate Change Would Affect the local Recreation and Tourism industry.

	QUOTATION	GENDER	LOCATION INTERVIEWED
1	“Changing weather patterns means recreation seasons will change”	Female	Katahdin Region
2	“Can already see the changes in the weather, even today.”	Female	Katahdin Region
3	“Climate change will affect plant regeneration in high traffic areas especially.”	Female	Katahdin Stream Campground
4	“Depending on how the affects play out, harsh winters could affect winter camping and less snow could result in lower water levels for fish and recreation.”	Male	Roaring Brook Campground
5	“Don't know about Maine but it will effect everywhere. More forest fires and draughts.”	Female	Katahdin Region
6	“I believe that the weather has a huge impact on people coming here. If it gets too hot people will no longer want to come visit.”	Female	Katahdin Shadows
7	“I feel that if the weather changes, people will not come in the same way.”	Female	Katahdin Shadows
8	“I think it could affect the seasons that people visit. It could affect the times that people can fish on these ponds. It will also affect winter recreation as changes in the winter conditions affect snowmobiling etc.”	Female	Daicey Pond
9	“I think it will affect alpine vegetation and habitat.”	Male	Katahdin Stream Campground
10	“I think it will affect the fragile tundra ecosystem here.”	Male	Kidney Pond
11	“I think that it could affect winter recreation. There need to be very specific winter conditions to make mountaineering in the region possible.”	Male	Roaring Brook Campground
12	“I think that it will affect natural ecosystems negatively. Some people may not want to visit because Baxter State Park may not be always be seen as a pristine wilderness.”	Male	Katahdin Stream Campground
13	“I think that it will affect recreation and tourism here eventually because the weather will be changing.”	Male	Daicey Pond
14	“I think that it will affect winter snowmobiling.”	Female	Roaring Brook Campground
15	“I think that the blight in trees will be on an increase but I believe the coastal region will be hit hardest.”	Female	Roaring Brook Campground
16	“I think yes because everything is connected.”	Female	Katahdin Stream Campground
17	“If it gets hotter here it will negatively affect the types of activities that I pursue when I come to the region.”	Female	Daicey Pond
18	“In the short term no, but in 100 years out maybe some [changes will be seen]. Timberline will change.”	Male	Katahdin Region
19	“It will affect everything, most likely tourism and recreation.”	Male	Katahdin Shadows Campground
20	“It will make the snowmobiling season shorter.”	Male	Katahdin Region
21	“Longer season might bring more people to the areas. Trail closures from extreme weather might change how people recreate here.”	Male	Daicey Pond Campground
22	“More people may want to visit the area if the weather is nicer and vice versa.”	Female	Katahdin Stream Campground
23	“My house will be under water.”	N/A	N/A

	<b>QUOTATION</b>	<b>GENDER</b>	<b>LOCATION INTERVIEWED</b>
24	“Storms and weather keeps being worse people will not want to come out in the summer.”	Female	Katahdin Region
25	“The weather will be changing.”	Female	Katahdin Shadows Campground
26	“Will affect how we disperse our resources. No luxury.”	Female	Katahdin Region

While a minority of participants believed that climate change would not affect recreation and tourism in the Katahdin Region, most of them did believe, however, that climate change is actually occurring. The most typical type of response from this group of respondents was that regardless of the effects that climate change has, visitors will come to the region no matter what (Table 4). One participant noted that the Katahdin Region is known to have rugged characteristics and climate change may not deter people from visiting due to changes in weather, etc. Other participants believed that the effects of climate change would not be very severe and that other regions, such as the coast, will be more seriously affected. Out of the forty open ended responses, only three individuals outright denied that climate change is occurring.

Table 4. Open Ended Responses for Katahdin Region Visitors Who Believed that Climate Change ***Would Not*** Affect the local Recreation and Tourism industry

	<b>QUOTATION</b>	<b>GENDER</b>	<b>LOCATION INTERVIEWED</b>
1	“Don't believe in climate change. People will come no matter what.”	Female	Katahdin Shadows Campground
2	“Because this is an area known to have rugged terrain and temperatures, so even if the weather changes people will probably still come here.”	Female	Katahdin Shadows Campground
3	“I don't believe in climate change or think that humans are having an impact on the climate.”	Male	Daicey Pond
4	“I don't believe that it will affect anything for at least 100 years.”	Missing	Missing
5	“I don't think that it is going to have an effect in our lifetime. The climate is part of a natural cycle. I'm not sure that it has been proven yet.”	Male	Daicey Pond
6	“I don't think there is going to be climate change.”	Female	Katahdin Region
7	“I think no because the degree of climate change is not enough to have an effect.”	Male	Katahdin Stream Campground
8	“People will come here no matter what, unless there is some very drastic change like a forest fire for example.”	Male	Roaring Brook Campground
9	“Warming up but has most effect in the oceans but don't know about it in the mountains. Ice will maybe melt and it will get warmer. Tourists will still come to the area but maybe in 1000 years it will be different.”	Female	Katahdin Region

A small number of participants responded that they were unsure whether or not climate change will affect the region (Table 5). Of these four respondents, two were simply unsure about what the effects might look like, even though they believe that it is occurring. Another participant was not sure if the Katahdin Region is far enough north so that the area might escape the effects of climate change. Of all the respondents who were unsure, all of them did however express beliefs that climate change is occurring.

Table 5. Open Ended Responses for Katahdin Region Visitors Who Were Unsure if Climate Change Would affect the local Recreation and Tourism industry

	<b>QUOTATION</b>	<b>GENDER</b>	<b>LOCATION INTERVIEWED</b>
1	“I believe that climate change is undeniably occurring, but I’m not sure how it will affect recreation and tourism in the Katahdin region. It may be 20 or more years before we see any affects.”	Female	Daicey Pond
2	“I think that climate change will affect the area but people will come to the region no matter what. People could however be deterred from coming if the climate becomes increasingly dangerous and there were more tornados and hurricanes etc.”	Female	Katahdin Shadows Campground
3	“Simply not sure. It is hard to estimate the effects of climate change for this region.”	Female	Kidney Pond
4	“[I’m not] sure if an area this far north would be noticeably affected.”	Male	Daicey Pond Campground

**Concluding Remarks:**

Although only a relatively small sample size was achieved for this study, many of the open ended responses help to provide useful insights into visitors’ attitudes and beliefs regarding climate change and tourism in the Katahdin Region. It appears that the great majority of individuals that responded to this study believe that climate change will have impacts on the recreation and tourism in the region. Therefore, most visitors may be understanding of the need to implement adaptive strategies to help mitigate the effects of the problem.

Given that no participants were visibly upset/perturbed by the questions regarding climate change, it may be worthwhile to include questions about the topic if visitor surveys are conducted in the future. It turned out to be relatively difficult to conduct in person surveys in the park given the number of visitors at a given time and the large distances between the sampling locations throughout the southern area of Baxter State Park. A more practical method in the future may be to distribute “take home” surveys in a similar manner to the Baxter State Park Economic Impact Study (Whittington & Bissell, 2008).

Finally, the research team would like to greatly thank Park Director Jensen Bissell and Park Naturalist Jean Hoekwater for their cooperation and permission for allowing this study to be undertaken.

Appendix: Survey Instrument

# 2014 Front-End Maine Visitors' Survey

**Dr. Sandra De Urioste-Stone**  
Assistant Professor of Nature-Based Tourism  
University of Maine  
School of Forest Resources  
5755 Nutting Hall- Office #237  
Orono, ME 04469-5755  
sandra.de@maine.edu

**Matt D. Scaccia**  
M.S. Research Assistant/Field Leader  
University of Maine  
School of Forest Resources  
5755 Nutting Hall- Office #223  
Orono, ME 04469-5755  
matthew.scaccia@maine.edu

**1) What is your main purpose for visiting the Katahdin Region?**

- Vacation, recreation, pleasure
- Visit friends, relatives, family event
- Just passing through
- Shopping
- Business convention, meeting
- I live here and recreate here
- Other: \_\_\_\_\_

**2) What are the purposes of your trip to the Katahdin Region?**

- Vacation, recreation, pleasure
- Visit friends, relatives, family event
- Just passing through
- Shopping
- Business convention, meeting
- I live here and recreate here
- Other: \_\_\_\_\_

**3) What are your top 3-4 most important reasons for choosing to visit the Katahdin Region?**

Reason 1: \_\_\_\_\_

Reason 2: \_\_\_\_\_

Reason 3: \_\_\_\_\_

Reason 4: \_\_\_\_\_

**4) Is this your first visit to the Katahdin Region?**

Yes

No

**5) Are you a resident of the State of Maine?**

Yes (Skip to question 6)

No (Skip to question 7)

**6) In what Maine town do you permanently reside?**

\_\_\_\_\_

**7) In what U.S. State, Canadian Province, or foreign country do you permanently reside?**

\_\_\_\_\_

**8) What option best describes your travel party?**

Self

Couple

Immediate family

Extended family

Family and friends

Friends

Business associates

Organized group/club

**9) What is your travel group size?**

---

**10) What is your approximate age range?**

- 18-21
- 21-30
- 31-40
- 41-50
- 51-60
- 61-70
- 71-80
- 81-90
- 91-100
- No response

**11) Please describe your level of education.**

- Less than high school
- High school graduation/GED
- Some college, no degree
- 2-year college/vocational graduate
- 4-year college graduate
- Masters degree
- Doctorate degree
- Professional degree (MD, DO, etc.)

**12) Please rate the importance of the weather to you while taking this trip to the Katahdin Region:**

**Very Important-----Important-----Neutral-----Unimportant-----Very Unimportant**

**13) Do you believe that climate change will affect tourism and/or recreation in the Katahdin Region?**

- Yes, it will affect tourism, but not recreation (Skip to question 14)
- Yes, it will affect recreation, but not tourism (Skip to question 14)
- Yes, it will affect both (Skip to question 14)
- No, it will not affect either (Skip to question 15)
- Not sure (Skip to question 16)
- No response (End of survey)

**14) Why do you believe climate change will affect tourism and/or recreation in the Katahdin Region? (See question 13)**

---

---

---

**15) Why do you believe that climate change will not affect tourism and/or recreation in the Katahdin Region? (See question 13)**

---

---

---

**16) Are there any reasons you are unsure about climate change affecting tourism and/or recreation in the Katahdin Region? (See question 13)**

---

---

---

## **Official Use Only**

**Survey ID#** \_\_\_\_\_

**Did the participant provide their email address?**

- Yes
- No

**Gender of participant**

- Male
- Female

**Survey Site/Location** \_\_\_\_\_