Visitor Perceptions of Climate Change: Regional Differences in National Parks and National Wildlife Refuges

Shawn K. Davis, Ph.D.
Northern Michigan University
shawdavi@nmu.edu
Results
Staff & Visitor Surveys

Visitor Interviews
349 total

Visitor Survey
4,181 total
3233 National Parks
948 National Wildlife Refuges
51% male / 49% female – average age 54
83% Caucasian / 69% with a college degree
33% democrat / 18% republican / 17% independent
Place Attachment Theory

“The emotional bonding of people to places”

- Altman & Low
Place Attachment $\alpha = .92$

This park/refuge is very special to me
I identify with this park/refuge
I am very attached to this park/refuge
This park/refuge means a lot to me
Results

Visitor Surveys

How emotionally attached are you to this place?

- Strongly Attached
- Attached
- Somewhat Attached
- Slightly Attached
- Not Attached

[Bar chart showing distribution of responses]
“Authentic environmental commitment emerges out of firsthand experiences with real places on a small manageable scale”

- David Sobel
“... [climate change] didn’t mean a whole lot until I’m seeing this stuff. It’s happening. I guess I didn’t think it was that important before. I now see that it is”
Results

Visitor Surveys

Have you seen effects of climate change at this Park/Refuge?

- No: 3%
- Unlikely: 4%
- Perhaps / Neutral: 23%
- Yeah, Probably: 46%
- Yes! Definitely: 24%
Visitor’s desire to learn more about climate change in parks and refuges

- 3% Strongly Disagree
- 5% Disagree
- 25% Neutral
- 51% Agree
- 16% Strongly Agree
Free-Choice Learning

guided by the desires and motivations of each idiosyncratic learner, and therefore exhibits different learning outcomes as varied as the learners themselves

- Falk & Deirking
Results

Staff & Visitor Surveys

We asked the Staff: Are Your Visitors Concerned about Climate Change?

- Not Concerned: 13%
- Slightly Concerned: 32%
- Somewhat Concerned: 39%
- Very Concerned: 8%
- Extremely Concerned: 1%
Visitor’s Concern Regarding Climate Change

- 8% Not Concerned
- 9% Slightly Concerned
- 27% Somewhat Concerned
- 34% Very Concerned
- 22% Extremely Concerned
Norm Activation Theory

Problem Awareness
Ascription of Responsibility
Outcome Efficacy
Ability to Help
How much do you think climate change will harm this Park/Refuge?

- Don't know: 5%
- Not at all: 5%
- Only a little: 11%
- A moderate amount: 37%
- A great deal: 42%
... [The earth’s] temperatures are warmer now than they used to be probably from the greenhouse gases society has been emitting and that leads to an overall warming, and different areas may experience that differently ... [They] started calling it climate change because some areas may experience drought and others may experience more rain and more snow ...
I feel responsible for contributing to the condition of the climate.
Salience $\alpha = .89$

How worried are you about climate change?

How important is the issue of climate change to you personally?

How often do you think about climate change?
Results

Visitor Surveys

Are you willing to change your behavior during your visit to help reduce the impacts of climate change at this place?

- Extremely Willing, 29%
- Very Willing, 38%
- Somewhat Willing, 24%
- Slightly Willing, 4%
- Never! Not at all!, 5%
Regression model showing norm activation analysis results (dotted lines are not significant, * refers to significant at $p < .001$).
Audience Segmentation in Parks/Refuges

**May 2011**
- Alarmed: 12%
- Concerned: 27%
- Cautious: 25%
- Disengaged: 10%
- Doubtful: 15%
- Dismissive: 10%

**Jan - Dec 2011**
- Alarmed: 29%
- Concerned: 21%
- Cautious: 20%
- Disengaged: 9%
- Doubtful: 15%
- Dismissive: 7%

*Highest Belief in Global Warming Most Concerned Most Motivated*

*Lowest Belief in Global Warming Least Concerned Least Motivated*

Proportion represented by area

Source: Yale / George Mason University
Differences Between Parks and Refuges

<table>
<thead>
<tr>
<th>Comparison</th>
<th>National Parks</th>
<th>National Wildlife Refuges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is climate change happening</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Salience</td>
<td>2.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Place Attachment</td>
<td>2.0</td>
<td>2.4</td>
</tr>
<tr>
<td>See effects of climate change</td>
<td>2.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Learn more about climate change</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>
### Analysis of variance results for concepts and variables between National Parks and National Wildlife Refuges

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think climate change is happening</td>
<td>1</td>
<td>0.02</td>
<td>0.01</td>
<td>.933</td>
<td>.00</td>
</tr>
<tr>
<td>Salience</td>
<td>1</td>
<td>0.21</td>
<td>0.21</td>
<td>.647</td>
<td>.00</td>
</tr>
<tr>
<td>Place Attachment</td>
<td>1</td>
<td>0.00</td>
<td>0.00</td>
<td>.972</td>
<td>.00</td>
</tr>
<tr>
<td>The effects of climate change can be seen at this park/refuge</td>
<td>1</td>
<td>67.20</td>
<td>75.64</td>
<td>&lt;.001</td>
<td>.02</td>
</tr>
<tr>
<td>I would like to learn more about climate change at this park/refuge</td>
<td>1</td>
<td>0.03</td>
<td>0.03</td>
<td>.862</td>
<td>.00</td>
</tr>
</tbody>
</table>
Regional Differences

Puget Sound
Kenai Peninsula
Washington D.C.
Southern Florida
Northern Colorado

Is climate change happening
Salience
Place Attachment
Effects seen
Learn more
Salience – Puget Sound, Kenai Peninsula, Southern Florida

Frame the discussion of climate change in terms of visitors’ values

Ingenuity
Innovation
Stewardship
Interdependence
Responsible Management
Effects Seen – Washington D.C.

Connect visible phenomena in the park/refuge to climate change

- Sea Level Rise
- Superheated Run-off
- Changing Vegetation Patterns (e.g. cherry blossoms)
- Urban Heat Island Effect
- Erratic Weather & Storm Intensity
Is it Happening? – Northern Colorado

Separating Human and Natural Influences on Climate

Global Temperature Change (°F)

Year

Observations
Natural and Human Factors
Natural Factors Only
THE IMPORTANT MESSAGE ABOUT COMMUNICATING CLIMATE CHANGE:

There is no template or “ready-made” solution! We need to **experiment with** – and – **test** different strategies.

Making progress means that we link our understanding of ecological changes with our **understanding of our audience(s)** and develop meaningful messages to engage them in climate dialogue and action.
For More Information & Reports:
climatechangepartnership.org

Special Thanks to the CCEP Partners & Research Team!

This project is funded by a grant from the National Science Foundation, award number DBI-1059654