

Recreational activities, place attachment, and intended future visitation under climate change conditions

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Introduction

Climate is changing globally, bringing increasing average temperatures, more precipitation, and more extreme weather events. This is already impacting where visitors' travel, and will likely continue altering visitors' destination selection and behavior in the future (Gössling et al. 2012). Previous studies have shown place attachment is an indicator of future visitation to an area (Ednie, Daigle & Leahy 2010). Place attachment describes how bonded people are to a particular location, both emotionally and cognitively (Altman and Low 1992). Additionally, visitor's attachment to a place can alter their perceptions and behavior, making place attachment important to understand for visitor management (Kyle, Absher&Graefe 2003). This study aims to investigate the relationships between recreational activities participated in, place attachment, and intended future visitation under differing weather and environmental conditions resulting from climate change.

Methods

A two-stage cluster probability sampling design was utilized by choosing random days to administer surveys throughout Maine, USA, and random visitors once on-site (Scheaffer et al. 2012). Visitors were asked for contact information to send reminders about the survey, as suggested by a tailored survey design method (Dillman, Smyth & Christian 2009). The overall response rate was 43.4% (883/2036). A total of 416 visitors to Mount Desert Island (MDI) responded to a self-administered questionnaire after being randomly selected throughout Maine. MDI is the largest island off the coast of Maine, USA, and is home to Acadia National Park, which receives between 2.5-3 million visits annually. Visitors were sorted into clusters using a multivariate two-step cluster analysis based off visitors' identity, dependence, and belongingness to MDI. This analysis yielded three segments of MDI visitors: those who had low, medium, and high attachment to MDI.

Results

Those who had a high attachment to MDI participated in more activities and had greater participation in nature-based activities. The high attachment group participated in a mean of 6.3 activities on their trip to Maine, the medium group participated in 5.08, and the low attachment group participated in 4.63 ($p=0.00$). There were significant differences between percentage of each group that participated in nature-based activities, including: backpacking/hiking, biking, canoeing/kayaking, and viewing wildlife. The high attachment group had the highest percentage of participation in all nature-based activities.

Additionally, many visitors, especially those with low place attachment, indicated they would change their future visitation if certain conditions were altered (Table 1). Those with low attachment to MDI are the most likely to not return to Maine under potential climate change conditions. Those with high place attachment are overall less likely to change intended future recreational behavior with climate change.

Table 1. How varying conditions would influence the decision of visitors to MDI to travel to Maine on future trips, by level of attachment to MDI. Scale: 1 (extremely likely to visit) – 5 (extremely unlikely to visit), with 3 being “no effect.”

| | Attachment to MDI | | | Levene's stat (sig) | ANOVA F/ Welch (sig) |
|---------------------------------|-------------------|-------------------|---------------------|---------------------|----------------------|
| | Low (n=83) | Medium (n=168) | High (n=92) | | |
| Extreme weather events | 4.13 ^a | 4.02 ^b | 3.74 ^{a,b} | .71 (.49) | 4.72 (.010) |
| Hurricanes | 4.44 ^a | 4.42 ^b | 4.09 ^{a,b} | .09 (.91) | 5.14 (.006) |
| Reduced snow | 3.33 | 3.23 | 3.03 | 6.28 (.00) | 2.52 (.082) |
| Flooding | 4.17 | 4.20 ^a | 3.93 ^a | .36 (.70) | 3.08 (.047) |
| Increased presence of ticks | 3.58 ^a | 3.51 | 3.23 ^a | 1.00 (.37) | 3.79 (.024) |
| Increased presence of mosquitos | 3.54 ^a | 3.44 ^b | 3.12 ^{a,b} | 2.70 (.07) | 6.11 (.002) |
| Increased ice storms | 4.28 ^a | 4.07 ^b | 3.79 ^{a,b} | .01 (.99) | 7.45 (.001) |
| High wind gusts | 3.58 ^a | 3.44 ^b | 3.16 ^{a,b} | 2.08 (.13) | 6.08 (.003) |
| Increased rain | 3.65 ^a | 3.44 | 3.31 ^a | .43 (.65) | 3.73 (.025) |
| Heat waves | 3.26 ^a | 3.04 | 2.87 ^a | .63 (.53) | 4.55 (.011) |
| Beach closures | 3.15 | 3.18 | 3.10 | .27 (.76) | 0.36 (.701) |

^{ab} Means followed by the same letter are statistically significant at $\alpha = 0.05$ found using Tukey's Post Hoc test for equal variances, and Games-Howell when variances were unequal.

Discussion

Results are important because tourism is one of the largest industries in Maine and is a critical component of many local economies. Revenue from visitors to Acadia National Park supports the communities on MDI. Therefore, it is important to understand how visitation might be altered under climate change. To keep visitors returning to Maine with potential climate change conditions, it would be beneficial to increase visitor attachment to areas within Maine. Additionally, understanding how the recreational activities participated in affects place attachment is useful for management. To foster place attachment and thus make visitors less likely to change visitation behavior under climate change conditions, it would be useful to market and promote more nature-based activities at the visitor's centers or as part of a tourism advertising campaign.



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