

CLIMATE CHANGE, TOURISM, AND COMMUNITY RESILIENCE IN THE BAY OF MACHIAS

Findings from a 2017-2020 interview study

Key Findings:

- Flooding emerged as a top concern
- Community challenges: Financial inputs and old infrastructure
- Community strengths: Social networks, partnerships, shared conservation values, & people-place relationships

Study Background

Many tourism destinations are a series of host communities providing tourism services and attractions. Hence, the concept of community resilience can be applied to tourism destinations. In this study, community resilience refers to the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change¹. Specifically, we focus on community resilience to climate change.

What Makes a Community Resilient?

Resilient host communities develop individual and collective capacities to respond to and influence change². These capacities refer to social, financial, built, natural, and political resources³. For this study, we used the community resilience framework pictured in Table 1 to analyze destination resilience in the Bay of Machias.

Table 1. This framework was developed by Drs. Berkes and Ross⁴ after a review of the psychological and ecological resilience literature. The following attributes, when present in some combination, contribute to community resilience.

Attribute	Meaning
Social networks	Networks of collaboration and cooperation
Engaged governance	Social and institutional structures and processes that engage citizens with decision-making processes
Leadership	Leadership among individuals/groups to bring together diverse perspectives and facilitate decision-making and collective action
Values and beliefs	Shared beliefs, values, and ideas within a community
Knowledge, skills, & learning	Knowledge sharing, partnerships, technology and innovation, and skill development
People-place relationships	Strong emotional bonds that influence attitudes and behaviors within a place; lifestyle values
Diverse & innovative economy	Ample economic opportunity; diversified livelihood activities
Community infrastructure	Built infrastructure and tourism superstructure
Positive outlook	Ability to accept change often manifest as feelings of hope, optimism, empowerment, and self-efficacy



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Study Goal: to determine what community assets enhanced destination resilience to climate change.

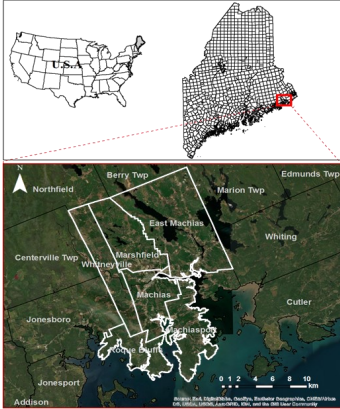


Figure 1. Study site towns of Machias, Machiasport, East Machias, Whitneyville, Marshfield, and Roque Bluffs

Methods

- ◆ Interviews with 17 nature-based tourism stakeholders working in the Bay of Machias
- ◆ Stakeholders included business owners, researchers, municipal officials, and non-profits whose mission supports tourism
- ◆ Data analyzed using multiple rounds of coding, concept maps, quotations, and analytic memoing⁵

Summary of Results

- ◆ Flooding in low-lying areas, such as downtown Machias, emerged as an issue of concern for the majority of participants.
- ◆ Community strengths to adapt to climate change included social networks, engaged governance, leadership, positive outlook in the community's ability to act in the face of climate change, and partnerships that allowed the sharing of knowledge, skills, and resources.
- ◆ Interview participants described aged infrastructure (and limited tourism infrastructure in some parts of the study site) and difficulties diversifying livelihood options (e.g., hesitation or lack of support for tourism) as challenges.

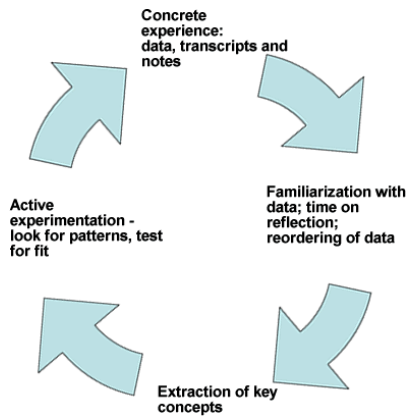


Figure 2. Overview of interview data analysis process

- ◆ Connection to place was strong among residents, though challenges in retaining youth in the area were described. Similarly, the belief that natural resource conservation was important seemed to be largely shared; however, participants described their communities as having mixed beliefs about the reality and nature of climate change.

Table 2. Summary of strength and areas needing improvement to increase climate change resilience in the Bay of Machias destination.

Community Resilience Attribute	How's the Bay of Machias doing?
Social networks	Strong
Engaged governance	Strong
Leadership	Strong
Positive outlook	Strong
Knowledge, skills, & learning	Strong
People-place relationships	Mixed
Values and beliefs	Mixed
Diverse and innovative economy	In need of development
Community infrastructure	In need of development

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Illustrative Quotes from Participants

Table 3. This table provides examples of participant quotes to illustrate how the data were coded using the Berkes and Ross community resilience framework. All participants were given pseudonyms to protect confidentiality.

Resilience Attribute	Example Quote
Social networks	And the sense of community, everybody knows everybody and as much as a deterrent those low population numbers can be, sometimes that sense of community creates is invaluable. Let there be a disaster and everybody pulls out all the stops to help. —Molly
Engaged governance	I know these municipal officials very well and they know me. And so when I need to, ya know, get support letters for a regional request [...] they were like ‘Absolutely, I am right behind you, what do you need?’ —Beth
Leadership	We have an intricate, intricate state and federal system that supports [the lobster fishery management] but is largely managed by the community and has done an incredible job of stewarding the resource. —Greg
Values & beliefs	It is tough because [the area] is very conservative and really low income, but they know what is going on in their hearts. They know what is going on, so we can work with that if we are smart about it. —Tony
Knowledge, skills, & learning	We discovered that Machias downtown, most of the large employers are very, very vulnerable to storm surge and sea level rise related flooding. And they weren't aware of that before [the mapping work]. —Nancy
People-place relationships	I hope that's a reversing trend, you know, that our best and our brightest aren't all going out, that some of them are going to stay here because the Machias area of Washington County is a unique place. —Kathy
Diverse & innovative economy	We were dependent on fishing, lobstering, forestry, those are sort of the Maine, blueberries and agriculture and things. So those are kind of in the realm of to support your livelihood for the future. —Ethan
Community infrastructure	[M]ost bridges in Maine are at least a hundred years old. So the chances of getting that changed are probably little to none because [Maine Department of Transportation] can't afford to replace the ones that they need to replace, right? Never mind one that's functioning right. So we're probably 50 or 60 years out from seeing any chance of change. —Dianne
Positive outlook	Now I see a shift and it is a shift in optimism. First of all, they are not waiting for Augusta to come and help us but they are doing it themselves and they are making changes on their own, they are not waiting for someone to come in on a white horse and save us. —Molly

“[W]e have richness, and people, and their richness and values. It seems to be lacking in some other places...[W]e are not going to be the richest financially. So? [...] We can be the richest when it comes to human values and I think that is really important.” —Mary



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Summary of Findings

- ◆ Flooding emerged as a top climate change concern among interview participants.
- ◆ Climate change resilience will be different across communities and tourism destinations, with no “one size fits all” solution.
- ◆ The Bay of Machias offers an example of how social, natural, human, and political resources can increase a community’s resilience to climate change even when other resources (e.g., financial and built) are still being developed.
- ◆ Maintaining long-term partnerships, leveraging skills and knowledge across individuals and organizations, and engaging locals with decision-making processes will be important as Machias develops as a tourism destination and continues to adapt to climate uncertainties.



About the Author

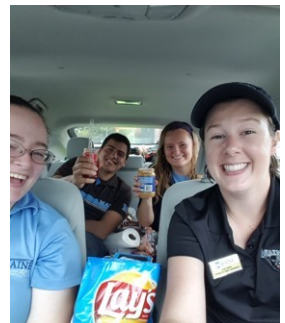
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