

Nature-Society Relationships Influence Household Adaptation to the Impacts of Climate Change

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Abstract

Individuals can adapt to the impacts of climate change by acting in anticipation of or in response to change, but what motivates households to act? This research draws on human-environment geographies to examine if social-ecological processes influence the amount of adaptation practices that are implemented by households. Results suggest that the amount of adaptation practices implemented by households in this study were motivated primarily by their (1) feelings of concern for the future of local areas and their place identity, (2) situated knowledge of local ecological histories, and (3) high valuation of regional provisioning ecosystem services.

Methods and Tools

A **systematic literature review** was conducted from 2018-2020 to determine the early indicators of climate change in the Arctic according to research studies that included local communities. Nearly 100 articles were included in the systematic review, and an adaptation typology was created.

In 2021, an **online questionnaire** and **mapping exercise** was launched to determine if households in Iceland are adapting to the early indicators of change. Over 70 households took the survey. A **statistical analysis** was conducted on these data using RStudio to determine if any of the adaptations that households implemented were motivated by social-ecological processes.

In 2022, fieldwork was conducted to verify and build on results using place-based **semi-structured interviews**.

Results and Discussion

Systematic literature review results suggest four primary impact indicators of early Arctic climate change: **(1)** degradation of land- and marine-based Arctic ice; **(2)** changes in ecosystems, including altered species health, migration, habitats; **(3)** changes in weather patterns; and **(4)** changes in hydrogeological risks and more frequent or intense erosion of slopes and coastal areas, mudslides, avalanches, and ground slumping.

Statistical results suggest that the amount of adaptation practices implemented by households in this study were motivated primarily by **(1)** feelings of concern for the future of local areas and their place identity, **(2)** situated knowledge of local ecological histories, and **(3)** high valuation of regional provisioning ecosystem services.



Image 1. Photograph taken during fieldwork in Seydisfjörður, Iceland outside of a cultural heritage museum that features critical local historical artifacts and identities.

Experiential Learning

I was joined for fieldwork in 2022 by two UGA graduate students, **Kate Foral**, MPH in Environmental Health Sciences, and **Sloane Sengson**, MPH in Disaster Management. They assisted in recruiting participants, conducting interviews, and inputting data. We were also joined by a local translator who assisted with participant recruitment and helped us follow cultural norms.

This research turned into an opportunity for immersive field-based learning experiences in disaster management that crossed disciplinary, generational, and political boundaries.

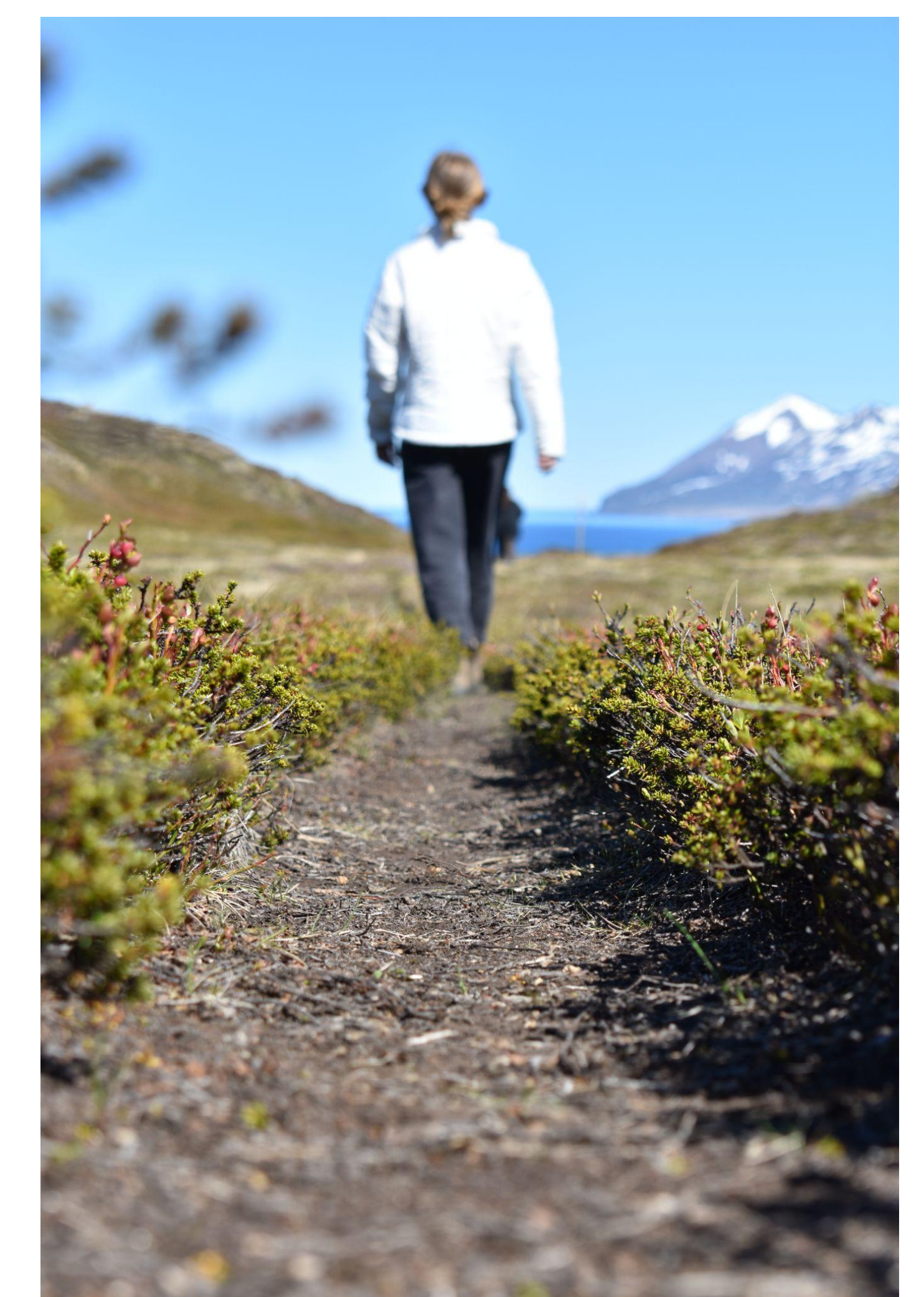


Image 2. Photograph taken during fieldwork in May and June, 2022. After conducting interviews with local residents, the research team went for a hike along protected areas on the island of Hrísey, Iceland.

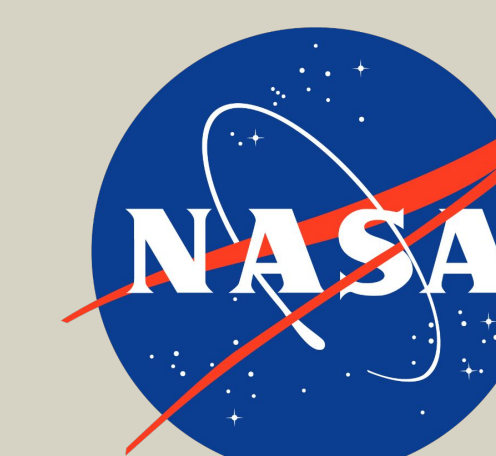
Next Steps

- The next steps for this project consist of, but are not limited to:
- **2023:** Analyze of interviews; Publish in peer-review journals
 - **2024:** Apply for funding; Conduct in-person fieldwork
 - **2025:** Publish in peer-review journals and disseminate

Acknowledgements and Thank Yous

[Thank you to all of the individuals and communities of North Central Iceland who participated in this research!](#)

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