

The Role of Volunteerism in Bolstering Community Climate Capacity:

A Case Study Approach to Explore Opportunities for Rural Maine

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ABSTRACT

Maine's rural communities are challenged with complex climate planning and preparedness in an environment with limited resources and competing priorities. They do not have the capacity to undertake climate change mitigation or adaptation projects alone. Through existing literature and case studies, this paper highlights the opportunity and benefit of increased investment in recruitment, education, and training for local volunteers, to increase the capacity of rural Maine communities to effectively respond to climate risks.

INTRODUCTION

With over 5,000 miles of coastline and as one of the most rural states in the nation, Maine's communities face unique challenges in addressing the impacts of climate change. Rising sea levels, warming waters, extreme precipitation, and rising temperatures threaten both the environment and local economies. Rural communities often consist of populations that are more vulnerable to these climate impacts because of their remoteness, isolation from central planning agencies, reliance on natural resource industries, and higher percentage of residents living in poverty. Considering that over half of US coastal communities affected by climate hazards such as sea level rise are socioeconomically vulnerable, equity in resource distribution and an array of adaptive responses—particularly ones that preserve community cohesion (Bhattachan et al. 2018)—are needed to prepare against physical exposure to sea level rise and to bolster adaptive capacity. As the oldest state in the nation with a median age of 44.8 years and 23 percent of the population age 65 or older (Maine State Economist 2024), Maine's communities are further burdened by the fact that their limited professional municipal staff must address the complex challenge of climate impacts alongside competing and seemingly more urgent issues such as affordable housing, access to health care and emergency services, and quality education.

In this paper, we examine the power of volunteerism, concepts such as productive aging, and prominent challenges of rural communities in addressing climate change. Through four case studies, we explore the opportunities for increased investment in recruitment, education, and training for local volunteers in Maine to best support rural communities in climate planning, stewardship, and the capacity needed to

effectively respond to climate risks. By equipping volunteers with the necessary skills and resources, Maine can foster a more resilient and inclusive approach to climate adaptation, one that supports both climate-readiness and community well-being.

THE ROLE OF VOLUNTEERISM IN BUILDING CLIMATE RESILIENCE

This literature review provides an overview of environmental volunteerism and its importance, who the engaged audiences are, and a broader conversation about rural communities: what are prominent struggles, opportunities for growth, and how to best set these communities up for success in climate planning, stewardship, and adaptation. We compiled articles through a comprehensive search for literature that explored such topics, including rural communities and their climate needs, volunteerism, municipal planning and home rule, and climate change needs, hazards, and planning in Maine.

Volunteerism

Volunteerism involves the contribution of time, skills, or resources to benefit others or the broader community, often without direct financial compensation (Wilson 2000). Volunteerism is a social and civic practice that connects individuals to community networks and

can contribute to social cohesion, resilience, and participatory governance (Speevak-Sladowski et al. 2013). Volunteerism can take multiple forms, from formal roles within organizations to informal efforts that respond to emerging local needs or crises (Whittaker et al. 2015). In the context of the environment, volunteerism often overlaps with stewardship activities, such as habitat restoration, monitoring, or education programs (Ding and Schuett 2020). Importantly, ideas that underly volunteerism, and especially environmental volunteerism are not universal. Some Indigenous scholars and communities perceive humans as part of the ecological system, rather than as caretakers, highlighting the need for environmental programs to acknowledge and incorporate diverse worldviews (McLeod et al. 2024).

Motivations for Environmental Volunteerism

Motivations for volunteerism vary widely across groups, and individuals volunteer for a range of personal, social, and values-driven reasons. Volunteers are often motivated by personal interests and enjoyment, opportunities for learning and skill development, the desire to find purpose and be engaged in everyday life, and concern for future generations (Ding and Schuett 2020; Same et al. 2020). Shared values within social networks and past participation in environmental groups positively influence individuals' willingness to engage in stewardship behaviors (Church et al. 2023). Social connection and a sense of belonging, alongside feeling supported and recognized within a volunteer role, further reinforce volunteers' commitment and satisfaction (Same et al. 2020). Importantly, motivations can also evolve over time (Sextus et al. 2024). Hoffman (2020) noted that environmental volunteer programs in community green spaces can foster shared community values, trust, and social connectedness. Understanding these motivations provides a foundation for examining the social and personal benefits of environmental volunteering, such as self-efficacy, sense of community, and social capital, and the ways in which they can support sustained engagement and long term-commitment in environmental volunteer programs (Bramston et al. 2010). Şentürk and Türan Tüylüoğlu (2022) note that by connecting individuals to collective goals, volunteerism serves as a way to address social, environmental, and systemic challenges while fostering adaptive and resilient communities.

Volunteerism and Older Adults

Productive aging includes a range of activities that older adults may engage in, including volunteering, formal and informal learning, and caregiving, with the goal of aging well (Dommaraju and Wong 2021). Volunteering supports older adults' social connectedness, sense of belonging, and opportunities for civic engagement and leadership (Carr et al. 2015). Environmental programs, in particular, allow older adults to contribute meaningfully with their communities, build intergenerational relationships, and reinforce a sense of purpose and community identity (Chen et al. 2022). While barriers for older adults to engage in volunteer efforts exist (such as perceived lack of experience or health concerns), volunteering presents potential benefits for an aging population (Petriwskyj and Warburton 2007). These include social benefits that often work in tandem with other cognitive and physical health benefits to create a holistic and positive experience for participants. By integrating opportunities for civic leadership, engagement, and environmental stewardship through leveraging the experience and building the knowledge of older adults, environmental volunteering programs for older adults can exemplify how volunteerism can address social, environmental, and systemic objectives while supporting productive aging and lifelong community participation (McLeod et al. 2024).

Outcomes of Environmental Volunteerism

Environmental volunteer programs offer a mix of social, personal, and community benefits. Volunteers also experience increased social connectedness, empowerment, and sense of purpose in stewardship initiatives (Hoffman 2020). Environmental stewardship activities can promote learning, build trust and collaboration among diverse groups, and encourage long-term commitment to sustainable practices (Ding and Schuett 2020). Collectively, environmental stewardship programs contribute not only to positive ecological outcomes but also to enhanced wellbeing, stronger community cohesion, and the fostering of shared values and shared hope for the future (Church et al. 2023). While environmental volunteering has broad benefits, its role in rural communities is particularly significant, as volunteers often help fill gaps in local capacity for climate adaptation.

Rural Communities

Rural communities may face acute climate vulnerabilities, often due to dependence on natural resources (e.g., agriculture, fishing), aging infrastructure, limited municipal capacity, and dispersed populations (MCC STC 2024). However, they also possess unique assets: strong local identities, informal support networks, and a deep knowledge of and connection to land and place. These strengths can be harnessed for adaptation—but only if structural barriers are addressed. This includes compounding risks, as rural economies are both ecologically vulnerable and under-resourced in terms of adaptation planning (Francini et al. 2021). Additionally, local governments often operate in fragmented systems without coordination mechanisms, leading to duplicative or ineffective efforts (Homsy and Mildred 2013). Because of underfunding and staff shortages, rural adaptation often falls to volunteers—many of whom are older adults. While this model can be empowering, it also introduces fragility: volunteer burnout, lack of training, and uneven engagement are major barriers. Overreliance on unpaid labor exposes systemic weaknesses in rural resilience planning (Shoreman-Ouimet et al. 2024). This combination of lack of communication and knowledge between sectors impedes productive and effective response to community needs.

Climate Planning in Maine

Climate planning in Maine is shaped by state-led strategies as well as local initiatives against the backdrop of the state's system of home rule, which grants municipalities control over local decision-making. Planning efforts often rely on both volunteer committees and municipal capacities to serve in decision-making roles, yet Johnson et al. (2019) highlight that these decision-makers and volunteers frequently encounter limited technical resources or access to localized climate data and often rely upon nonscientific information sources. While this reliance upon community-sourced efforts can foster strong local engagement for long-term community-driven adaptation, it introduces additional challenges such as volunteer burnout, uneven participation, and gaps in expertise. State-led initiatives, including Maine Won't Wait and the Community Resilience Partnership, provide guidance, funding, and frameworks to support municipal planning, integrate scientific data, and strengthen collaboration, helping to align local action with broader statewide climate goals (MCC STC 2024).

Maine's communities have a strong foundation for volunteer engagement, particularly in environmental and civic activities. Older adults represent a substantial segment of the state's population, and often bring time, experience, and opportunities for engagement through volunteering and community leadership (Carr et al. 2015). More broadly, Mainers demonstrate high levels of civic engagement, including attending public hearings, contacting elected officials, and submitting public comments, which supports participatory policymaking and ensures that local priorities inform planning and policy (Brown et al. 2025). While volunteer turnover and perceived lack of expertise of volunteers continue to be barriers for volunteerism to support climate planning, engaged local networks, strong place-based identities, learning opportunities, and informal support systems further contribute to social capital that can be mobilized for community-driven climate actions (Church et al. 2023).

Adaptive Capacity

Adaptive capacity is a core component of community resilience. It is defined as the ability of a system to respond to change through adaptation or transformation, not just to maintain its previous state but to thrive and develop positively and justly amidst change (Berkes 2013). It includes multiple elements such as learning and information, governance, social capital, agency, and people-place connections. Learning and information not only involve access to knowledge, but also the processes through which communities recognize change, attribute causes to that change, assess responses, and reframe problems, incorporating memory from past experiences. Social capital captures the role of relationships and networks in supporting cooperation and knowledge sharing (Cinner and Barnes 2019), while people-place connections reflect an attachment to local environments and communities, supporting stewardship and engagement (Hoffman 2020). Together, these elements demonstrate how adaptive capacity represents a set of capabilities that are embedded within communities and that support communities in anticipating, responding to, and thriving amidst environmental and social change (Magis 2010).

Governance Lens for Volunteerism

Volunteer engagement is shaped by both individual characteristics and community contexts and can also be framed through the lens of governance frameworks that shape collective decision-making (Stukas et al. 2016).

Framing environmental volunteer programs through a governance lens highlights how decentralized volunteer efforts (where multiple actors at different scales contribute to decision-making) can operate within broader polycentric environmental systems. In a polycentric system, the responsibility and authority for natural resource management is distributed across overlapping local, regional, and national institutions (McLeod et al. 2024). Leadership, civic engagement, and environmental action can be mutually reinforcing, particularly by enabling older adults to stay socially connected and contribute meaningfully to their communities (Chen et al. 2022). Environmental volunteer programs not only support environmental and ecological outcomes but also strengthen community resilience and participatory governance structures.

Volunteer efforts are also effective when integrated with governance structures that enable meaningful participation (UNV 2011). Maine's home rule framework grants municipalities primary control over decision-making, creating a decentralized system in which authority is distributed across multiple levels. In practice, this supports a polycentric governance structure, where municipal governments, state agencies, and community actors, including volunteers, all contribute to climate adaptation (Ostrom 2009). Volunteers contribute critical local knowledge, a contextual understanding of vulnerabilities, and social connections that can bolster climate action and environmental stewardship (Johnson et al. 2019). When these capacities are effectively harnessed, they have the potential to strengthen participatory governance and climate adaptation planning processes and expand the reach and effectiveness of state and local climate initiatives.

CASE STUDIES OF CLIMATE VOLUNTEER PROGRAMMING

Maine combines many studied rural dynamics: aging infrastructure and population, limited municipal capacity, and climate-sensitive natural resources industries like farming, fishing, and forestry. Maine communities are already grappling with the impacts of climate change such as sea level rise, extreme precipitation, drought, and warmer ocean and air temperatures (MCC STC 2024). Volunteer efforts—ranging from informal gatherings to formalized municipal committees—are working across the state to tackle these issues. While

Maine has a strong climate action plan (MCC 2024), gaps remain in uneven capacity across municipalities, limited technical assistance, and challenges in engaging under-resourced communities. All of these factors make Maine an ideal location for volunteer-led community climate adaptation. The following four case studies explore examples of statewide volunteer-training and community climate-capacity building programs in California and New York, as well as a volunteer-support and a volunteer-led effort in Maine.

Statewide Volunteer Training Programs

Cornell Climate Stewards

Founded in 2021, Cornell's Climate Stewards program aims to equip volunteers with the resources, knowledge, and confidence to be proactive in addressing the impacts of a changing climate. The program, led and managed by Cornell Cooperative Extension, highlights how volunteerism can amplify local climate action in New York State. To become a climate steward, participants complete 12 weeks of research-based training on topics such as climate change science, mitigation, adaptation, working with local governments, and communication. After completing the training, participants develop and implement their own community climate project with support from extension staff. Stewards' projects often aim to help their local municipalities become a New York State Climate Smart Community, which requires passing a municipal resolution and completing certain mitigation and adaptation actions. Examples of past projects by climate stewards include making guides for smart fertilizer management, planting pollinator pathway gardens, and teaching plant-based cooking classes.

Through the program, Cornell Cooperative Extension leverages existing infrastructure while adding new capacity to New York's climate space, creating a self-propelling cycle of change. Present across all New York State counties with the mission to connect communities with research from Cornell University's College of Agriculture and Life Sciences and College of Human Ecology, Cornell Cooperative Extension is a well-established institution with the capacity to support the stewardship program in strengthening its reach and credibility throughout the state. As a part of Cornell Cooperative Extension, the climate stewardship program benefits from the expertise of staff and educators experienced in

volunteer coordination, environmental education, and community engagement, as well as a well-established model for training, certification, and long-term volunteer engagement.

University of California Climate Stewards

The University of California's Climate Stewards program was developed as an extension of the University's California Naturalist program. The stewardship program aims to build climate literacy among participants, establish a community of practice to advance resilience, and develop both statewide and local support for and capacity to advance climate action. While the program is housed within the University of California's Department of Agriculture and Natural Resources, classes are delivered through community-based partners throughout the state. Courses offer a combination of classroom, online, and field experiences on topics ranging from earth systems to energy, and include communications training, participatory science, and community service opportunities, all with the goal of strengthening participants' climate change literacy and civic engagement. Participants receive a certification upon completion of a 40+ hour course and a final capstone project.

Rather than a standardized curriculum that community-based partners facilitate, the University of California Climate Stewards curriculum varies according to the partner organization offering the course, providing opportunities for participants to tailor their experience based on personal interests. For instance, Canopy, a nonprofit organization dedicated to enhancing urban forests, offers a course on urban tree planting and care, whereas the Community Environmental Council, a nonprofit working to develop equitable climate solutions, provides a course on community dynamics and applicable climate solutions. Capstone projects may be individual or collaborative amongst participants, and past examples include creation of a bilingual climate justice zine, a storytelling podcast on wildfire memories, and a guide to reduce one's carbon footprint. Following certification, climate stewards are encouraged to volunteer in activities such as participatory science, land and water stewardship, and education and interpretation.

Volunteer-Supported and -Led Efforts in Maine

A Climate to Thrive, volunteer support programming

A Climate to Thrive (ACTT) is a nonprofit organization based on Mount Desert Island (MDI) in Maine.

Born from a volunteer-led effort sparked by conversations among concerned residents over potluck dinners, A Climate to Thrive understands the power of volunteerism first-hand (J. Blackman, personal communication, July 28, 2025). The organization currently leads several programs that support volunteers in expanding their skillsets, helping them take on community leadership roles, and connecting them with one another and with relevant trainings and resources.

Climate Ambassadors helps Mainers of all ages develop comfort in climate action leadership through five educational sessions focused on climate science, communication strategies, and solutions. At the end of the program, each participant is supported in identifying a group within their sphere of influence with which to host a conversation on the development of local climate solutions. This conversation serves as both a capstone project for participants and an extension of the program's reach, bringing climate conversations into new pockets of the community. *Local Leads the Way* is a monthly hybrid meeting for resilience-professionals and community leaders on participant-informed topics that support networking, building knowledge and skills, sharing resources, and strategizing to amplify collective impact. The *Climate Action Toolkit* is an online resource designed for volunteer community leaders. It provides step-by-step guidance for implementing climate action initiatives, from getting started, to building longevity, to launching ready-made climate action projects. This toolkit was created collaboratively, with organizations and experts across the state contributing to the development of its resources.¹

Together, these programs and resources strengthen Maine's volunteer community, increasing the value individuals are able to offer their municipalities while connecting them to a broader community of practice in which to learn, reflect, and grow. By fostering these interconnected support systems, A Climate to Thrive not only uplifts the work of individual volunteers but also builds a more resilient network of climate leaders across the state.

Casco Bay Islands, volunteer-led initiatives

Tracy Sommers lives three miles off the coast of Portland, Maine, on Great Diamond Island, where she and her neighbors are witnessing first-hand the impact of storms and sea level rise to their coastline. In response, Sommers established a volunteer Climate Action Task Force for her community, which over several years has

expanded into a multi-island coalition of volunteers across Casco Bay (T. Sommers, personal communication, July 30, 2025). Now, Sommers and her island neighbors organize workshops, presentations, and symposiums for island residents on various topics related to environmentalism and resilience.

A dune restoration project next to Little Diamond Island's state pier, a multi-island coastal bluff erosion monitoring project, and efforts to secure funding for implementing nature-based solutions at Fowler Beach on Long Island have all been sparked by Sommers' efforts to bring knowledge of climate adaptation strategies to the islands. What began as a grassroots effort has evolved into a regional force for climate resilience that has already succeeded in bridging information gaps, securing funding, and empowering islanders to take adaptation into their own hands through volunteerism.

DISCUSSION

The four case studies presented here demonstrate the powerful role volunteerism can play in expanding community capacity and strengthening climate resilience. A central strength of volunteer training and support programs is how they elevate local voices and cultivate community leaders. When trained stewards share clear and compelling messages about climate change and resilience, they not only build public understanding and support for local initiatives but also model a concrete, achievable path for action. Newly inspired individuals see examples of how they can contribute, and because these programs are structured and credible, they provide an accessible way to get involved—turning individual passion into a growing movement.

This role is especially important in rural communities, where local volunteers act as trusted messengers. Their positionality encourages open and receptive listening, which is particularly valuable in Maine, where self-reliance and local pride are deeply rooted in the culture. As one of the most rural states in the nation,² Maine faces significant challenges of limited funding and capacity that often hinder progress on climate resilience. In this setting, volunteerism becomes an essential resource, enabling project work that might not otherwise move forward. Because climate adaptation strategies must be tailored to local context, volunteers are well-positioned to contribute the critical insights needed to guide them. Maine is home to many people with unique skill sets who want to improve their communities—the

key is providing them with the language, tools, and foundational knowledge to do so effectively.

Programs such as Cornell Climate Stewards and University of California Climate Stewards help fill capacity, knowledge, and data gaps by training community volunteers in leadership, advocacy, and climate literacy. These initiatives connect local adaptation with productive aging, offering a model that is community-based, scalable, and sustainable. The most effective programs are adaptive, responding to changing community needs, new information, and volunteer interests. A Climate to Thrive's volunteer-support efforts and the volunteer-led initiatives on the Casco Bay Islands illustrate this adaptability, codeveloping goals and projects that reflect both participant interests and community needs.

At the foundation of these programs is the development of participants' skills, confidence, and relationships. These are tailored to place and outcomes but often include knowledge of climate science and decision-making processes, skills in communication and community engagement, and relationships among participants and between volunteers and climate service providers. Combined, these elements build the agency and confidence volunteers need to step into leadership roles and take meaningful action on climate change.

Volunteerism also strengthens the less tangible aspects of adaptive capacity, including knowledge sharing, governance, social capital, agency, and people-place connections. As Berkes (2013) and Cinner and Ross (2019) note, adaptive capacity depends not only on the resources available but also on the ability to mobilize them, often through governance structures and social networks. Volunteer-driven initiatives often operate within decentralized, polycentric systems that allow for more responsive and context-specific management while fostering participatory decision-making (Omoto and Snyder 2002). This approach empowers communities to take ownership of climate action, as demonstrated by programs like Cornell Climate Stewards and University of California Climate Stewards, where volunteers contribute both to local projects and to municipal climate planning efforts.³

Volunteerism also builds social capital by fostering trust, reciprocity, and collective action among community members (Cinner and Barnes 2019). A Climate to Thrive's Climate Ambassadors program illustrates how volunteer-led initiatives strengthen leadership and place-based engagement, enhancing both belonging and commitment to local strategies. Participation in stewardship

activities further reinforces community bonds and attachment to place, encouraging people to invest in their communities (Hoffman 2020). When supported through formal and informal volunteer programs, these elements of adaptive capacity help rural communities respond, take action, and thrive in the face of environmental change.

CONCLUSION

The case studies and literature discussed here highlight the essential role volunteerism plays in advancing climate resilience, particularly in rural communities like those in Maine. Volunteer programs not only expand capacity where resources are limited, but also elevate local voices, build leadership, and strengthen social networks that are critical for adaptive capacity. By equipping individuals with knowledge, skills, and pathways to engage, these programs transform community pride and personal commitment into sustained collective action. As climate challenges intensify, investing in volunteer training and support emerges as a practical and powerful strategy to ensure adaptation is grounded in local knowledge, driven by community leadership, and capable of fostering resilience over the long term.

NOTES

- 1 More information about ACTT and its programs and resources is available on the organization's website <https://www.aclimateto-thrive.org/>
- 2 "Urban and Rural," US Census Bureau, <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html>
- 3 More about Cornell's Climate Resilience Partnership can be found at <https://www.climate resiliencepartnership.org/>; More about University of California's Environmental Stewards program can be found at <https://ucanr.edu/program/uc-environmental-stewards>

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