



Building Adaptive Capacity Through Civic Environmental Stewardship: Responding to COVID-19 Alongside Compounding and Concurrent Crises

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A growing body of community resilience literature emphasizes the importance of social resources in preparing for and responding to disturbances. In particular, scholars have noted that community based organizations and strong social networks positively contribute to adaptive capacity, or the ability to adjust and respond to change while enhancing the conditions necessary to withstand future events. While it is well established that strong civic engagement and social networks contribute to enhanced adaptive capacity in times of change, there is more to learn about how adaptive capacity at the civic group and network level is impacted temporally by multiple and compounding crises. Research has shown that the ability for communities to adapt and respond to crisis is closely tied to longer term recovery. In the midst of the COVID-19 pandemic, which has overlapped and intersected with multiple additional climate crises as well as a reigniting of the ongoing American reckoning with racial injustice, the ability for communities to adapt and respond to compounding crises seems more crucial than ever. This paper uses qualitative data from semi-structured interviews with 34 civic environmental stewardship groups in New York City to explore their role in building adaptive capacity. In order to better understand how past crises have impacted stewardship groups' response to COVID-19, we focus on how groups have demonstrated flexibility and learning at an organizational scale. We look at two other crises, both acute (Superstorm Sandy, which hit the East Coast in 2012) and chronic (systemic racism) to identify instances of learning that lead to organizational transformation. We further aim to understand how group professionalization, measured by budget and staff size, and network connectivity impact their actions. By comparing the groups' experiences and responses to each event, we uncover strategies learned from past events (e.g., sharing contact lists, holding internal dialogues, leveraging new funding sources) that enable stewardship groups to respond to disaster in a way that builds their organizational adaptive capacity as well as contributes to the long-term resilience of their communities.

Keywords: adaptive capacity, environmental stewardship, crisis, systemic racism, community resilience

INTRODUCTION

Stewardship groups play a key role in the ongoing care of the urban environment. In addition to providing care and everyday maintenance of green and blue spaces, stewards participate in managing, monitoring, conserving, transforming, educating on and advocating for their local environments, becoming essential actors in resilience planning and climate adaptation (Landau et al., 2019; Campbell et al., 2021). This paper focuses on the general adaptive capacity of civic environmental stewardship groups, taking into account the local context and the varied resources available to New York City's communities. The term adaptive capacity has been widely used in the understanding of natural resource management and group level response to disturbance. As social-ecological actors in the city, stewardship groups span these contexts and play a unique role in building adaptive capacity. By looking at how these groups respond to disaster, we hope to identify examples of how adaptive capacity is created and fostered at the civic scale.

We use New York City as a study area to examine stewardship groups in the context of compounding crises. By Spring of 2020, New York City was seen as the epicenter of the COVID-19 pandemic in the US (Thompson, 2020). Though the pandemic spanned geographic boundaries, and in fact later hit the rest of the United States just as hard, for a moment in time it was acutely felt as a New York City crisis. The high case numbers and death rate, combined with the density of city life, led many New Yorkers to flee the city to summer homes and rentals in surrounding suburban and rural areas (Krauth, 2020). Others reflected on past disasters in New York City as evidence for the importance of staying put and contributing to the city's response and recovery (Paybarah et al., 2020). At the same time, this crisis did not occur in a vacuum—it operated in a societal and historical context that includes other concurrent disasters as well as prior disturbances. For New York City residents and stewards, the memory of Sandy still looms large. Superstorm Sandy hit the East Coast of the US on October 29th, 2012, killing over a hundred American residents and leaving nearly \$70 billion dollars in damage (FEMA, 2013). New York City was among the hardest hit places, with millions losing power and access to communication and transportation systems. Following the storm, federal aid poured in from FEMA and HUD, leading municipal leaders to name new offices and departments to handle funding allocation and recovery projects, including the New York Governor's Office for Storm Recovery and the New York City Mayor's Office of Resiliency. Since Sandy, discourse around community resilience, multi-sector governance, and co-production have emerged even stronger in disaster literature and in government agencies, especially with regard to the growing threat of climate change (Grove, 2018).

The impact of climate change, evident in the neighborhoods hit hardest by Superstorm Sandy, disproportionately falls on low-income communities of color (Wilson et al., 2020). Similarly, COVID-19 is shaped by the racial inequities inherent in our society. It is no coincidence that as of March 2021, Black, Indigenous, Hispanic and Latino, and Pacific Islander Americans have suffered the highest COVID related death rates (CDC, 2020;

APM Research Lab, 2021). The systemic racism that undergirds our society represents its own crisis. The police murder of George Floyd and the subsequent protests of 2020 highlighted this racial injustice and forced many, including environmental stewardship groups in New York City, to respond (Osaka, 2020). Rather than treat climate change, COVID-19, and racial injustice as separate phenomena with distinct patterns of response and recovery, we view them as interconnected, compounding, and cascading crises (Felsenstein et al., 2020; Hoover and Lim, 2020; Liebman et al., 2020), all with roots in environmental injustice (Wilson et al., 2020). We aim to better understand how environmental groups learn and adapt in the context of multiple intersecting crises.

While civic groups are well established as key actors within environmental governance networks (Connolly et al., 2013), less is known about how they are impacted by compounded events or how these organizations and networks evolve temporally. Felsenstein et al. (2020) write about COVID-19 in the context of cascading disasters, which contribute to a domino effect of natural and human impacts and require new research approaches. COVID-19 complicates the recovery from concurrent social and environmental disturbances (Quigley, 2020), requiring innovative and emergent responses. Yet much of the hazards literature fails to meaningfully engage with the root causes of the uneven impacts of disaster (Wisner, 2019). This paper attempts to fill this gap by evaluating the literature on adaptive capacity in the context of natural resource management and environmental stewardship, and examining a network of environmental stewards over time and identifying how responses to multiple crises (both acute and chronic) impact adaptive capacity. We find that civic environmental groups contribute to adaptive capacity following disturbance through examples of learning and flexibility.

Adaptive Capacity and Natural Resource Management

In order to understand the potential role of stewardship groups in response to crises, we first provide a brief overview of the literature on resilience, vulnerability, and adaptive capacity as it relates to natural resource management. Researchers studying the impact of disasters on human populations often use the term resilience to capture the ways in which—and the degree to which—communities adequately prepare for, respond to, and adjust to disturbances (Cutter et al., 2008; Aldrich and Meyer, 2015). Vulnerability is one key factor that is fundamental in determining how communities are impacted by disaster. There are many definitions of vulnerability in the field of disaster research, but most explanations share the understanding that vulnerability involves the susceptibility of a community to disaster (Adger, 2006; Zakour and Gillespie, 2013; Kelman et al., 2016). Blaikie (1994) define vulnerability as “the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard.” (p. 9). This concept helps bridge the natural with the social, as “Vulnerability ties general political economic conditions to very particular environmental forces to understand how basic

conditions such as poverty or racism produce susceptibilities to very specific environmental hazards” (Oliver-Smith, 2009, p. 14).

Adaptive capacity is a more specific way to consider the ability of a system to cope with change (Smit and Wandel, 2006). The term adaptive capacity is closely tied to resilience, though there is not a universal understanding of the relationship between the two. Some scholars frame adaptive capacity as an indicator of vulnerability, where vulnerability is a function of exposure to a threat and the sensitivity to that threat, offset by the adaptive capacity of a system (Gupta et al., 2010). Other definitions of adaptive capacity are nearly interchangeable with common definitions of resilience. For example, Cutter et al. (2008) define resilience as including “those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat” (p. 599). The authors similarly define adaptive capacity as including the ability to adjust and cope with change (p. 600). Still others place adaptive capacity within their definitions of resilience. Meerow (2016) define urban resilience as including the ability to “quickly transform systems that limit current or future adaptive capacity” (p. 39). In the same piece, they propose that in a constantly changing environment where nothing is ever static, definitions of urban resilience should prioritize the ability to continually evolve: “...building resilience hinges on general flexibility and adaptability (denoted by “adaptive capacity” in the definition), rather than becoming highly adapted to specific threats” (Meerow, 2016, p. 46). Considering the context of compounding crises, we adopt this definition in which adaptive capacity is highlighted as the innate ability to handle any number of threats and changes. This trait is both reactive and proactive—reactive in that adaptive capacity allows a system to respond to change, and proactive in that a system can learn to better adapt to its environment in order to cope with future uncertainty (Dressel et al., 2020).

Scholars studying natural resource management have increasingly adopted a social-ecological systems approach that integrates the human dimension of climate adaptation described above into the on-the-ground management of environmental resources. In this perspective, community-based natural resource management (CBNRM) is widely acknowledged as a best practice (Ostrom, 1990; Armitage, 2005). CBNRM encourages a shared model of decision making that involves all resource users, including local stakeholders and community-based groups. Ideally, a CBNRM model addresses both environmental and socio-economic goals, shifts at least some decision-making power to the community, addresses issues of access to and control of the resource in question, and balances the concerns of multiple actors that may not always have common goals, such as equity and conservation (Armitage, 2005). Commons theorists, most notably Eleanor Ostrom, suggest that common pool resources are best managed in a polycentric governance system, and require the inclusion of local decision makers supported by, and working in cooperation with, larger government entities (Ostrom, 1990, 2010). Polycentric governance structures that include local representation are viewed as more equitable as well as more nimble (Morrison et al., 2019), but more information

on how these local groups function is needed in order to better understand how they contribute to the governance system in times of disturbance.

Despite the many benefits of polycentric governance, it remains unclear why some CBNRM models are more successful than others. In his 2005 paper, Armitage looks at adaptive capacity as a possible answer to this question. He defines adaptive capacity as the “ability to experiment and foster innovative solutions in complex social and ecological circumstances” (Armitage, 2005, p. 704). He builds off of Folke et al.’s (2005) paper highlighting four key processes that build resilience and adaptive capacity in social-ecological systems: learning to live with change and uncertainty, nurturing diversity for reorganization and renewal, combining different types of knowledge for learning, and creating opportunity for self-organization (p. 355, Table 14.1).

Dressel et al. (2020) echo the trend toward co-management in building adaptive capacity, but question the best model of governance within a community-based management context. The authors use a case study of a community-based moose management effort in Sweden to look at the perceived adaptive capacity across scales of governance. They argue that while different levels of governance can impact one another, adaptive capacity should be present at all levels, and both vertical and horizontal linkages can help create cohesion across the system. This finding highlights the need to analyze the stewardship system as a whole, from the small informal block associations to the larger private-public partnerships that help link community needs to government entities (see also Svendsen and Campbell, 2008).

Social Capital and Organizational Capacity

The emphasis on *people* in definitions of adaptive capacity is found across the literature, often described as a social concept that depends on the ability of people to work together, mediate challenges, and invent new solutions (Armitage, 2005). Cinner et al. (2018) define adaptive capacity as “the conditions that enable people to anticipate and respond to change, to minimize the consequences, to recover, and take advantage of new opportunities” (p. 117). Adger (2003) writes that understanding the human response to climate change requires examining more than just the cost and benefits of specific adaptations, but “the social acceptability of adaptation options, the institutional constraints on adaptation and the place of adaptation in the wider landscape of economic development and social evolution of societies into the future” (p. 30). This acknowledgement of the human dimension of climate adaptation draws from literature on social vulnerability and social-ecological systems (SES). An SES approach to resilience honors the role of the human, both in contributing to anthropogenic climate change and in managing the resulting crises. Adaptation is key in this process, as Folke et al. (2005) note: “In a social-ecological system with high adaptability, the actors have the capacity to reorganize the system within desired states in response to changing conditions and disturbance events” (p. 444).

Indicators for adaptive capacity in the social context include social capital and collaboration (Adger, 2003). Social capital,

broadly understood as the beneficial outcomes of social relationships, can be further broken down into three categories: *bonding social capital*, or the ties between kin that are often based on a shared identity or locality; *bridging social capital*, the loose relationships and networks that connect people across race and class lines; and *linking social capital*, the connections between local community members and those with political power (Aldrich and Meyer, 2015). Each of these can contribute to adaptive capacity, but they should be somewhat balanced for the optimal impact. Too much bonding social capital, for instance, can create the feeling of exclusivity, and a lack of linking social capital can place a burden on a local community while alleviating government responsibility. Dressel et al. (2020) find that “linking social capital towards decision-making levels will heavily influence actors’ risk perception and adaptive behavior” (p. 95). Adger (2003) recommends a model of context-specific “synergistic social capital” (p. 43), where the government works with local community members to enhance adaptive capacity and manage risk. Cinner et al. (2018) note that tactics to enhance social capital at the organizational level include building and strengthening networks, incentives for community volunteering/participation, and co-management tactics like community meetings. Community organizations such as stewardship groups have the ability to enhance bridging social capital by fostering the kind of reciprocal loose ties that build local trust, as well as form relationships with those in power (Aldrich and Meyer, 2015; Campbell et al., 2021).

Adaptive capacity has also been studied at the institutional and group scale. Here, we use Gupta et al.’s (2010) definition of institutions as not only organizations themselves but “the social rules that both constrain and empower social actors” (p. 468). Adger (2003) cautions that while institutions can help to build trust and social capital, two key social indicators of adaptive capacity, they can also be harmful and make vulnerable groups more vulnerable if they exist within systems of oppression. In fact, many of the major organizations that are tasked with post-disaster recovery work, such as FEMA and the Red Cross, have fixed regulations about which groups of people they serve that exclude the most marginalized (Dawson, 2017). In this way, institutions, according to Gupta et al. (2010), are inherently both conservative and reactive. The authors define the adaptive capacity of institutions as including both the characteristics that allow society to cope with climate change, and the ability for the institution itself to change in order to become better equipped to cope.

It is well established in the literature that civic groups and social networks play a key role in climate adaptation and resilience. The role of social capital, particularly linking social capital in natural resource co-management networks, has been shown to support desirable outcomes in post-disaster scenarios (Marin et al., 2015). Graham et al. (2016) found that following Superstorm Sandy, the civic infrastructure laid by community based organizations (CBOs) on the Lower East Side of Manhattan made the community better able to mobilize and respond to disaster needs than a demographically similar neighborhood lacking the same civic organizing. Stewardship groups are also a key part of this civic infrastructure. Some stewardship groups

are CBOs, but they also exist at multiple scales in the governance system, from small groups of local actors, to mid-size non-profit organizations, to full on institutions that function alongside city agencies as quasi-governmental actors (Fisher et al., 2012; Fisher and Svendsen, 2014). McMillen et al. (2016) identified five indicators of social resilience operationalized by urban environmental stewardship, including social cohesion, social networks, and knowledge exchange—each of which shows up in the adaptive capacity literature as well. These indicators support the argument that stewardship groups are uniquely positioned to respond to disturbance.

Indicators for Adaptive Capacity: Learning and Flexibility

The adaptive capacity literature centers a few prominent indicators, including trust, access to financial and human resources, institutional diversity, ability to improvise, and collaboration (Adger, 2003; Folke et al., 2003; Armitage, 2005). In addition to a focus on the material and social resources that prove important to a group’s general capacity and ability to function, learning and flexibility are key concepts that capture the processes that enable groups to best adapt to shifting circumstances. Learning shows up in the literature in a number of ways. Armitage argues that in a CBNRM context, there are a number of prerequisites that enhance a system’s ability to adapt, including “...learning through uncertainty and crises, learning from mistakes in practice, maintaining a collective memory of experiences with resource management, linking different knowledge systems to support learning and adaptation, and collaborating and power sharing in order to promote tight feedback loops and maintain institutional and organizational diversity and redundancy” (p. 707). Learning here happens in the context of prior experiences. Some scholars further break down learning into single-loop and double-loop learning. Plummer and Armitage (2010) describe single-loop learning as simply modifying practices, while double-loop learning addresses the core beliefs and assumptions behind the practices, and leads to more holistic transformation. Fostering double-loop learning requires diverse types of knowledge and drawing on networks of trust and reciprocity (p. 13). Both types of learning are important, particularly following a crisis. According to Cinner et al. (2018), “Instrumental single-loop learning only informs and changes the most immediate technical operations (for example, turning on the air conditioner in a heat-wave), while deeper double-loop learning may change governance procedures at the organizational level (for example, local green infrastructure planning), and even overarching values and norms at the policy and paradigmatic levels (for example, reduction of carbon emissions at a societal level)” (p. 120). Double-loop learning occurs over longer time spans, making it an important indicator when looking at how groups continue to learn from and respond to past events.

Flexibility is similarly key in understanding how environmental groups adapt to change (Carpenter and Brock, 2008). Unlike some of the other indicators in the literature, flexibility is sometimes used as a parallel concept to adaptive

capacity (Smit and Wandel, 2006), where flexibility encompasses the many traits and characteristics that allow a system to evolve. It also shows up in the literature as room for change (Cinner et al., 2018) and improvisation (Gupta et al., 2010). Returning to Meerow's (2016) definition of resilience, we see that general flexibility is used as a stand-in for adaptive capacity, and is considered key in being able to respond to multiple threats. Highly flexible groups are better able to respond to climate change (Cinner et al., 2018), and flexibility is considered an important trait in ecosystem management when dealing with uncertainty (Folke et al., 2005). Folke et al. (2005) also show that flexibility is closely tied to the literature on social capital, and is supported by informal social networks. In defining adaptive co-management, they write that "The flexible structure allows for learning and ways to respond to and shape change" (p. 448). In this way, learning and flexibility are strongly linked in the literature. At the group or organizational level, Gupta et al. (2010) argue that "institutions should allow actors to learn from new insights and experiences in order to flexibly and creatively "manage" the expected and the unexpected, while maintaining a degree of identity" (p. 461). Hutton et al. (2017) build on Hatano and Ignaki's definition of an "adaptive expert" as someone who can not only adapt but explain the reasoning behind an adaptation, suggesting that a degree of knowledge and learning contributes to flexibility. Using these definitions, we see that learning and flexibility are part of the same cycle: flexible conditions can allow for learning, and learning from past experiences can lead to flexibility in social-ecological systems. In this paper, we aim to understand how this cycle of learning and flexibility occurs in the context of past and concurrent crises. We focus on both of these key indicators, aiming to identify examples of each in order to illustrate how civic stewardship groups contribute to adaptive capacity over time.

MATERIALS AND METHODS

This study builds on the 2017 New York City Stewardship Mapping and Assessment Project (STEW-MAP) (Landau et al., 2019). STEW-MAP is a research methodology and set of tools to understand civic environmental stewardship groups. Data for STEW-MAP are collected through an organizational survey that includes questions about group history, mission, stewardship actions, organizational networks, and geographic territory. STEW-MAP defines a stewardship group as two or more people with a group name working toward a shared mission of managing, monitoring, conserving, transforming, educating on, or advocating for the local environment (Campbell et al., 2019). Although many stewardship groups are registered 501(c)(3) non-profit organizations, others are groups of neighbors working with no budget and supported entirely by volunteers. In order to understand the differences between these types of groups, we classify them through budget and staff size to create a professionalization index between 1 (0–1 paid staff and small budget) and 5 (more than 11 paid staff members and budgets of \$1 million or more) (Fisher et al., 2012). While there are multiple

TABLE 1 | Characteristics of stewardship groups interviewed.

Category	Distribution of groups interviewed (<i>n</i> = 34)
Stewardship network connectivity	<ul style="list-style-type: none"> • 14 highly connected groups • 11 named by other groups • 9 not named by other groups
Geographic territory size	<ul style="list-style-type: none"> • 9 citywide • 13 borough to neighborhood • 12 smaller than neighborhood
Territory inundated during Superstorm Sandy	<ul style="list-style-type: none"> • 27 yes • 7 no
Level of professionalization (see Fisher et al., 2012)	<ul style="list-style-type: none"> • 17 high • 9 medium • 8 low
Sampling strategy	<ul style="list-style-type: none"> • 21 in 2017 STEW-MAP dataset • 13 snowball groups

forms of civic capacity, measured through indicators from voting to volunteerism (Dewey, 1927; Krinsky and Simonet, 2017), we aim to focus on the group scale in order to understand how stewardship groups differ from one another in their ability to adapt and sustain their organizational mission. For the purpose of this paper, the terms "stewardship group" and "stewardship organization" are used interchangeably.

In 2019, in depth, semi-structured interviews were conducted with 26 STEW-MAP respondent groups (Robinson, 2014). Interview subjects were randomly chosen through a sampling design that looked at size of geographic turf (small, neighborhood, citywide and larger) and the degree of network connectivity (not named within the network, moderately connected, and highly named/brokers) (see Connolly et al., 2013). Nine categories were created through this typology, and three groups were randomly selected within each category. Within the category of large turf size and moderate connectivity, only two groups were able to be reached for interviews, resulting in a total of 26 interviews (Campbell et al., 2021). In the summer of 2020, follow-up interviews were conducted with the original 2019 respondents. This time, interview questions focused on the ways in which stewardship groups had been impacted by and responded to the COVID-19 crisis and the uprising against racial injustice following the murder of George Floyd. Of the original 26 groups, 21 were able to participate in the 2020 interviews. An additional 13 groups were identified through snowball sampling (see Table 1). Together, this sample represents a broad spectrum of stewardship groups in NYC in terms of geographic reach and partnership connections and also includes a number of groups known to be responding to COVID-19 through snowball sampling. Overall, groups identified by snowball sampling covered all categories, but were more likely to be small (*n* = 5) or neighborhood (*n* = 6) and moderately connected (*n* = 6) or highly named/brokers (*n* = 6) than citywide and larger or not named groups. Twelve of the 13 snowball groups worked in areas affected by Sandy.

The 2020 STEW-MAP interview protocol invited respondents to reflect on their response to COVID-19 as well as both the acute crisis Superstorm Sandy and the ongoing crisis of racial injustice. For the purpose of this paper, we concentrated on the interview responses to the following questions:

1. What was your group's experience following Hurricane Sandy? Did those experiences or lessons inform your work and partners in the time of COVID-19?
2. COVID-19 is occurring entwined with the rise of protest over racial injustice, how has your group been affected by or responded to these twinned crises?
3. How are you collaborating with other groups to adapt and respond to COVID-19? Please name your most important collaborative partners. Has that been a significant shift since pre-COVID?

These interviews were confidential and anonymous (IRB: Pro2020001281). Interviews were recorded with permissions, transcribed, and coded using NVivo 11. Two interviews did not have audio recordings, so detailed field notes were coded in the place of the transcriptions. We used a mix of inductive and deductive coding, drawing on grounded theory (Strauss and Corbin, 1994) to develop a coding scheme based on the most common indicators in the adaptive capacity literature. Using NVivo, we allowed a single fragment of text to be assigned one or more of these codes, if the text aligned with the definition of a particular code. We identified emergent sub-codes through team debriefs and used member checks to validate the coding scheme (Seale, 1999). Examples of flexibility were further broken down into (a) change in organization, (b) diversity, equity, and inclusion actions, (c) programming and messaging changes, and (d) workplace and fieldwork adaptations. Learning included both single and double-loop learning and was broken down into (a) individual learning, reflection, and visioning, and (b) institutional memory or group learning. Once the coding scheme was developed by the full team, a single team member (LL) completed coding for all transcripts, which allowed for additional interpretative inquiry (Morse, 2020).

RESULTS

Our interviews showed that stewardship groups across the board were impacted by COVID-19. We interviewed groups that lost significant funding, paused or cancelled programming, created new online tools, and even shifted their efforts to respond to the pandemic. When asked about prior events and parallel crises, flexibility and learning emerged as the most prominent indicators of adaptive capacity. Understanding a group's social capital, assets, and leadership is crucial context, but when asked to compare their experiences with other events groups responded by sharing examples of changes in practice, however small (flexibility), and reflected on their vision and desire to change (learning). We present results in two sections based on the two crises we highlighted in the research questions: first, we examine group response to Superstorm Sandy, and then we look at the ongoing crisis of racial injustice. In each of these

TABLE 2 | Learning and flexibility characteristics of stewardship groups by disturbance.

Crisis	Results: learning	Results: flexibility
Superstorm Sandy (past, acute disturbance)	<ul style="list-style-type: none"> • Recognition of racial disparities following Sandy impact • New understanding of place meaning/ importance of green space • Lessons about stewardship and activation of space • Lessons on organizational response to disaster 	<ul style="list-style-type: none"> • Group formation in response to Sandy • Leveraging of post-Sandy funding • Implementing long-term stewardship and restoration projects
Systemic racial injustice (chronic, co-occurring crisis)	<ul style="list-style-type: none"> • Examining issues of representation at the group level • Implementing trainings and holding group conversations • Learning about Black Lives Matter and writing statements in support of the movement 	<ul style="list-style-type: none"> • Changing organizational policies • Providing support to women of color • Addressing systemic power imbalances

cases, we look for examples of how these lessons and experiences have impacted their ability to respond to COVID-19. **Table 2** introduces a summary of the results from each category, and the narratives below offer evidence and examples of these findings. Finally, we look at professionalization and network connectivity in order to understand the group characteristics which hindered or supported their ability to respond to change.

Sandy: Ongoing Recovery Timelines

When Superstorm Sandy hit New York City in October 2012, the impact varied greatly by neighborhood. Interview respondents in neighborhoods with higher elevations, such as Brooklyn Heights and the Upper West Side of Manhattan, reflected on the relatively minor and short-term damage they faced, sharing that within a few days their work was more or less back to normal. For other stewardship groups, Superstorm Sandy remains a defining moment in their ongoing work. Within the STEW-MAP dataset, respondent groups with lower elevations and higher social vulnerability in the neighborhoods of Red Hook, Coney Island, Jamaica Bay, and the Lower East Side were particularly impacted. In addition, some larger multi-neighborhood and city-wide groups navigated changes in their stewardship work in response to Sandy. Aside from the varied geographic impact, Sandy differed from COVID-19 in that despite its ongoing impact in certain neighborhoods, it was an acute event with a clear timeline of before, during, and after. One steward reflected on the differences between Sandy and COVID-19, describing

how in many ways, COVID-19 is a more challenging crisis for organizations to face:

“I would say that the one thing I’ve learned from managing through crises, then and what’s different now is that Sandy was like a moment in time that occurred. It was awful. And we figured out how to get around it and plan and dig ourselves out of the mess...the difference now is that nobody is coordinated at the leadership level and there’s no end in sight to this crisis.” (Respondent 1, hereinafter R1)

Flexibility

Groups in areas hit hard by Sandy reflected on the many similarities between the two events. These groups often needed to respond quickly to on the ground damage from Sandy. First, a number of groups had founding stories that were directly linked to Superstorm Sandy. In one case, a neighborhood group in Coney Island was founded immediately following Sandy to address the physical and environmental devastation by planting flowers to beautify their neighborhood and bring together members of the community around a common goal. Another citywide stewardship group that was founded just before Superstorm Sandy received a large grant following Sandy that helped them focus their efforts on recovery and resilience. For other groups, Sandy inspired specific stewardship projects that are still ongoing, such as the living shoreline project in Jamaica Bay. One steward reflected on the project and shared how COVID-19 felt to a community that was still grappling with the impact from Sandy, saying, “it’s something that the community references all the time. And I think COVID, this feels like Sandy and a lot of ways for people, especially in the month of March, April and May when everything was so shut down. It felt very similar to Sandy” (R2).

Still others shared specific ways that their response to Sandy directly prepared them to respond to COVID-19. Often, these examples took the form of contact lists and social networks that were compiled after Sandy and became key tools in their COVID response. As one steward said, “I think by the time we got to COVID we had already built a lot of important relationships that we maybe didn’t quite have in Sandy” (R3). A Red Hook organization that opened their doors to use their physical space as a community center following Sandy, had to re-think the best way to serve the community in the COVID-19 context where physical gathering was no longer a safe solution. In the interview, they spoke about the challenge of not being able to serve their community the way they knew how, coming to the realization that “We can’t be what we were for Sandy” (R4). However, the group managed to find other ways to be responsive by relying on community connections and digitizing tools they had built in the aftermath of Sandy, like their neighborhood bulletin called the “hub”:

“So they didn’t open the doors, but they open the lists and the database and they knew all the people to call and check in and ask which questions and who to connect them to. And who’s the medical team who’s the social, emotional team who’s the high school team who’s the food team. How are we getting connecting

people to resources. And just shifting that all to phone calls in an online using something called the hub.” (R4)

Learning

In the time since addressing the most immediate needs post-Sandy, many groups have had the chance to reflect on their experiences and distill specific lessons learned. Within these responses, four distinct categories of takeaways or lessons learned emerged. The first, expressed by groups both within and outside the Sandy storm surge area, were lessons about inequality. For many stewards, witnessing the uneven impact of Sandy across class and race lines opened their eyes to the reality of environmental racism. An artist who explores our relationship with the waterfront said that once she understood the way low income communities of color were disproportionately impacted during Sandy, she started seeing systemic racism everywhere. For the many stewardship groups located in low-income areas and led by people of color, environmental justice has always been central to their mission. The most extreme impacts of COVID-19 have also disproportionately fallen on the Black community and other communities of color in New York City, many which also shouldered the burden of destruction from Superstorm Sandy. One steward in Coney Island reflected on this pattern, saying, “it’s like it’s happening all over again...you know, the most vulnerable are most affected and here the people in this community are making this huge sacrifice and a lot of them have sacrificed their life. And that’s something that we take a look at and it shouldn’t be that way.” (R5)

In addition to lessons learned about inequality, Sandy influenced place meaning and stewardship for many stewards, who spoke about both Sandy and COVID-19 as events that enhanced the importance of open space. One group, located on the Lower East Side of Manhattan, reflected on the importance of green space both as a tool to increase coastal resilience following Sandy, and as a safe place to gather in a socially distant way. Yet while both Sandy and COVID-19 have emphasized the need for public green space, specific responses have at times been at odds with one another. As part of the city’s response to Sandy, the East River Park in Manhattan is set to undergo construction to develop a raised storm barrier, which would require parts of the park to be closed during a time when open space is extra important, as one Lower East Side steward explained:

“So, the community has kind of been like a you’re really going to close this park in a community that already faces low access to open space? And so that’s been like a push point in the community with regard to COVID related access to outdoor space. And I mean the project, when complete, will provide some flood protection, but do you address the immediate need for this public health crisis or do you just move on forward with a large-scale future resiliency?” (R6)

Some interviewees spoke about more specific lessons on stewardship that they learned following Sandy. One group, a civic manager of a public city park, reflected on how they learned a valuable lesson following Sandy about how the public interacts with their space.

“[steward name] and his team created [site name] natural play space using trees from Sandy and created a really wonderful location that is highly used by kind of preschool age children, for the most part. So I think it’s that there’s lessons Learned about, you know, land management, but also how to then connect to the community about the needs of the park and you know how to... be creative in a space that was underutilized at the time. I think it’s kind of related to now during this time period. It’s really a great opportunity to introduce visitors to areas of the park that they have never visited.” (R7)

Finally, a few stewardship groups examined their response to Sandy and discussed how the aftermath taught them larger lessons about organizational response. One steward, also based on the Lower East Side, posited that Sandy had the “advantage” of striking New York City on the heels of the Occupy Wall Street movement (R8). The organizers who had been involved with Occupy Wall Street were able to build on their existing networks to create Occupy Sandy, which provided aid to many neighborhoods before official funding streams came through. This taught the lesson that active social networks are necessary following a crisis. Another steward, based at the New York City branch of a global environmental non-profit, shared that their biggest takeaway from Sandy was also the importance of working across networks. They said that the “tangible” and “piecemeal” stewardship actions they took on were important, but not sufficient (R9). In the aftermath of Sandy, they were able to make the argument that they can become more nimble and have greater impact if they work in partnership with other organizations.

Racial Injustice: Getting to Organizational Change

On May 25th, 2020, George Floyd was brutally and publicly murdered by the Minneapolis police. Police murder of Black people is not a new story in the US, but George Floyd’s death, as well as the previous murders of Ahmaud Arbery, Breonna Taylor, Elijah McClain, and others, sparked “the biggest collective demonstration of civil unrest around state violence in our generation’s memory” (Wortham, 2020, para. 5). Activists and writers have proposed that the combination of video documentation, pandemic anxiety, and exhaustion over social distancing all contributed to the surge in Black Lives Matter protests in 2020 (Wortham, 2020). Racial injustice, particularly against the Black community, has also been highlighted by the disproportionate death rate of Black Americans due to COVID-19. Yet the crisis of racial injustice and anti-Black racism is embedded into the history of this country and far outdates the pandemic. As one stewardship group noted, for Black people in America, “This is not new for us.” They named “the two pandemics, COVID-19 and COVID-1619,” (R10) a term coined by Raphael Warnock referencing the year that Africans were first brought to America as enslaved people (Galloway and Journal-Constitution, 2020). COVID-19 and racial injustice are not equivalent crises, but by understanding how stewardship groups address systemic racism we can begin to identify the properties and processes that support them in responding to the inequities inherent in all forms of disaster.

Learning

Because of the perennial nature of racial injustice, stewardship groups often spoke about the learning and reflection they underwent prior to taking action or making tangible organizational changes. Individual stewards approached the conversation about racial inequality from a wide range of perspectives—some drawing upon their personal lived experiences as stewards of color, and others confronting their racial privilege for the first time. One steward, the volunteer president of a rooftop community garden in a predominantly white neighborhood, shared that there had been some uncertainty within the group of how to express their support for the Black Lives Matter movement. A community gardener had brought up the possibility of hanging a Black Lives Matter sign on the garden gate, but the president of the group wanted to pause and reflect before signing off. He explained, “In spite of my absolute support for the movement and visceral hope that something is really changing now in this country, I did not think it was a good idea. It smacked of lip service to me. It was like what so many corporations are doing and selling with it, though that’s not our intent. I think we still need to find a more meaningful way to respond to it” (R11). Other stewardship groups were similarly concerned with how to have a conversation at the organizational level in order to determine next steps. One expressed frustration at the lack of action taken by their organization, saying “the organization as a whole didn’t even explicitly say anything about support or anything of the Black Lives Matter movement. And was not really able to vocalize a response to that at all. And that was something a few of us on staff were really upset about and really felt that the organization needed to step up and say something” (R12).

Other groups were able to move past individual reflection and hold conversations about racism and representation at the staff or board level. One mid-sized organization noted that the work to dismantle racism has to begin with the recognition of how white supremacy is built into the structures we work within, stating that “one of the really helpful pieces of dialogue that has emerged more prominently in the last 2 months is around concepts of racism and white supremacy being cultural structures that and we’re all subject to and influenced by and that our organization, like every organization, is one that functions with white supremacy” (R13). Understanding these structures served as a starting point for holding inter-staff discussions where multiple action items were identified, including holding training sessions for staff that would be led by paid professionals with expertise on racial justice, and putting out a public statement in support of the Black Lives Matter movement. They worried that the statement would fall flat or be seen as an empty promise, but soon after publicizing the statement they heard that at least one partner organization used their statement to kick off their own internal conversation about anti-racism efforts. This served as an important reminder of the potential for leading by example and creating a ripple effect of change throughout a professional network.

Many STEW-MAP respondent groups also reflected on the reality of working in predominantly white-led organizations. One group, a small organization with only two full-time staff (both

white) spoke about exploring ways to diversify their board in order to better represent the communities in the full extent of the neighborhoods they serve.

“We are not diverse in our staff, either. I think it’s something that we do need to look at and be very aware of in terms of the board....We certainly know the elected officials and we have spoken for many years with the elected officials for any sort of introductions or suggestions for board members because you don’t want all your board members to be located between you know 20 blocks or 30 blocks. They should represent all of the neighborhoods that we serve. We’ve also been looking at some board matching organizations.” (R14)

Other stewards reflected on the structural challenge of getting traditional white male leadership to respond to the need for more diverse voices, or the difficulty they have had in trying to identify stewards of color to partner with in specific white dominated sub-fields, such as energy efficiency. Even groups with more diverse staff shared challenges of implementing change. One stewardship group, an environmental justice organization located in a low-income community of color, took an active approach to addressing racial injustice and the events of summer 2020. They organized a racial justice committee, held a staff-wide discussion following a viewing of a James Baldwin documentary, and administered a staff survey to better understand where their employees were coming from. The results of the survey highlighted the fact that not all staff felt included in these events and processes. In particular, there was a perceived barrier between office staff and the more racially diverse field staff, who may not be able to check email as frequently and as a result sometimes felt out of the loop or ill-informed of leadership decisions. These examples serve as reminders that staff training and personal reflection on dynamics of race and power are only the first steps towards addressing systemic racism.

Flexibility

Certain stewardship groups were able to take their lessons learned and implement action items in the hope of supporting racial justice work and shifting organizational culture. One group that stewards a small park under the management of a larger environmental non-profit saw a shift from how the leadership responded to protests over police brutality in the early summer to late summer. The steward explained, “I know that yesterday in response to the Jacob Blake outcry, we received an email saying that if anyone needed to go protest that their time would be covered, that somebody could cover for them if they had work that needed to be done. At the beginning of the summer, that was not an email that was sent. So that’s cool. That’s a step, you know” (R15). Another organization decided to make Juneteenth, the commemoration of the date that the last enslaved people in Texas received notice of the Emancipation Proclamation, a paid holiday for all staff.

A smaller subset of groups shared examples of how they were able to begin to address some of the root causes of racism, such as systemic power imbalance and lack of resources and autonomy in historically Black communities. One group led by women of color shared that the events of summer 2020 only reinforced

the need for the work that they do, which focuses on Black and Brown women specifically. They reflected on the need for a “framework for healing” that they addressed by holding virtual processing circles and sharing tools to promote both physical and mental health for their members. Creating that space for wellness, especially in a culture where the wellness industry centers white women, helps situate their work as resistance to white supremacy. In addition to their wellness work, they are also beginning to look into the possibility of opening a food co-op. They discussed the importance of community ownership in economic empowerment, explaining, “if we control the food chain, we really have the means to impact people’s health” (R10). Another woman of color-led organization is similarly interested in food sovereignty as a tool for building long term equity. They have been providing food boxes to neighbors in need since the beginning of the pandemic, but dream of being able to move away from this charity model and towards a more sustainable and long-term solution to food insecurity. This is not easy work, however, as one steward noted:

“And I think that it’s easier to fund an emergency food program than it is a food sovereignty program. Because a food sovereignty program is dismantling as it is building and it requires time. It requires opening up decision making, who’s at the table. And so that doesn’t have the same kind of outputs and outcomes that you put in a grant report that’s clean, like “we’re going to do this many pounds and this many boxes and this many people.” So I think it’s easier to fund a traditional food access model.” (R4)

Another way stewardship groups can make an impact on procedural justice is by using their privilege to promote equity. For one organization, a conservancy for a park that was a popular protest site, this meant stepping up to support Black Lives Matter protesters.

“We started sort of slowly listening and finding out what’s going on with some of the following protests that week and then we started a conversation with the organizers, and we did two things. One, we shared it out that we wanted to coordinate with any protesters to keep the visitor center open. We will keep it open late, we are advertising cold water and advertising PPE like just saying, you know, come on. This is a place we want you to protest...it’s just a place where civic action should happen. So after that, we started talking with the organizers of the demonstration and we, to this day, are still coordinating with them.” (R16)

In addition to promoting the use of their space for protest, stewards stepped up to serve as a mediator between the protest organizers and the New York City Police Department. They explained, “So our role there has been to support them by giving them what they call sort of back end cover with NYPD, meaning they don’t have to coordinate with them. We coordinate with them and we say, Please don’t bring more vans into the park...this is a peaceful protest, we’re supporting it. There’s no need for that” (R16). Considering the police brutality many protesters in New York City faced, this seemingly simple action had the potential to protect community members and even save lives.

Adaptive Capacity and Group Characteristics

While all stewardship groups responded to the COVID-19 crisis in some way, the extent of their adaptive measures varied group to group. We sought to understand how group characteristics impacted their responses. Some smaller, single-issue organizations such as community gardens or street tree stewardship groups simply cancelled scheduled programming or used PPE and social distancing to minimize risk. Other groups dramatically shifted their priorities in order to respond to new and pressing needs created by COVID-19, such as heightened food insecurity, cancelled municipal compost collection, and growing economic inequality. As the adaptive capacity literature suggests, groups that demonstrated learning and flexibility in response to the crises of Superstorm Sandy and racial injustice were able to draw on those experiences to build their organizational adaptive capacity, placing them at an advantage when responding to unexpected challenges such as COVID-19. Other factors, such as an organization's size, degree of professionalization, and mission also contributed to their ability to begin new initiatives or make changes to existing programs. Here we look at how learning and flexibility varied by groups' *level of professionalization* and position within the stewardship *network*.

Professionalization, Learning, and Flexibility

Our analysis found that highly professionalized groups showed the most examples of both flexibility (fieldwork/workplace adaptation and programming changes) and learning. These groups have the highest budgets and largest staff size, which may put them at an advantage in moments of crisis. However, groups with a professionalization score of 3, corresponding to mid- or semi-professionalized groups, had more examples of organizational change, where a shift was made more permanent in the organization's structure. There are a number of possible reasons why groups at the highest level of professionalization struggled to implement these organizational changes. Some stewards of large and highly professionalized groups that care for New York City parks through a public-private partnership with the Department of Parks and Recreation shared that it was challenging for them to continue their volunteer stewardship efforts in the beginning of the shutdown because of regulations from the Parks Department that prohibited any volunteer stewardship efforts, even small groups working in a socially distanced manner. Eventually these restrictions eased, but in the meantime smaller grassroots efforts were at an advantage because they could organize without oversight. One steward reflected:

“So you know the Parks Department has a process through which you have to go through to do anything in parks and so right now, they had also sort of put a stop on all of that, you weren't allowed to volunteer. You weren't allowed to do events. And at a certain point, the people, you know, the park users were saying, you know what, we're just, we're just going to do it. So you just had crowds of people...taking up trash bags and they're going out there and they're actually organizing and being more effective than we have been or any of our institutional partners have been because [as an]

institutional partner there's just more bureaucracy that you have to go through an organization.” (R17)

Another steward at a large and highly professionalized organization spoke about how large institutions can struggle to adapt to new norms, speaking about the diversity, equity, and inclusion initiatives that have not reached the level of effective organizational change:

“And so whenever I think about [organization name] in relation to race issues I have to put it in the context that big NGOs are failing every day. Like, I'm not saying it's for lack of trying. But failing miserably...there are structural norms that we were unwilling to break down so I think that [organization name], like a lot of organizations, is issuing public statements and is trying to double down on our diversity, equity inclusion efforts but has not cracked the nut.” (R9)

These examples show that professionalization is only one variable in understanding organizational adaptive capacity. The interview results also indicated that groups are often more fluid than their budget and staff size may imply. Some groups are headed by a single leader with no paid staff, but nonetheless become formalized 501(c)(3)'s. Other stewards work for large organizations but are able to take initiative and bring in new partnerships or ideas, like one gardener who used the organization's outdoor space for food storage and distribution in partnership with the local mutual aid group. These networks, both personal and professional—or what one steward described as their “mycelial network” (R15) of contacts, allows stewards to adapt.

Network Connectivity, Flexibility, and Learning

Network connectivity had some bearing on the number of adaptations a group mentioned in their interview. Civic brokers—the most highly connected groups in the stewardship network—had the highest number of examples of fieldwork/workplace adaptations and programming changes. This suggests that working across a network is an important indicator of adaptive capacity that is underexplored in the context of stewardship groups experiencing multiple disturbances. Yet stewards from every level of network connectivity reflected on the importance of collaboration across groups. One shared that she wanted to build a larger network and work more with environmental justice organizations in order to integrate conversations about race and coastal resiliency and come up with more innovative and equitable solutions. She said, “well, maybe it's more important now than ever to kind of strengthen these community networks and really build up the voices of people that have been historically left out of the conversations” (R18). Another steward working in a non-profit shared a story of how she was able to work with an informal network to relocate a 2–3 acre milk crate farm from JFK airport to various sites around the city to combat the food insecurity that peaked as a result of COVID-19. The farm was launched by Jet Blue in 2015 to grow potatoes and other vegetables in order to stock the airport restaurants with local produce (Baskas, 2015). After the airport decided they were not able to maintain the urban farm, they

reached out to a large stewardship group who did not have the capacity to take on the project. This group instead contacted a small number of individuals with expertise as urban farmers, food justice advocates, and artists, including the steward we interviewed. She explained:

“[The contact at the large stewardship group] put us on an email together and I immediately was like, Oh my God, yes, because for the weeks prior my phone has been blowing up with friends, wanting to know where they could get clean soil and seeds and things and so it just felt like I didn’t want to see that resource go to waste. So we kind of got together a small group of people. There were six of us that were the primary coalition members... so the six of us in the span of about a month, figured out how to relocate 3000 milk crates... Some of that was through individuals who just signed up through a Google form and some of it was through outreach that different members of the coalition had you know, like the [another large stewardship group name].” (R15)

This example powerfully illustrates the ability for a small group of people to come together around a common goal and, using their personal networks, scale up the impact of a project.

In addition to these personal networks, organizational networks emerged as an important theme throughout the interviews. One in particular, a network of mid-sized and large organizations that work in New York City’s open spaces, formed specifically as a response to COVID-19. One of the founders came from the arts and cultural non-profit world and described her experience following September 11, 2001 as a moment where organizations came together to apply for joint grants and share resources. After shifting to the parks and open space sector, she was surprised that there was not a similar network with which to work in response to COVID-19. Many of these stewardship groups were facing extreme budget cuts and she thought they could benefit by meeting weekly with one another to share ideas and support. The coalition that emerged became a space for groups to talk about new funding opportunities, volunteering and visitorship, and even racial justice. Together, they penned a letter in response to George Floyd’s murder and in support of the Black Lives Matter movement. In order to address structural racism within their organizations, they collectively applied for a grant that would bring in trained facilitators to conduct anti-racism workshops and “support a “train the trainer” curriculum so that we can sustain this going forward” (R19). This joint grant would ensure that even organizations within the network that don’t have the funds to pay for a staff training will still have access to these resources. Efforts like this point to a recognition that working across a network enhances a group’s ability to adapt.

DISCUSSION AND CONCLUSION

The realm of disaster response and recovery work is dominated by the role of government and large-scale response organizations. In this study, we have uncovered the important role that local environmental groups play in the context of compound crises. The civic groups we spoke to contributed to the adaptive capacity of the neighborhoods they serve through learning and their unique ability to flex in response to change. Our interviews also

showed that prior experiences with crises played an important role in shaping the ability of stewardship groups to adapt and respond to COVID-19. Almost all groups demonstrated single-loop learning in figuring out how to quickly change their practices when COVID-19 hit. We also saw examples of double-loop learning—ways that stewards used lessons learned from past events to reprioritize their work and transform their organizations, making them better able to respond to COVID-19. One way that stewardship groups demonstrated double-loop learning was by reflecting on Sandy, racism, and COVID-19 and acknowledging the intersections of climate, race, and public health. Even those who did not label these as environmental justice issues were able to point out the ways that marginalized people, and especially Black Americans, continually face the brunt of the harm from disturbances. We found that groups looked inward—with the Black Lives Matter movement serving as a catalyst for organizational changes—and looked outward to the rest of the communities they serve to explore how they can reach people and share their resources more equitably. Stewardship groups also synthesize learning across scales and sectors, blurring lines between civil society and government by brokering and sharing roles.

Stewardship groups across the board also demonstrated flexibility in their response to COVID-19. Following disturbance, stewardship groups navigate large scale changes such as gaps in funding and collaborative campaigns. While the access to funding and resources that comes with larger non-profits and institutions can certainly support larger-scale efforts to respond to disaster, the same assets can constrict or slow organizational change through red tape or static organizational culture. On the other hand, emergent groups that operate outside the structure of a non-profit or government agency can use their nimbleness to respond to crises more quickly, but they may lack the support to continue long-term. We found that stewardship groups responded to these challenges by reflecting on where they fit within the governance structure and then using their resources and local knowledge to fill the gaps that the government and the private sector are unable or unwilling to address. The innovation of civic stewardship groups is crucial in meeting the immediate needs of communities facing crisis, and in dismantling the systems that lead to injustice.

One way that stewards work to counter these limitations—whether within an organization or as an independent actor—is through collaboration across a network. We found that stewards are not bound by the size and professionalization of the groups within which they work. Further, we found that stewards sometimes work outside the bounds of their organizations completely, leveraging contacts from both their professional and personal lives to address concerns that don’t fit within their group budget or mission. Network partners enable a level of learning and knowledge exchange that is not possible within a single group, as the literature on adaptive capacity suggests. Crucially, we found that many of these network relationships were formed in the context of a prior or parallel crisis, and maintained through everyday efforts. In response to COVID-19, many stewardship groups reached out to partner organizations to share their concerns about loss of funding, the changing role of public space,

and inequity in the workplace. Through regular conversations, they were able to deepen their individual understandings of their roles as stewards. Personal networks were often blended with professional networks and were similarly important to flexibility in the COVID-19 response, allowing stewards to quickly connect with those in need and amplify their efforts.

Stewardship groups in New York City are well positioned to respond to a wide range of crises because they are keepers of place-based knowledge and social trust, and operate within a frame of networked governance. The findings from our interviews illustrate the ability of these groups to learn from past experiences and adjust their practices to address changing needs, both within their organizations and in their wider communities. We note that our interview sample is limited to New York City; stewardship groups in other locations may respond differently. Additionally, our interview sample covers a wide variety of geographic scope and density of partnerships, but other group factors may affect whether and how groups responded to the COVID-19 crisis. More research is needed to understand the internal and external factors and characteristics that allow some groups to transform more quickly and fully than others. In addition, future studies could focus on the varied outcomes of these transformations, in order to better understand how learning and flexibility impact a group's overall effectiveness. As we grapple with systemic racism and exclusionary practices of all kinds, all in the context of a still present global pandemic and with the threat of climate change looming, we have to keep in mind the outsized impact disasters will continue to have on our most vulnerable people and places. Further research on the root causes of these inequities in the context of compounded disasters, including through the lens of racial capitalism (Liebman et al., 2020), could help link existing literature on hazards and disaster with political ecology and critical scholarship and activism. In the meantime, learning from and supporting the groups that have demonstrated truly novel approaches and sharing these practices across a network can expand the toolkit of stewardship practices to support populations in crisis. How can we best leverage

the capacity of these stewardship groups as we grapple with our country's racist history and face increasingly compounded disasters in the future?

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation. Data shared will contain no identifiers associated with interviewed individuals or organizations.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Rutgers University IRB. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

LL recruited and conducted interviews, coded interview transcripts, analyzed data, and led the writing. LC, ES, and MJ developed the conceptual framework, contributed to the coding scheme, assisted with interviews and analysis, and contributed to writing. All authors contributed to the article and approved the submitted version.

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