

Roles and experiences of non-governmental organisations in wildfire response and recovery

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Abstract. Local non-governmental organisations (NGOs) play critical roles in providing immediate relief resources and long-term recovery support for communities after a disaster. Drawing on interviews with NGO representatives involved in three Northern California wildfires in 2017 and 2018, this study identifies challenges and opportunities for NGOs supporting wildfire relief and recovery. Across fires and NGOs, NGO management and wellbeing, coordination and disaster experiences emerge as common barriers and enablers of relief and recovery. In many cases, local NGOs' participation in wildfire relief and recovery included simultaneous expansion of an organisation's mission and activities and negative impacts on staff mental health. Under the rapidly evolving circumstances of relief and the prolonged burdens of recovery, personal relationships across NGOs and government agencies significantly improved coordination of assistance to communities. Finally, interviewees expressed greater confidence when responding to wildfires if they had previous experience with a disaster, although the COVID-19 pandemic presented distinct challenges on top of pre-existing long-term recovery work. Despite repeated assertions that interviewees' experiences reflected only their individual community or wildfire, key challenges and opportunities were consistent across disasters. These results may aid other NGOs in preparing to provide immediate disaster relief and long-term recovery in California and other wildfire-prone areas.

Keywords: disaster recovery, disaster relief, non-profit organisation, non-governmental organisation, NGO, resilience, wildfire, California.

Received 8 June 2021, accepted 26 October 2021, published online 9 December 2021

Introduction

Recent destructive wildfire seasons have left communities across the western United States and around the world grappling with recovery and rebuilding. In California alone, more than 51 000 structures burned and 15 of the top 20 most destructive wildfires occurred between 2011 and 2020 ([California Department of Forestry and Fire Protection 2020a, 2020b](#)). Full recovery for communities affected by wildfires and other disasters may take years, if not decades, depending on the disaster's impacts.

Disaster recovery is typically described in three stages known as short-term, intermediate and long-term recovery. Short-term recovery during disaster response (hereafter referred to as 'relief') involves disaster response such as mass care and emergency services. Intermediate recovery returns the community to a

functional state, often through temporary measures. Long-term recovery can last from months to years and returns a community back to its status before the disaster, if not better ([FEMA 2011](#)). Here, the intermediate and long-term recovery stages are referred to collectively as 'recovery.' Government agencies, the private sector and non-governmental organisations (NGOs) all contribute to effective disaster recovery; NGOs include 'voluntary, faith-based, nonprofit, philanthropic, or community organisations' ([Department of Homeland Security 2016](#)).

NGOs play valuable roles in responding to social problems that cannot be fully addressed by the private sector or government, but NGOs vary in their knowledge of and participation in disaster response, relief and recovery ([Grønbjerg and Paarlberg 2001](#)). Some larger, more established and well-funded NGOs

like the Red Cross exist on standby to provide disaster support and then mobilise as local units when needed to provide immediate relief. Such organisations rely heavily on volunteers for large-scale action (Dynes 1968) and may only provide services during relief, prompting criticism for leaving before full long-term recovery (Simo and Bies 2007; Stys 2011; American Red Cross 2012).

NGOs that actively coordinate and prepare for disasters are more likely to be ready to support disaster response and relief efforts (Kapucu 2007; Murphy 2007; Edgeley and Paveglio 2017). NGO participation in groups such as a local VOAD (Voluntary Organisations Active in Disaster), a US national program with local chapters composed of local organisations that convene to prepare for and respond to disasters, is associated with greater familiarity with the challenges and needs immediately following a disaster (Sledge and Thomas 2019). During the disaster relief stage, NGOs may struggle as a result of insufficient resources, coordination challenges due to multiple actors working towards similar or overlapping goals amidst a chaotic environment, and funding delays or restrictions (Stephenson and Schnitzer 2006).

By contrast, smaller, local, non-disaster-focused NGOs may engage during the disaster relief phase but are not necessarily equipped to mobilise quickly or effectively. However, they may have resources, expertise and connections that could support long-term recovery (Dynes 1968). NGOs often adapt their missions in response to disasters (Jenkins *et al.* 2015), and new NGOs typically emerge post-disaster to address otherwise unmet needs (Hutton 2018).

Following a disaster, long-term community-based NGOs may decide to support both their existing beneficiaries (whose needs have likely been exacerbated) and new clients seeking assistance, becoming financial and support systems to return clients to pre-disaster life (Flatt and Stys 2013). Challenges related to the recovery phase reflect poor coordination with government agencies and other NGOs over NGO roles, but trusted relationships, interpersonal knowledge and social capital can improve long-term recovery efforts (Demiroz and Hu 2014; Curnin and O'Hara 2019). In addition, staff may experience increased pressure and burnout from relief and recovery work, while also managing the potential added stresses of being survivors themselves (Jenkins *et al.* 2015; Woolf 2019).

Recovery involves many sets of stakeholders, including government agencies at local to federal levels (e.g. via the Federal Emergency Management Agency, FEMA), the private sector and NGOs. FEMA helps local NGOs, government agencies and community members form Long-Term Recovery Groups (LTRGs) to manage disaster-related issues in order to 'unite recovery resources with community needs to ensure that even the most vulnerable in the community recover from disaster' (Department of Homeland Security 2016). Though government agencies provide some resources to support immediate relief and long-term recovery, local NGOs can offer significant financial, organisational and logistical support during recovery. For example, FEMA can fund disaster case managers to work with survivors to develop and implement plans to identify disaster recovery needs and access recovery resources, though local NGOs may also raise money to pay for additional disaster case managers (FEMA 2013).

Disaster recovery research has focused on disasters like floods and hurricanes, with fewer studies on wildfires, a pressing gap given the growing frequency and economic, social and physical damages from wildfires (Rouhanizadeh *et al.* 2019; Schumann *et al.* 2020). Wildfire-related recovery research often examines a single wildfire in a specific community (Carroll *et al.* 2011; Botey and Kulig 2014; Mockrin *et al.* 2015), and less frequently multiple wildfires or communities (Mockrin *et al.* 2016). Similarly, existing literature on NGO activities in recovery often concentrates on individual disasters, such as Hurricane Katrina, or broad disaster response. Recent wildfires illustrate the critical need for more research on how communities respond to and recover from wildfires, and particularly on how local NGOs can prepare given their substantial involvement in relief and recovery. Local NGOs are highly likely to support disaster relief and remain engaged through long-term recovery, but staff may not have prior disaster experience or knowledge. Understanding the roles, challenges and best practices of NGOs in wildfire relief and recovery before a disaster may help local NGOs prepare more effectively for a future wildfire.

In this empirical study, we identify challenges and opportunities for NGOs involved in wildfire relief and recovery based on interviews with individuals engaged in and familiar with NGO activities following three wildfires in northern California in 2017 and 2018. Specifically, we examine challenges and opportunities related to NGO management and wellbeing (i.e. mission expansion, mental health and trauma), coordination (with other NGOs and government representatives), and disaster experience (i.e. other disasters, COVID-19 pandemic, and the wildfire as a unique event). Climate change projections indicate that the incidence of large wildfires will rise (Westerling *et al.* 2011; Abatzoglou and Williams 2016). In anticipation of more local communities being affected by wildfires, it is critical to identify how NGOs can support wildfire relief and recovery most effectively.

Materials and methods

Case study selections

This study considers three wildfires selected because they ranked among the most destructive fires in California's history and occurred in northern California at approximately the same period: the Sonoma Complex Fires (October 2017), Carr Fire (July–August 2018) and Camp Fire (November 2018) (Fig. 1). The close physical proximity of the three locations also allowed several NGOs to engage in relief and recovery efforts for multiple wildfires.

First, we consider the Sonoma Complex Fires, also known as the North Bay Fires and Wine Country Fires, a collection of 17 wildfires predominantly in Sonoma and Napa Counties that collectively destroyed 8900 structures and killed 44 people. The Sonoma Complex Fires included the Tubbs Fire, which was at the time the most destructive and third deadliest wildfire in California's history. Interviews for this study primarily occurred in Sonoma County.

Second, we examine the Carr Fire, which primarily burned through Shasta County, destroying more than 1600 structures and killing eight people. At the time, it was the thirteenth deadliest and sixth most destructive wildfire in California's history.

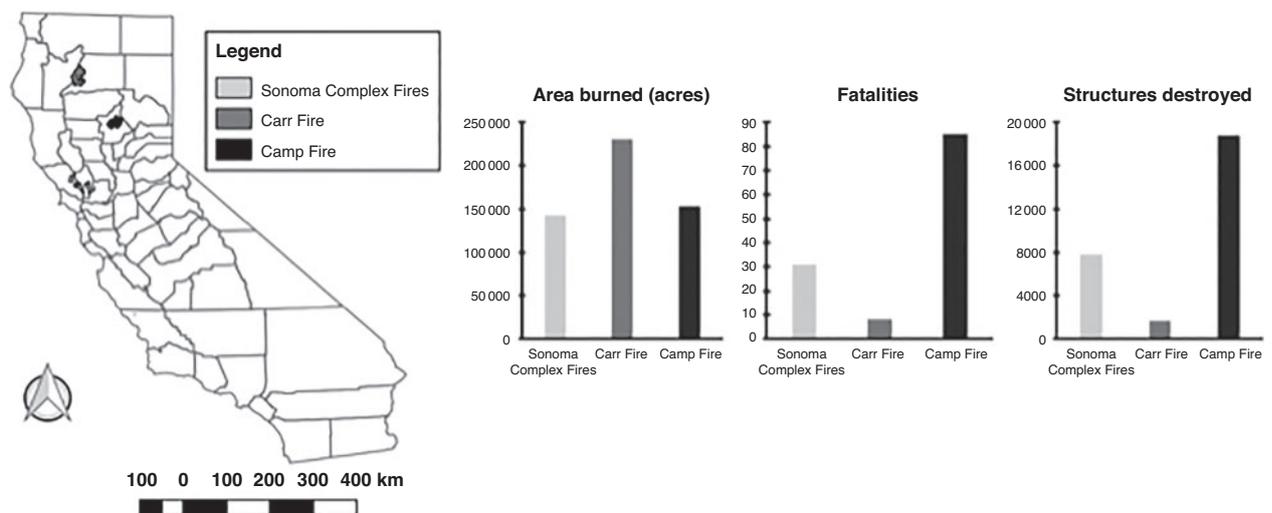


Fig. 1. Wildfires included in the study. (Left) Map, and (right) area burned (shown in acres, 1000 acres is equivalent to 4.04 km²), number of fatalities and structures destroyed from Sonoma Complex Fires (light grey), Carr Fire (dark grey), and Camp Fire (black). Map and numbers for the Sonoma Complex Fires reflect data from the Tubbs, Nuns and Atlas Fires. Source of data: California Department of Forestry and Fire Protection (2020b).

Table 1. Background information on the California counties included in case study, organised by income, population density and political affiliation
Source: California Secretary of State (2018); United States Census Bureau (2019)

	Sonoma County	Shasta County	Butte County	California
Income				
Median household income (2019 US\$)	81 018	54 667	52 537	75 235
Poverty rate (%)	8.20	13.30	16.10	11.80
Population density				
People per square mile (km) (as of 2010)	307.1 (118.6)	46.9 (18.1)	134.4 (51.9)	239.1 (92.3)
Political affiliation				
Registered voters: Democratic Party (%)	51.92	23.23	34.91	43.45
Registered voters: Republican Party (%)	18.14	46.01	34.18	24.04
State and Congressional District Political Representation (since 2013)	Democratic	Republican	Republican	Democratic majority

Finally, we consider the Camp Fire, which burned in Butte County, destroying more than 18 800 structures and killing 85 people. It remains the deadliest and most destructive wildfire in California's history.

Sonoma County is wealthier, denser and more liberal than California on average. By comparison, Shasta and Butte Counties are poorer, more rural and more conservative than California on average (Table 1) (California Secretary of State 2018; United States Census Bureau 2019). Wealthier communities receiving more government funding tend to have higher densities of non-profit organisations (Lecy and Van Syke 2013), but lower-income and rural communities rely heavily on the local non-profit services that are available in areas with more limited government capacity or funding (Allard 2007).

Interview sampling strategy and analysis

Potential interviewees were identified first through affiliation with LTRGs for the three fires. The results draw on 24 interviews with representatives from 17 local NGOs and 3 LTRGs, conducted between August 2019 and November 2020 by the lead

author (Table 2). Interviewees were identified based on their active participation in relief or recovery, across a diverse set of NGO classifications and sizes, in order to sample and reflect multiple perspectives. Nine interviewees represented local branch offices of a larger network or organisation. Most organisations were small, with fewer than 50 full-time staff (Table 2). Interviewees representing LTRGs worked closely with local NGOs and could speak of the experiences of the local NGO community in wildfire relief and recovery. Interviews took place approximately 2 years after each fire. Sonoma Complex Fires interviews occurred between August and October 2019. Carr and Camp Fire interviews occurred between August and November 2020. Interviewees were asked to recommend other interviewees involved in wildfire relief and recovery (Biernacki and Waldorf 1981). Fourteen interviewees were identified through snowball sampling based on initial interviewee recommendations; interviews continued until interviewee saturation was reached.

Interviews were semi-structured, using a protocol interview guide (Rubin and Rubin 2012; Creswell and Poth 2018). All interviewees received opportunities to ask questions and

Table 2. Interviewee affiliations by wildfire

Interviewees represented a range of non-profit organisational backgrounds and perspectives across wildfire relief and recovery efforts. Classifications (Column 4) reflect Charity Navigator data or status as a Long-Term Recovery Organisation (LTRG). The LTRGs in this study include Rebuilding Our Community Sonoma County (ROC) from the Sonoma Complex Fires, NorCal Community Recovery Team (NorCal CRT) from the Carr Fire, and the Camp Fire Collaborative from the Camp Fire. Total employees in 2019 (Column 5) reflects total employee data from 2019 Internal Revenue Service (IRS) Forms 99 when available and personnel data from the organisation when otherwise not available from the IRS

Wildfire	Interviewee	Affiliation	Organisation classification	Total no. employees	Primary stage of involvement
Sonoma Complex Fires	Sonoma-1	Catholic Charities of the Diocese of Santa Rosa ^A	Charitable organisation	100–300	Both
	Sonoma-2	Coffey Strong	Charitable organisation	10–49	Recovery
	Sonoma-3	Legal Aid of Sonoma County	Legal services	10–49	Both
	Sonoma-4	Pepperwood Preserve	Land resources conservation	10–49	Recovery
	Sonoma-5	Rebuild North Bay Foundation	Public safety, disaster preparedness, and relief not elsewhere classified; social welfare	<10	Recovery
	Sonoma-6	Sonoma County Community Foundation ^A	Community foundations	10–49	Recovery
	Sonoma-7	Sonomacounty.recovers.org ^A	Charitable organisation	<10	Relief
Carr Fire	Carr-1	Center for Mind–Body Medicine ^A	Health	10–49	Recovery
	Carr-2	Community Foundation of the North State	Community foundations	<10	Recovery
	Carr-3	Norcal CRT	Long-term recovery group	10–49	Recovery
	Carr-4	Norcal CRT	Long-term recovery group	10–49	Recovery
	Carr-5 ^B	Northern Valley Catholic Social Service	Charitable organisation	100–300	Recovery
	Carr-6 ^B	Redding Host Lions Club ^A	Social welfare organisation	10–49	Relief
	Carr-7	Salvation Army Redding Corps ^A	Religious organisation	<10	Both
	Carr-8 ^B	United Way of Northern California ^A	Fund raising organisations that cross categories	10–49	Both
Camp Fire	Camp-1	Butte Hope, Northern Valley Catholic Social Service ^A	Charitable organisation	100–300	Recovery
	Camp-2	Camp Fire Collaborative	Long-term recovery group	<10	Recovery
	Camp-3	Camp Fire Collaborative	Long-term recovery group	<10	Recovery
	Camp-4 ^B	Camp Fire Collaborative	Long-term recovery group	<10	Recovery
	Camp-5	Camp Fire Collaborative	Long-term recovery group	<10	Recovery
	Camp-6	Community Housing Improvement Program (CHIP)	Charitable organisation	50–99	Recovery
	Camp-7	Jesus Center	Religious organisation	10–49	Recovery
	Camp-8	Rebuild Paradise Foundation	Disaster preparedness and relief services	<10	Recovery
	Camp-9	United Way of Northern California ^A	Fund raising organisations that cross categories	10–49	Both

^AOrganisation is part of a network or is a branch office of a larger organisation.

^BInterviewee supported relief and/or recovery for both the Carr Fire and Camp Fire.

provided informed consent for recording and for responses and personal identification to be shared, following the ethical guidelines and approval from the Stanford University Institutional Review Board. Interviews were conducted in person, by telephone, or on Zoom (<https://zoom.us/>). Interviews lasted between 45 and 90 min. Interviewees answered questions on: (1) the activities of the NGO before the fire and during relief and recovery; (2) their preparation for the fire; (3) the fire's impacts; (4) challenges, successes and best practices before, during and after the fire; (5) what the interviewee would have done differently; and (6) any other topic not previously discussed.

The lead author conducted, recorded and transcribed all interviews. Transcripts were first reviewed to identify broad topic areas based on questions posed to interviewees. In response to the first question, interviewees described how the NGO adapted its mission and activities after the fire. In response

to the second, fourth and sixth questions, interviewees primarily mentioned coordination with NGOs and government agencies and prior experience with other disasters, along with the wildfire's impact on staff mental health and the aspects of the fire that made its impacts unique to their community. We grouped these responses under three main themes: management and wellbeing, coordination, and disaster experience (Table 3). Transcripts were next coded in *NVivo* using qualitative content analysis (Hsieh and Shannon 2005; Elo and Kyngäs 2008). The coding occurred through thematic association by question to identify themes and recode interviews thematically and by wildfire in an iterative process. The second author checked all codes to ensure coder reliability. Discrepancies between coders were scrutinised and resolved to ensure consistency of findings. Quotes are attributed to interviewees by wildfire and interviewee number (for example, Sonoma-1).

Table 3. Code descriptions and interviewee counts, sorted by key themes (Management and wellbeing, Coordination, Disaster experience) and occurrence by individual wildfire and across all fires

Grey headers present overarching themes. Column 1 lists the specific subthemes that emerged from interviews under each overarching theme. Column 2 provides a description of each subtheme. Columns 3–5 present the number of interviewees who mentioned the subtheme from each wildfire. Column 6 displays the total number and percentage of interviewees who mentioned the subtheme. Interviewees with experience with two wildfires are counted with the fire(s) they refer to during the interview, as applicable based on coding, but are not double-counted in the total count

Code description		Sonoma Complex Fires	Carr Fire	Camp Fire	Total
Management and well being					
Mission and activity expansion	Organisations adapted, expanded, or reframed their activities or missions to encompass the wildfire's impacts, but the core mission remained largely the same. New changes often focused on creating more affordable housing and helping newly vulnerable populations	5	3	7	15 (63%)
Trauma and mental health	Staff experienced ongoing trauma and negative mental health impacts (including burnout) linked to new staff responsibilities and programming	5	6	7	18 (75%)
Coordination					
Personal professional relationships	Personal professional relationships improved NGO coordination with other NGOs and government representatives	7	7	6	20 (83%)
Lack of personal professional relationships	Lack of personal professional relationships and timely responsiveness to context-specific circumstances negatively impacted NGO coordination with other NGOs and government agencies	6	5	10	19 (79%)
Disaster experience					
Prior disaster experience	Staff had greater confidence responding to wildfires if interviewees/NGOs had prior experience with a disaster. Staff also had greater confidence responding to a wildfire or other disaster (including COVID-19) after the three wildfires in this study	2	5	8	14 (58%)
COVID-19 pandemic	COVID-19 presented overlapping yet distinct challenges compared with a wildfire including (1) COVID exacerbated negative mental health impacts; (2) COVID slowed rebuilding; and (3) virtual recovery is harder than in-person recovery	Not applicable	6	8	14 (82%)
Wildfires as unique events	Each wildfire and affected community are unique, resulting in unique effects on wildfire relief and recovery	5	8	8	20 (83%)

Results

Management and wellbeing

NGOs adapted to wildfires by expanding their missions and activities, but staff experienced negative mental health impacts associated with trauma and burnout.

Mission and activity expansion

Interviewees recognised NGO management changes, noting pre-existing NGOs often expanded their missions and activities during and after the fires, while new NGOs emerged to address unmet needs (Table 3). Nearly two-thirds of interviewees said their organisation expanded or reframed its work to encompass the wildfires' impacts, even as the core mission remained largely consistent. For example, United Way of Northern California traditionally only funds agencies but distributed individual grants to Carr Fire survivors.

Organisations first adapted to wildfires with a new or expanded emphasis on affordable housing availability. One interviewee explained:

There was no need to change our mission. Because our focus was creating, providing, supporting housing... What we have needed to do is think about how we accelerate, how we invest in our capacity to be able to do more and do it faster. And then how do we maybe tweak some of our

programs to fit within the needs ... of the recovery model. [Camp-6]

Several organisations led new projects to support the availability of affordable housing. For example, Community Foundation Sonoma County provided a grant to fund advocacy and public education on the importance of housing projects.

Organisations also expanded their work by supporting populations with new or exacerbated vulnerabilities because of the fire. Wildfires expose new vulnerabilities and compound pre-existing inequities and vulnerabilities linked to social and economic insecurities, for example related to language proficiency or unemployment or disproportionate impacts for racialised groups (Méndez *et al.* 2020). Sonoma-6 explained that all fire survivors felt vulnerable after the disaster, resulting in increased competition among survivors for NGO resources:

Everybody was vulnerable after the fires. Even the people who had resources... I got calls from people who had multimillion dollar homes... and were furious at us that we weren't distributing our funding to them.

Earmarked philanthropic donations and federal funds constrained NGOs. According to Camp-7:

You had those who were homeless because of the fire, and there were other [pre-fire] homeless... The 'homeless'

homeless can't get the resources that are [assigned] for the fire homeless.

Camp Fire interviewees described situations of elderly people living on fixed incomes with limited financial options beyond what local NGOs provided. Several interviewees identified renters as a particular group that the NGOs had not previously considered to be vulnerable but began supporting after the fires. One interviewee explained:

Renters who lost their home in a fire have no right to rebuild... They also had less insurance options and subsidy options because, again, they weren't the homeowner... They were definitely getting left in the cracks of our safety net... That has been a big battle we've been taking on and making sure that the renters are able to recover in the same way a homeowner might be able to recover. [Sonoma-1]

Emerging vulnerable populations prompted new attention from NGOs.

In addition, several NGOs included in the study formed shortly after the wildfire to meet otherwise unmet needs but faced early legitimacy and funding issues. One interviewee quit their job and spent 9 months fundraising and applying for grants to gain enough legitimacy to formally create the new NGO and hire staff. While the Rebuild North Bay Foundation did not face financial challenges because Pacific Gas & Electric (PG&E) provided preliminary funding to begin operations, the foundation had to overcome suspicions from other NGOs that PG&E was influencing its priorities because PG&E equipment had caused the Sonoma Complex Fires. However, when interviews were conducted 2 years after the fires, other NGOs had embraced the new organisations included in this study as long-term contributors to recovery.

Trauma and mental health

Most interviewees noted ongoing trauma and negative mental health impacts associated with the wildfires among staff, with several linking wildfire-related trauma to new staff responsibilities and programming (Table 3). Interviewees described the pressure of supporting short-term disaster relief efforts, with many often only recognising their exhaustion when transitioning from relief to long-term recovery. Staff burnout followed long weeks of crisis response, when supporting survivors felt more urgent than dealing with everyday concerns like rest. Carr-7 explained:

There were times when [one volunteer] had to be removed from the computer during the Carr Fire. She was so much in the [fire] response that her body was having a hard time keeping up.

Some interviewees and their colleagues or families were also directly affected by the wildfire, compounding their stress because survivors had to balance supporting their clients' needs while simultaneously managing their own.

Interviewees also grappled with their mental health while supporting long-term disaster recovery. Sonoma-5 rhetorically asked:

Who helps the helpers? ... It's like you hold your breath for so long because you have to be strong for all the people in front of you.

Interviewees felt like there was always too much work to take a break. For example, Sonoma-3 said:

I have thought many times that, 'Okay, a lull is coming.' And every time, something else happens... It's 60-plus hour weeks, and that's been consistently true.

Similarly, interviewees described 'hitting a wall' from exhaustion or 'tearing [their] hair out' to find funding to keep people at the NGO employed.

Coordination

Interviewees claimed that personal working relationships improved coordination with both other NGOs and government representatives, while the lack of personal working relationships hurt coordination efforts.

Personal professional relationships

Interviewees widely acknowledged the value of pre-disaster coordination and personal professional relationships during the relief stage, particularly praising the VOAD (Table 3). Interviewees contrasted the Carr and Camp Fires because while Shasta County had an active VOAD before the fires, prior efforts to establish a VOAD in Butte County had failed. Carr-7 described the Shasta/Tehama VOAD's value:

We had practiced together and got to know each other and understood each other so that when, and if, something did happen, we were able to respond as a whole, instead of responding as a bunch of separate agencies... [The Shasta/Tehama] VOAD organised quickly [after the Carr Fire... But for the Camp Fire] there was no VOAD. There was no structure for the non-profits to rally around.

Carr-5 agreed:

Camp [Fire NGOs] had a much harder time coordinating efforts... so that it delayed the process. And we didn't realise that we were coordinated so well here in Shasta County until we saw what was happening in Camp.

Pre-emptive coordination and close working relationships among NGOs contributed to faster relief efforts.

Close relationships among NGO staff improved relief and recovery work. NGO staff reported sharing their resources with other organisations during relief and recovery (Table 3). For example, Sonoma-1 said:

Many of us who've been involved in this work have helped other communities and shared what we are doing and what has worked and what has not worked. I just hope people can learn from what we've done.

Interviewees appreciated receiving the guidance. Carr-8 explained:

The morning after the Carr Fire, one of the first emails I got was from the chief operating officer of United Way of the Wine Country. She was sending me basically their playbook for how to address this kind of emergency. We ended up saying, 'Okay, well, let's follow their playbook!'

Interviewees from local branches were grateful to receive expert help from national or regional offices. An expert from Catholic Charities USA came to Shasta County for 1 week to help the Northern California Catholic Social Service branch after the fire. Similarly, the CEO of Lutheran Social Services of Northern California provided tips to Carr-3 on ensuring Lutheran representation in the long-term recovery process.

Interviewees also praised relief and recovery coordination with government representatives when they had personal working relationships with them. Several interviewees applauded the Sonoma County government's 'block captain' system in which neighbourhoods appointed representatives, or block captains, to report issues directly to government officials. The Shasta/Tehama VOAD had met regularly with Shasta County's sheriff's department before the fire to write emergency protocols. Each night after the fire, the sheriff's department told the VOAD's spiritual liaison which evacuated neighbourhoods would reopen the next morning so local spiritual leaders and professional disaster chaplains could be on site to provide emotional support as evacuees returned home. Close relationships helped expedite government attention towards recovery. As Carr-2 explained:

When we're trying to bring together key stakeholders or we're trying to get information... I could just text the county CEO, and I can just call the city manager. I can just text whomever, or they text me, and it's done... And it's not strange that I can call our representative... and just have breakfast with him. You don't have to go through tons of layers and staff members to make it happen.

Working relationships with city, county and state government representatives improved relief and recovery efforts.

Lack of personal relationships

Conversely, the lack of personal working relationships with other NGOs or government agencies frustrated coordination efforts during relief and recovery. Though several interviewees praised the Red Cross for providing shelters and food, others complained about the Red Cross's lack of coordination. Sonoma-7 explained that people often volunteer with the Red Cross because of its reputation and become registered exclusively on the Red Cross's proprietary volunteer list:

So now if something happens, we can never use that list again. We need to recreate a list of volunteers, trained volunteers, every single time there's a disaster, which is the most stupid thing I've ever heard in the world in terms of preparedness.

In addition, a Camp Fire interviewee described the Red Cross shelters as 'horrific' and 'inhumane,' where 'they treated people like prisoners to get them to leave'. The interviewee described a morale-boosting holiday dinner that the Red Cross cancelled at the last minute and the creation of new shelter restrictions intended to make people feel unwelcome so they would leave the shelter faster. The interviewee continued:

It was not intended to be less than mildly cruel to people who were suffering, with really no real care put into what was

going on with them, just getting them moved out so that they weren't the Red Cross' problem anymore.

These interviewees interpreted decisions made by the Red Cross as counterproductive to survivor welfare and unhelpful to other NGOs, which in turn felt compelled to expand their own services.

Similarly, interviewees complained about working with government agencies that were unfamiliar with on-the-ground conditions or challenges during long-term recovery. Most complaints centred around FEMA delays or misunderstandings of local context. For example, Camp-2 explained:

FEMA needs to be reworked completely... It's unconscionable how long it takes for help to arrive. Our FEMA trailers did not arrive here until August [2019]. Nine, 10 months after the disaster.

Interviewees also expressed frustration with FEMA disaster case managers. Camp-9 said:

Those people [from FEMA] knew nothing about our community... They didn't come with any resources. They were just there to tell people what to do... And then they would have wrong information!

In addition, some case managers intimidated their clients because of unfamiliarity with the local community and its values. Camp-3 described how FEMA workers arrived wearing army fatigues and boots:

This is really retraumatizing for populations that don't deal well with government... Survivors will hide when they [FEMA] knock on the door... They'll [FEMA] come back three or four times a day, if they don't talk to them.

NGO staff felt compelled to supplement what they viewed as FEMA's minimal support. When a government shutdown prevented FEMA from hiring disaster case managers for months after the Carr Fire, local NGO staff instead recruited and trained volunteers as disaster case managers. NGOs cited the lack of personal working relationships with specific government agencies and NGOs as harming coordination and survivor recovery efforts.

Disaster experience

Interviewees expressed more confidence responding to wildfires when they had some prior experience with disasters, though the COVID-19 pandemic presented distinct challenges. Each wildfire also had unique impacts on the community and recovery.

Prior disaster experience

Interviewees felt more confident supporting wildfire relief and recovery if they had any prior disaster experience (Table 3). For example, Camp-7 described the benefits of previously responding to the Oroville Dam flood:

We had what we've called our 'practice emergency' with the Dam evacuation in '17, which pointed out all sorts of inefficiencies ... or lack of cohesive networking amongst those of us who are often on the ground when these kind of

things happen... So by '18, we were a bit more networked and set up [for the Camp Fire].

Prior disaster experience resulted in better disaster response.

Similarly, interviewees expressed greater confidence and knowledge when responding to disasters that occurred after the three fires considered here. Carr-3 helped institute new policies and procedures for future wildfires at their church by mapping the congregation and gathering contact information:

If there's a fire on a certain intersection, I can get on my map ... [and] ... see who lives where and start calling them and making sure they're okay. See if they need help evacuating, all that kind of stuff, things we did not have in place at all, and didn't even know that we needed [before the Carr Fire].

After the 2020 North Complex Fires in Butte County, Camp-2 reported that 'we knew which partners to call to access immediate funding, which partners to call to figure out our donations pieces, who to do all these different things with'. Prior wildfire experience had taught interviewees how to react more effectively to future wildfires.

COVID-19 pandemic

Carr Fire and Camp Fire interviews occurred during the coronavirus pandemic. Interviewees described the ongoing pandemic as distinct from a wildfire, with its own impacts on long-term recovery, specifically on mental health, rebuilding and LTRG meetings (Table 3). First, interviewees reported that the pandemic exacerbated the negative mental health effects of the wildfires on staff. Camp-3 described the challenge of working as a disaster case manager facilitator: 'It's already stressful enough doing this work, but then also figuring out how to do that at home!' Carr-4 contrasted the mental health impacts of the Carr Fire ('more of a flash') to the pandemic ('this really slow, long, agonising burn').

Second, the pandemic slowed rebuilding efforts and increased the cost of housing materials. Plans for college students to assist with Camp Fire rebuilds during spring and summer breaks were cancelled. The first manufactured home ordered by the Camp Fire Collaborative took 6 weeks for delivery, but homes ordered by September 2020 were expected to take 22 weeks. Camp-2 explained:

Costs have gone up 20%. So instead of being able to house 50 families, I had to go down to 45, and now I'm trying for 47, and I'm juggling finances to scrape one more family in.

Delays reflected lower capacity operations at construction plants and hold-ups of materials in ports.

Third, multiple interviewees mentioned the challenge of adjusting to virtual recovery meetings. One interviewee commented that a county representative had not attended recent Camp Fire Collaborative meetings because of the pandemic: 'There's just a lot of distraction. Those of us on this frontline are on three other frontlines.' Before the pandemic, Camp Fire Collaborative members would arrive 30 min before the meeting to chat and remain 45 min after the meeting to continue their conversations in the parking lot. Camp-5 explained:

The informal networking that COVID has taken away has, I think, stalled us... COVID has taken away opportunities for

creativity and collaboration that happened in those parking lot conversations.

The loss of social capital from the transition to virtual interactions negatively impacted the informal recovery coordination between NGOs.

Wildfires as unique events

Despite similarities across the three fires, interviewees noted the unique impacts of each wildfire on the local community and its relief and recovery (Table 3). Interviewees highlighted their community's specific cultures and relationship with the world. One interviewee commented that Sonoma County received international donations because of emotional connections to local vineyards. Widespread government distrust slowed recovery in Butte County. Camp-7 explained:

[People] couldn't get their FEMA checks because they didn't have a bank account... There's a cultural difference. A lot of money in mattresses that burned up. Gold bars in fireplaces.

In addition, interviewees claimed that each community's response and recovery process was unique. Camp-8 spoke with Sonoma-5 shortly after the Camp Fire:

She said, 'Look, your disaster is completely different than ours. The needs of your community, there are going to be commonalities, but there's going to be so many things that are so different.'

Carr-2 described Shasta's fast recovery as a result of its 'uniqueness, but I don't think that is something that necessarily can cross communities.' Interviewees agreed that local context matters in disaster recovery.

Discussion

Recent trends indicate that wildfires are likely to continue devastating local communities across California and the western United States, with local, regional, national and international NGOs engaging in immediate relief and long-term recovery. Parallels in our findings across the three major wildfires examined here indicate that NGOs that support relief and recovery are likely to experience similar, recurring challenges, opportunities and best practices related to management and coordination. Despite these analogous experiences, most interviewees described the wildfire, their community and the path to recovery as unique, while still also recognising the value of prior disaster experience in preparing for future incidents. Therefore, while NGOs can prepare for commonly encountered management and coordination challenges and opportunities after a disaster, staff must simultaneously respond to the distinct features of each new disaster and its impacts.

The parallels between this study and those examining other disasters suggest that the barriers to effective relief and recovery associated with NGOs have commonalities across many types of disasters (Jenkins *et al.* 2015; Edgeley and Paveglio 2017; Sledge and Thomas 2019; Woolf 2019). For example, other studies reveal frustration with FEMA due to FEMA's limited experience with wildfires (Edgeley and Paveglio 2017), confusion over FEMA's official role during hurricane relief (Schneider 2008), or unpleasant interactions with FEMA workers following floods

(Greer and Trainor 2021). Disasters, including wildfires, generate disproportionate negative impacts on the most socially vulnerable in a community, particularly on minority populations and those of lower socioeconomic status, and can also expose new social vulnerabilities and inequities (Fothergill *et al.* 1999; Davies *et al.* 2018). Individuals from socially, politically, or economically marginalised backgrounds are more likely to experience greater challenges in long-term recovery and may rely heavily on NGO support (Reid 2013; Nagler 2017).

Non-profit organisations deliver important services during disaster relief and recovery. Based on both our results and those from other studies examining NGO roles during disaster relief and recovery, NGOs can prepare for disasters by coordinating with government agencies and other NGOs through VOADs (Sledge and Thomas 2019). Previous experience with a disaster improves NGO staff's understanding of their roles in relief and recovery. NGOs should be flexible and adapt as organisations and with their staff (Jenkins *et al.* 2015). Community needs will inevitably change after a major incident, exacerbating disparities and exposing new vulnerabilities. Remaining flexible aids in adaptive capacity during complex situations like disaster recovery (Cinner *et al.* 2018). NGO services may shift to respond to new community needs, and staff may need support to prevent burnout (Woolf 2019). Finally, full recovery may take years, requiring local NGOs to divert or expand their focus onto disaster recovery for an extended period of time (Crutchfield 2013). Actively practicing adaptive management and coordinating with other local NGOs and government agencies before, during and after a disaster enables greater success in long-term community recovery.

Data availability

The data generated during the study are not publicly available under the Institutional Review Board approval of the research. This work has been approved by the Stanford University Institutional Review Board protocol (eProtocol 50976). All participants provided written and informed consent for participation and publication.

Authors' contributions

R.K.M. conceived and designed the research, coded and analysed the data, and wrote the paper. K.J.M. served as the second coder and provided edits, comments and review.

Conflicts of interest

The authors declare no competing interests.

Declaration of funding

This work was funded by an E-IPER Summer Research Grant and a McGee Research Grant.

Acknowledgements

Len Ortolano, Caroline Ferguson and Josheena Naggea provided comments on draft versions of this manuscript.

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