

Supporting the Role of Emergent Volunteers During Disasters: A Review of the 2021 BC Floods

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Author's Note

We would like to declare that Mahtab Gill and Chirag Chopra serve as Board Members of the Airlift Emergency Response Operations (AERO) program discussed in this paper. Correspondence concerning this article addressed to Chirag R. Chopra, Email: chiragrahulchopra@gmail.com

Abstract

Emergent volunteers play a vital role in supporting their local communities during emergencies or disasters. Frequently emergent volunteers find themselves as the first onsite; immediate capacity bolstering forces that fill gaps left by the scope and timing of the 'official' response. Despite their inherent presence during crises, these volunteers tend not to be formally acknowledged or incorporated within the larger response. In this study, we conduct a review of the various emergent responses during the BC 2021 flood disaster and evaluate their respective roles, strengths, weaknesses, and identify their common characteristics. This analysis aims to inform the employment of potential collaborative governance frameworks, namely the Constellation Collaborative Model (CCM) and the Johnson model, that appreciate and tangibly support emergent volunteer responses during disasters. On-the-ground preparedness initiatives and governance models that appreciate the presence and utility of emergent responders can promote a collaborative, safe, and supportive relationship between volunteers and governing authorities during emergencies. Such initiatives emphasise efficacy through an all of society approach to emergency management. With greater intensity of climate fuelled disasters, now is the right time to build the foundation for the next generation of emergency management systems which recognise the role of emergent volunteers.

Introduction

In the fall of 2021, British Columbia experienced an atmospheric river which caused extensive damage to public infrastructure and private property across numerous communities. In addition to the governmental response, news of civilian groups and relief efforts spearheaded by small non-government organisations (NGOs) came to light. Such stories included off-duty physicians supporting overflowing regional hospitals, volunteers working long hours to sandbag vital infrastructure, and groups of volunteer pilots airlifting essential supplies to communities cut-off by road (Karamali, 2021; Luymes, 2021; Devlin, 2021).

Such volunteers, known as emergent or spontaneous responders, are characteristically self-organised citizens who take the initiative to provide immediate emergency relief services to their communities (Dynes, 1968). Emergent civilian efforts in response to disasters are commonplace around the world and have proven to be essential in increasing immediate response capacity. In 2004, following the tsunami in Sri Lanka and Thailand, virtually all immediate life-saving responses were conducted by local volunteers for the first few days post-disaster, including rescue, provision of food and water, and burials (Twigg & Mosel, 2017). In the 2015 earthquake which struck Kathmandu, local residents rescued people from collapsed buildings, constructed temporary shelters, distributed relief packages, and raised online funds (Devkota et al., 2016). More recently, amidst the devastating 2020 fires which ravaged the North American west coast, the California Pilots Association Disaster Airlift Response Team

Immediate response to disasters is almost always carried out by family, neighbours or emergent volunteers, hours or days before a coordinated government effort. Such spontaneous responses continue to be overlooked in formal emergency management plans even though they remain a common and vital

aspect of relief and recovery efforts (Twigg & Mosel, 2017). Recent large-scale events have emphasised the oft unacknowledged fact that emergencies require a whole of society approach, and governmental emergency management must embody such a mindset (Sobelson et al., 2015). Simply stated, worsening climate related disasters mean jurisdictions must be capable of mobilising and managing large, mostly unorganised, emergent civilian forces.

Methodology

In this study, we conduct a review of the various emergent responses to the BC 2021 flood disaster and evaluate their respective roles, strengths, and weaknesses. This analysis aims to inform the employment of possible collaborative governance frameworks that appreciate and tangibly support emergent volunteer responses during disasters.

2021 BC Floods: Analysis of Emergent Civilian Response

The November 2021 Pacific Northwest Floods caused by an atmospheric river primarily affected parts of southern British Columbia and neighbouring Washington state, causing between 2.5 to 7.5 billion CAD in damage and leading to 5 deaths (Journal Montreal, 2021). The disaster saw the closures and damage of numerous highways and railroads, causing the subsequent isolation of communities (Schmunk, 2021). Amidst the crisis, various volunteer initiatives materialised in BC whereby civilians bridged the gaps in response left by NGOs and government entities. Table 1 describes notable emergent civilian responses to the disaster.

Table 1: Description and high-level characteristics of select emergent responses during the 2021 BC Floods. Examples chosen by prevalence in media and showcase of diversity. “Type of Activity” column descriptors created by Twigg and Mosel (2017).

Emergent Response	Type of Activity	Description
Volunteer Civilian Pilot Response (Devlin et al. 2021)	Supplies and Provisioning	Dozens of aircraft piloted and serviced by volunteers airlifted critical supplies from the Lower Mainland to communities in the Interior isolated from the disaster.
Barrowtown Pump Station Volunteers (Luymes, 2021)	Buildings and Services	Local volunteers passed 40,000 14-to-22-kilogram sandbags from hand to hand, overnight to form a protective barrier around an essential pump station, preventing loss of critical infrastructure.
Stranded Physicians Supporting Mudslide Victims (Karamali, 2021)	First aid and medical emergency care	Physicians stranded on Highway 7 near the City of Hope arrived at the overflowing Fraser Canyon Regional Hospital to support individuals injured by mudslides.

Emergent Response	Type of Activity	Description
GoFundMe Campaigns (gofundme.com)	Raising funds for victims	Over \$100,000 raised in relief funds for 120+ independent campaigns on GoFundMe.com. Campaigns ranged from supporting various NGOs to individuals stranded/injured during the disaster (Appendix 1).
Princeton Volunteer Group (Laube, 2021)	Recovery Efforts	Locals in the town of Princeton banded together to coordinate flood response and recovery efforts with local businesses and churches to provide meals and lodging, and conduct clean-up efforts post-flood.

Common Characteristics

Volunteer Diversity and Improvised Response

These organic efforts to alleviate pressure on local response capacity exhibited certain common characteristics. An emergent response, as seen in Table 1, is able to organically pull talent from a varied workforce resulting in greater diversity in approaches to the emergency. Emergent responders are highly heterogeneous, with their profiles dependent on the type of event they respond to, their socioeconomic status, education, cultural background and political context (Twigg & Mosel, 2017). Volunteers' diverse backgrounds and skills present the capability of performing a greater variety of tasks and approaching problems from different perspectives (Sims, 2018). However, this emergent workforce is limited in scale of collaboration, lacks inter-group coordination, and tends to disband post emergency, losing any institutional memory or expertise (Twigg & Mosel, 2017).

This diversity of volunteers gives rise to the element of improvisation and innovation in emergency response. Due to intimate familiarity with areas or the people that are affected by a local disaster, emergent volunteers can configure their relief efforts to meet unique needs (Whittaker et al., 2015). In contrast, governmental or formal organisations may be less likely to innovate or improvise with their responses for an array of reasons, including established protocols (Whittaker et al., 2015) or other technological and legal constraints (Table 1). The BC 2021 floods saw the use of improvised and innovative responses that resulted in immediate benefits. This included off-duty physicians who journeyed to regional hospitals to provide aid to hospital staff overwhelmed by injured individuals. This involved providing a service (medical support) outside of formally sanctioned work hours, and their internal motivation to provide an essential service at a crucial time. Furthermore, volunteer pilots used private aircrafts to deliver essential items and supplies to communities in need, leveraging their personal assets and available resources (aircraft, fuel) for this emergency response (Table 1).

However, there is associated risk with the nature of this approach. Civilians partaking in an emergent response may not be well trained in performing certain emergency management-related tasks, leading to increased risk of injury or loss of life for volunteers and the communities they serve. Furthermore, a phenomenon known as convergence, whereby good-intentioned individuals or groups congregate towards a disaster-stricken area may disrupt the efforts of a coordinated response. In 1999, emergency responders in Turkey were delayed in reaching an earthquake disaster zone due to a 32 km

traffic jam primarily caused by spontaneous volunteers (Helshoort and Ruitenbergh, 2004). Due to a lack of training and potential coordination, spontaneous volunteers may add further strain on recovery efforts.

Localised Response in Origin and Capacity

None of the emergent responses reviewed for this analysis spread beyond their immediate community or region (Table 1). The farthest reaching response was that of the pilots due to the nature of their work, but even they did not expand beyond select communities in the Interior region. Twigg & Mosel (2017) posit that individuals may feel personally impacted by disasters that affect their own community, and typically decide to prioritise their own response and recovery within their own community.

From the BC 2021 floods, examples of volunteers responding to support their own communities included the Barrowtown volunteers who sandbagged a specific local pump station, individuals in Princeton who responded within their town through a variety of humanitarian acts, and pilots who responded with personal missions to local communities and later expanded to the Interior region (Table 1). In nearly all instances, local emergent volunteers worked alongside and provided support to official emergency management services. Comparatively, institutional responses conducted by governments and established NGOs benefit from existing resources and planning, so can launch far-reaching responses. This paradigm highlights the unique characteristics of both types of response and makes evident their complementary nature. Institutional responses are well-suited for governance and coordination, while emergent responses can be critical to relieve local capacity shortfalls (Twigg & Mosel, 2017).

Decentralised Funding

The success of decentralised funding efforts was apparent through the wide use of GoFundMe (GFM) and other crowdfunding campaigns. In crowdfunding models, campaigns and organisers are typically authenticated by the crowdfunding facilitator (i.e. GoFundMe) along with the identity of the fund recipient/user and their relationship with the organisers through a cross-referencing process. GoFundMe, and other platforms, offer an encrypted and efficient method of directly withdrawing donated funds via bank transfers. The process of transferring funds can take between two to five business days, unlike relatively arduous bureaucratic processes (GFM, 2022).

Just over eight thousand donations were made through GFM during the 2021 BC floods, raising in excess of \$1.3 million CAD for seventy-two verified fundraisers. Funds were used to cover a variety of costs, primarily home repairs, general living expenses, and animal care, as well as donations to local charities and redistribution among the affected communities. One year after the floods, sixty-five of the fundraisers continued to accept donations, providing ongoing financial support for affected communities and local recovery efforts.

Government assistance can provide benefits that crowdsourcing methods lack. There is a certain reliability in government assistance, as it does not rely on active campaigning and the harnessing of public support, which can be difficult to perform following a disaster. Regardless of one's best efforts, it remains very possible to underperform when setting a monetary goal in a decentralised setting. Of the 72 verified campaigns, twenty officially met or surpassed their goal, with an average completion rate of 91% [Appendix A]. Government resources also tend to be vaster when compared to even the most robust crowdsourcing campaigns. For example, the federal government endowed the province with a \$5 billion grant to provision flood recovery efforts, and the most recent 2022 Provincial Budget contains \$1.5 billion for flood recovery efforts and \$600 million dedicated to emergency preparedness (Meissner, 2021; BC Budget, 2022)

However, a major drawback is the amount of time it may take to access government funds. For example, even if an individual is eligible for Disaster Financial Assistance (DFA) in BC, it may take

several months to receive a payment or even a decision after applying (EMBC, 2022). The application and approval process can take months which fails to alleviate immediate needs or fulfil the same short-term relief that personal campaigning and decentralised funding addresses. A year following the floods, over 83% of DFA applications remained outstanding (Brunoro, 2022).

Non-traditional Communication

In all emergent responses reviewed in this paper, social media commonly served as a method for quickly accessing a larger pool of resources and support. It played an important role in the promotion of GoFundMe campaigns and callouts for volunteers to participate in activities. For example, Facebook support groups formed across BC offered a variety of material donations and emergency services, such as boat evacuations or livestock transportation (Labbé, 2021). Furthermore, posts on the r/britishcolumbia subreddit helped connect displaced individuals with access to shelter and essential needs (Crawford, 2021). Social media serves as a more familiar and accessible place for people to obtain information, allowing for greater reach for both institutional and emergency responders, compared to official websites or other more traditional means of communication (Yigitcanlar, 2021)

Traditional methods of accessing emergency services in BC include registering for Emergency Social Services (ESS) in order to become eligible for provincial aid resources. ESS aims to fulfil primary needs, including temporary shelter, food, clothing, and incidentals, as well as specialised resources, such as emotional support, health services and first aid provision, pet care, and transportation. Further resources were made available on the BC government website through various agencies and select NGOs, such as the Canadian Red Cross and United Way BC (BC, 2021). Social media not only facilitated communication of these services, but provided an equal opportunity for emergent efforts to be published and made known to those in need. Alternatively, recipients of the service are able to readily connect with providers through social media by directly asking for assistance, promoting real-time events, and sharing available resources to others in need (Yigitcanlar, 2021)

Assessment

Spontaneous volunteers and grassroots community efforts are critical in dynamically responding to emergencies. These volunteers are often first on the scene during a disaster, provide decentralised local support prior to the arrival of official emergency management services, and can fill gaps that may be left by larger institutions. However, guidelines for managing and incorporating emergent volunteers in responses are largely absent from emergency management frameworks. Formalising collaborative governance frameworks that embody a whole of society approach to mitigating and responding to emergencies are important in recognising the role of emergent volunteers while ensuring they can provide support in a safe and effective manner (Public Safety Canada, 2022).

The absence of collaboration between emergent groups and official emergency services was observed to an extent during the BC floods of 2021. Despite the desire to help, little to no formal coordination took place between emergent civilian groups and the larger institutional response. A prominent example of this was the lack of coordination between volunteer pilots and the province in working to deliver essential supplies to communities. No funding was provided by the province for the cost of fuels and supplies to the volunteers (Devlin, 2022). Saturated lines of communication and communities coordinating a myriad of good-intentioned volunteers can pose harm to individuals who are rarely specialised in responding to emergencies. In addition, without rigorous post-disasters evaluations, such realities often fail to be reported and are doomed to be repeated. Therefore, empowering prospective spontaneous volunteers to safely and effectively respond to emergencies should become increasingly important. Coordination among emergent civilians and governmental organisations could also contribute to increased efficiency and preservation of scarce resources. Whittaker et al., (2015) postulated that formal training and volunteer registration programs are ineffective in managing spontaneous volunteers in areas where volunteerism is “highly informal and emergent”. However, given that various disasters are

becoming increasingly prevalent in certain geographic areas, such strategies may prove to be prudent in preparing potential spontaneous volunteers for emergencies and connecting them with necessary resources. These trainings must prioritise safety and be customised to the specific needs of the community or geographic area that is likely to experience a particular type of disaster these volunteers can respond to.

Previous collaborative-governance models have outlined ways government and non-government sectors can cooperate in sharing new ideas and resources. One such model is the Constellation Collaboration Model (CCM) (Surman, 2006) (Figure 1). This model can aid in formulating a collaborative governance framework where civilian groups are provided a seat at the table in the development of emergency management and response strategies. Through the CCM, the governing body proactively creates a portrait of the holistic response capacity of a community and identifies areas in which emergent responders are likely to step in. To achieve efficiency in response, the governing body is composed of officials and community members who can act as liaison for informal volunteers. With fluid teams, referred to as “constellations,” composed almost entirely of the responding partners dedicated to managing specific threats, they have a much greater awareness of on the ground activities. Simple awareness of realities on the ground allows the governing entity to maintain communication with groups of volunteers and provide support as needed, as well as more accurately catalogue events for future reference. While this model serves as a governance structure, it is not intended to be a plan of action for grooming potential civilian volunteers.

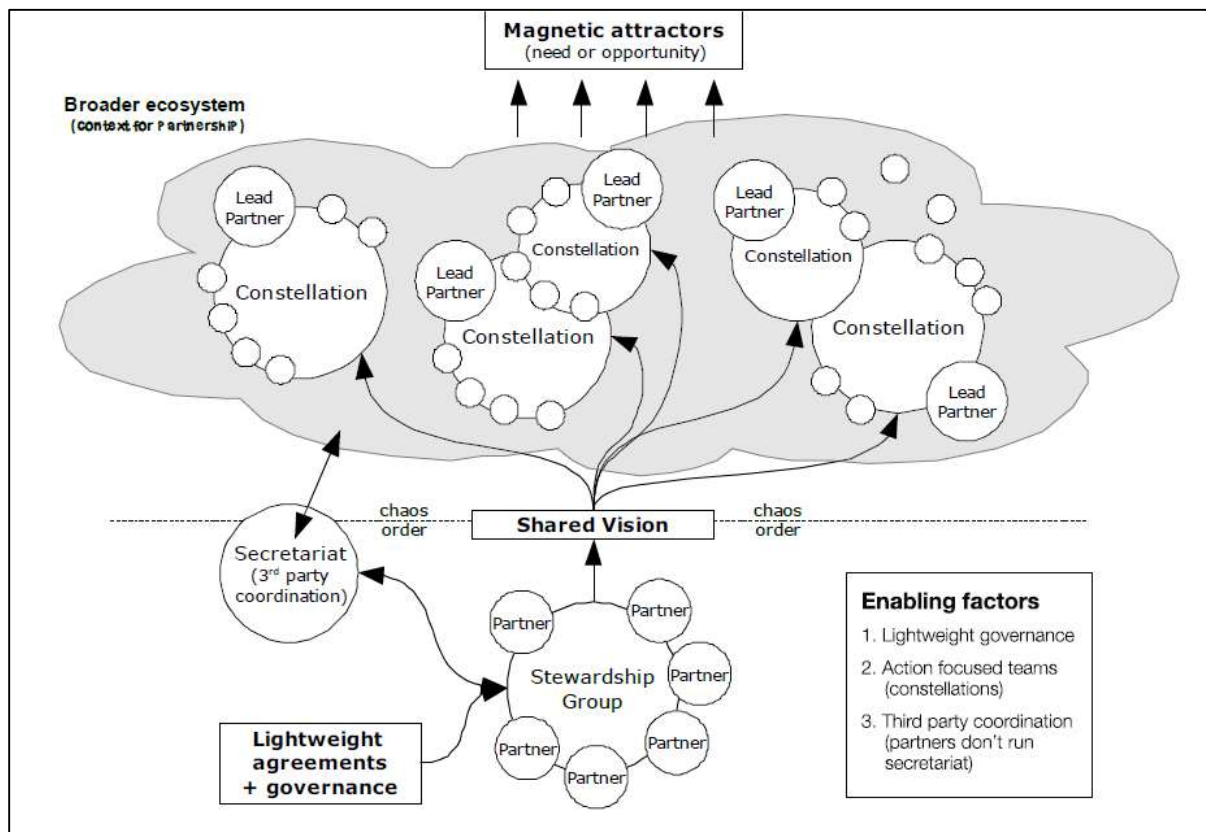


Figure 1: Constellation Collaboration model by Step Up BC.

Intended for collaboration between various civilian non-profit organisations, the model is eminently transferable to emergency management and response activities.

Johnston et al. (2022) have also developed a five step community-centred engagement model to promote preparedness and ready cadres of emergent volunteers. These steps include 1) community profiling; 2) relational ties and connections; 3) capacity building; 4) community programs; 5) tailoring for

local hazards action. The process begins by obtaining a high-resolution awareness of a community's capacity, strengths, and weaknesses, from an emergency preparedness lens through consultation and research. Once identified, vulnerabilities can be mitigated by connecting communities with relevant resources, providing legislative and legal support, and developing programs that empower the population to assume leadership and response roles during emergencies. Each step of this model involves collaboration between local communities and emergency management agencies to holistically prepare for future emergencies.

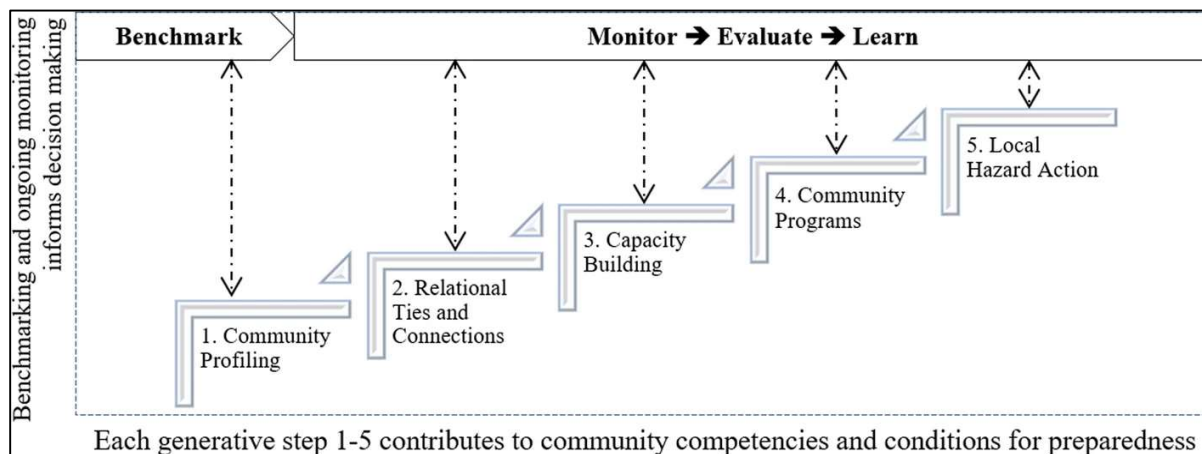


Figure 2: Community capacity building model proposed by Johnston et al. (2022).

The model highlights 5 generative steps for community-centred preparedness and the general principles that should guide emergency preparedness. (Johnston et al., 2022)

Conclusion

Emergent volunteers play a vital role in supporting their local communities during emergencies or disasters and are often the first point of contact for those in distress. The 2021 BC floods showed numerous examples of emergent volunteers using their skills and resources to support others within their communities. On-the-ground preparedness initiatives and governance models that appreciate the presence and utility of emergent responders can promote a collaborative, safe, and supportive relationship between volunteers and governing authorities during emergencies. Such initiatives emphasise an all of society approach to emergency management. With greater intensity of climate fuelled disasters, now is the right time to build the foundation for the next generation of emergency management systems which recognises the role of emergent volunteers.

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