

Research Article

## The Canadian Rangers: Strengthening Community Disaster Resilience in Canada's Remote and Isolated Communities

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**Abstract:** The Canadian Rangers are Canadian Armed Forces Reservists who serve in remote, isolated, northern, and coastal communities. Due to their presence, capabilities, and the relationships they enjoy with(in) their communities, Rangers regularly support other government agencies in preparing for, responding to, and recovering from a broad spectrum of local emergency and disaster scenarios. Drawing upon government and media reports, focus groups, and interviews with serving members, and a broader literature review, this article explains and assesses, using a wide range of case studies from across Canada, how the Rangers strengthen the disaster resilience of their communities. Our findings also suggest ways to enhance the Rangers' functional capabilities in light of climate and environmental changes that portend more frequent and severe emergencies and disasters. It also argues that the organization can serve as a model for how targeted government investment in a local volunteer force can build resilience in similar remote and isolated jurisdictions, particularly in Greenland and Alaska.

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## Introduction

In early April 2020 the Regional Emergency Preparedness Advisory Committee established to coordinate the response to COVID-19 in Nunavik, Quebec, confirmed the first five cases of the coronavirus in the region and requested that local Canadian Rangers be mobilized to assist in response efforts in their communities (Government of Canada, 2020). As part-time, non-commissioned members of the Canadian Armed Forces (CAF) Reserves, the Rangers' official mission is "to provide a military presence in sparsely settled northern, coastal and isolated areas of Canada that cannot conveniently or economically be provided for by other components of the Canadian Forces" (DAOD, 2020). The fact that the committee turned to the Rangers—the vast majority of whom are Inuit—in Nunavik's fourteen communities, to assist health and emergency management agencies in their efforts to stem the spread of COVID-19, is a testament to the Rangers' perceived value to human security and emergency response (Vullierme, 2020).

In the days and weeks that followed, the CAF activated hundreds of additional Rangers across the country as part of Operation LASER, the military's effort to support the Government of Canada's objectives and requests for assistance in the fight against COVID-19. Serving in their own or neighbouring communities, Rangers performed community wellness checks, prepared triage points for COVID testing, raised awareness about social distancing, established community response centres, cleared snow, cut and delivered firewood, and provided food (including fresh game and fish) and supplies to Elders and vulnerable community members (Giles, 2020; Pashagumskum, 2020; Stefanovich, 2020). They also acted as a conduit between their communities and the government agencies involved in responding to potential community outbreaks, with important roles in passing along reliable information about local needs. In short, during this time of domestic and international crisis, the Canadian Rangers provided the Government of Canada with an additional layer of local capacity that it could quickly leverage to enhance its COVID-19 response efforts. "The advantage," concluded one government official in Nunavik, "is that the Rangers are already here, in their communities" (Quinn, 2020).

As Rangers carried out their new COVID-19 related duties, they continued to perform their traditional tasks, which include preparing for the spring-time natural hazards that threaten their communities and participating in disaster response. In April and May 2020, the communities of Fort Vermillion in northern Alberta (St-Onge, 2020), Hay River in the Northwest Territories (Pruys, 2020), and Kashechewan in northern Ontario (Forester, 2020) requested the assistance

of their local Rangers in the face of heavy flooding. Fort Vermillion, in particular, faced "once-in-a-generation" flooding, and its twenty-five Rangers were engaged in monitoring water levels, setting up roadblocks, transporting and distributing logistical equipment, placing sandbags around critical infrastructure, staffing the Emergency Operations Centre, and helping over 450 residents with the evacuation of their homes (4th Canadian Ranger Patrol Group, 2020).

The Rangers' involvement in flood relief activities and in the response to COVID-19 highlight a role that Canadian Rangers have been playing for decades: by virtue of their capabilities and presence, they regularly support other government agencies in preventing, preparing for, responding to, and recovering from the broad spectrum of emergency and disaster scenarios facing isolated communities. Rangers are a source of disaster resilience in their communities by helping to "anticipate, and where possible prevent or at least minimize the potential damage a disaster might cause" and to cope with the effects of a "disaster if it occurs, to maintain certain basic functions and structures during the disaster, and to recover and adapt to the changes that result" (Justice Institute of British Columbia, 2015; see also Cox and Hamlen, 2015).<sup>1</sup>

Despite these contributions to community safety, the Canadian Rangers' role has been largely ignored in the literature on community disaster resilience (CDR) and emergency and disaster management in Canada—even by studies focused on remote, isolated, northern, and/or Indigenous communities (e.g., Benoit et al., 2016; Cox, 2014; Funston, 2014; Pearce et al., 2017; Standing Committee on Indigenous and Northern Affairs, 2018). In this article, we argue that the Rangers offer a response to a difficult question: how can targeted government investment effectively build disaster resilience in at-risk, remote, and isolated communities with small populations, limited infrastructure, few local resources, and little access to rapid external assistance? Building upon an examination of government documents and media reports on the Rangers' role in past emergencies and disasters, and focus groups and interviews we conducted with serving members, we assess how the Rangers strengthen the disaster resilience of their communities through their organization, leadership, and training; their ongoing involvement in community preparedness and hazard risk analysis; their social relationships and networks; and the trust they have earned from fellow community members. We end with thoughts on how the Rangers might be leveraged to build greater community disaster resilience—an important consideration with climate change reshaping northern environments and exacerbating risks and hazards—and with suggestions for how the Ranger model could be used to bolster community capacity in other jurisdictions.

## Methods

The empirical evidence gathering for this article began with a comprehensive review, synthesis, and analysis of media sources and government documents discussing Canadian Ranger involvement in emergency and disaster events over the last three decades. This review included an assessment of the Rangers' emergency response roles listed in publicly available territorial, provincial, and municipal emergency and evacuation plans.

We then conducted interviews and focus groups with Canadian Ranger patrols as part of our broader community-collaborative Kitikmeot Search and Rescue project (KSAR), which seeks to identify and assess existing community-based SAR and emergency management capabilities in the communities of Kugluktuk, Cambridge Bay, Gjoa Haven, Taloyoak, and Kugaaruk. In cooperation with the Kitikmeot's community-based SAR organizations, data collection for the KSAR project began with capacity-mapping workshops in each community to determine local assets and resources, identify untapped or unrecognized resources, and register collective and individual capacities (World Health Organization, 2018; Ampomah and Devisscher, 2013, p. 15–16). Capacity mapping laid the groundwork for capability-based planning, which asks whether communities or organizations have the right mix of assets—equipment, organization, planning, training, leadership—to perform a required emergency task. As part of this process we met with the twenty-two members of the Gjoa Haven Canadian Ranger Patrol between 23–24 October 2019; eight members of the Cambridge Bay Canadian Ranger Patrol on 18 April and 21 October; eighteen members of the Kugluktuk Ranger Patrol on 23 April and 16–17 October; and twenty-five members of the Taloyoak Canadian Ranger Patrol on 15 April. While these meetings focused heavily on the technical aspects of SAR operations, Rangers also discussed their broader roles in community public safety and emergency management.

Fifteen of these Canadian Rangers also participated in the Kitikmeot Roundtable on Search and Rescue (KRSAR), organized by the authors and Angulalik Pedersen. Held at the High Arctic Research Station in Cambridge Bay on 31 January and 1 February, the roundtable brought together fifty-five members of community-based organizations (CBOs) from the five Kitikmeot communities, academics, and representatives of federal and territorial departments and agencies to discuss best practices, lessons learned, challenges, and future requirements for search and rescue in the Kitikmeot region. During the roundtable, the Ranger participants shared their views on search and rescue operations and emergency response, thus providing an additional source of data for this article (see Kikkert et al., 2020a, 2020b, and 2020c).

We then applied the empirical data gathered on the roles Rangers play during emergencies and disasters to the theoretical framework provided by the rich scholarship on community disaster resilience, which refers to a community's ability to anticipate, prevent, prepare for, manage, and recover from emergencies and major incidents (Justice Institute of British Columbia, n.d.; Cox & Hamlen, 2015). A community's level of disaster resilience is contingent upon a complex array of factors: strong socio-economic, physical, and psychological health; a diverse economy able to withstand shocks; effective local government and key services; recognition of the inequity around risk and vulnerability; and adequate physical infrastructure (Norris et al., 2008, p. 144; Emery & Flora, 2006; National Research Council, 2012; Demiroz & Haase, 2018). The most important element is human infrastructure—the area in which the Rangers make their most significant contribution. Scholars and practitioners agree that a community's disaster resilience should be built from the bottom-up, in a whole-of-community approach that taps into the personal and collective capacities of its people (Bhatt & Reynolds, 2012; Conference Board of Canada, 2014; Federal Emergency Management Agency, 2011; Fournier, 2014; Public Safety Canada, 2019). Such an approach should also strive to leverage and bolster a community's social capital, defined as the “aggregate of the actual or potential resources that are linked to possession of a durable network of relationships” (Norris et al., p. 137; see also Aldrich, 2012; Bourdieu, 1986; Murphy, 2012). Resilience flows from community members working together to strengthen these relationships and networks, and to enhance the trust, social cohesion, and social support inherent within them (Norris et al., p. 137–139; Wilkin et al., 2019). Communities also build resilience when they are “empowered to use their existing skills, knowledge, and resources to prevent/mitigate, prepare for, respond to and recover from disasters” and are provided with opportunities to develop other required capabilities (Public Safety Canada, 2019, p. 5–6; see also Murphy et al., 2014). Key capacities include hazard identification and risk awareness; planning and preparedness that outlines the roles and responsibilities of various groups; effective formal and informal communication; emergency response training and exercises; and partnerships between the different internal and external organizations involved in disaster response (Bowles & Ursuliak, 2014; Chandra et al., 2011; Morley et al., 2018; Patel et al., 2017; Sithole et al., 2017; Tiernan et al., 2019). Finally, a community requires good leadership and effective organization to allow it to mobilize these assets for a sustained period during disasters (National Research Council, 2012, p. 124–125).

The presence of community-based organizations directly engaged in disaster management can play a key role in developing many of the assets required by disaster resilient communities (Carr & Jensen, 2015; Chandra et al., 2013; Drennan & Morrissey, 2019; Mackwani, 2016), particularly in rural and underserved

communities (Brennan & Flint, 2007; Flint & Brennan, 2006). Community groups of all types—from voluntary societies to faith groups—can make essential contributions in preparing for, responding to, and recovering from a disaster. If they are not effectively integrated into the emergency plans and procedures, and have no training, volunteer responders can also interfere with more formal efforts and risk doing more damage than good. In recognition of this, the last decades have seen the proliferation of voluntary and trained local emergency response teams in communities around the world (e.g., Federal Emergency Management Community Emergency Response Teams in the United States, Red Cross and Red Crescent Community Disaster Teams, Ontario Volunteer Community Emergency Response Team). During a disaster, members of these community-based organizations deploy to their assigned areas to extinguish small fires, perform light search and rescue, render basic first aid, perform wellness checks on community members, direct traffic, assess damage, and execute other roles as required (Carr & Jensen, 2015, p. 1552; Federal Emergency Management Agency, 2019). Given their pre-existing relationships with fellow community members, local responders can persuade people to take action, whether it be evacuating or taking immediate shelter. These relationships also allow them to identify the most vulnerable members of their community and ensure that these people receive priority assistance. Emergency response team members can also provide an essential function by rapidly funneling a steady stream of accurate and essential information to outside agencies responding to a disaster, and facilitate immediate cooperation between these agencies and their communities (Carr & Jensen, 2015, p. 1554). Provided they are trained and well-organized, local emergency response teams can make a significant contribution to the resilience of their communities.

Many of the key building blocks of community disaster resilience are brought together in community-based Canadian Ranger patrols. They are an example of how community resilience can be strengthened from the bottom-up, with the Canadian Armed Forces empowering Rangers to use their existing skills and social relations within an organizational structure that provides them with the framework, training, and equipment they require to assist in every phase of disaster management.

### **The Canadian Rangers: Who Are They?**

The Canadian Rangers serve as the “eyes, ears, and voice” of the Canadian Armed Forces, providing a military presence in the remote parts of the country “which cannot conveniently or economically be covered by other elements of the CAF” (DAOD, 2020; see also Lackenbauer, 2013, 2015). They are not intended to act as combat forces and receive no tactical military training. Instead, their regular tasks include surveillance and presence patrols, collecting local data for the CAF,

reporting unusual sightings, participation in community events, and assisting with domestic military operations. To facilitate these operations, Rangers share their knowledge and skills with regular members of the CAF, teaching them how to survive and function effectively in Arctic, Subarctic, and rugged coastal environments. They are also heavily involved in leading and mentoring youth in their communities through the Junior Canadian Ranger program, a Department of National Defence initiative that promotes traditional cultures and lifestyles and other developmental activities. Furthermore, Rangers are often called upon to respond to local emergencies and disasters, conduct search and rescue operations, support humanitarian operations, and perform other public safety missions (Canadian Army, n.d.; Vullierme, 2018; Lackenbauer, 2020a; Office of the National Defence and Canadian Armed Forces Ombudsman, 2017a).

The Canadian Rangers are a diverse force. Approximately 5,000 Rangers live in more than 200 Canadian communities—over 60% are Indigenous, they speak at least twenty-six different languages and dialects, and 21% are female (Canadian Army, 2017; Lackenbauer, 2011, 2018). Canadian citizens can join the Rangers at the age of eighteen if they have not been convicted of a serious offence under the Criminal Code of Canada and if the community-based patrol confirms that they are “knowledgeable and personally equipped to survive and operate on the land” (Canadian Army, 2018). There is no retirement age and no operational standard for physical fitness (although they must be physically and mentally able to perform Ranger duties), which allows Elders to participate and share their knowledge with younger members (Canadian Army, 2018).

The Rangers are organized into patrols by community (e.g., Fort Vermilion Canadian Ranger Patrol; Kashechewan Canadian Ranger Patrol), with an average of twenty-five to thirty members and a minimum of eight. Patrols are led by a patrol commander (sergeant) and second-in-command (a master corporal), who are elected into these positions by patrol members, and they are divided into ten-member sections each commanded by a master corporal. Ranger patrols are separated into five Canadian Ranger Patrol Groups (CRPG) that encompass distinct geographical regions (see Table 1) and have their own headquarters and a staff to oversee administration, training, and other activities (Office of the National Defence and CAF Ombudsman, 2017a). The Department of National Defence spends approximately \$38 million annually to support all five patrol groups (CBC News, 2015).

Table 1. Canadian Ranger Patrol Groups (Office of the National Defence and CAF Ombudsman, 2017a); updated statistics from 1CRPG

Patrol Group	Region	Patrols	Canadian Rangers
1 Canadian Ranger Patrol Group (1CRPG)	Northwest Territories, Yukon, and Nunavut	61	2,000
2 Canadian Ranger Patrol Group (2CRPG)	Quebec	25	752
3 Canadian Ranger Patrol Group (3CRPG)	Ontario	20	591
4 Canadian Ranger Patrol Group (4CRPG)	Manitoba, British Columbia, Saskatchewan, Alberta	43	988
5 Canadian Ranger Patrol Group (5CRPG)	Newfoundland and Labrador	32	929

While Rangers are expected to be self-sufficient when on the land—and to use their own personal gear, snowmobiles, all-terrain vehicles, or boats to conduct their duties (for which they are reimbursed according to nationally established equipment usage rates)—the military also provides them with modest equipment and training. Each Canadian Ranger is issued a red hoodie sweatshirt, CADPAT (Canadian Disruptive Pattern) pants, red fleece, water-resistant shell jacket, combat boots, baseball cap, safety vest, navigation aids, and a bolt-action rifle (for protection against predatory animals, not for military combat). In addition, patrols are generally given a supply of camp stores, including tents and lanterns, two satellite phones, and two Track 24 devices (an Iridium satellite system that facilitates the monitoring and tracking of on-the-land movements). A ten-day Basic Ranger Qualification Course is held for new Rangers, which includes rifle handling, general military knowledge, navigation (map and compass, GPS), first aid, search and rescue, and communications. Each year, Rangers are paid for up to twelve days of service, which includes annual patrol training and a field exercise, providing patrols with the opportunity to practice essential skills and work together as a team. Often, members also have the chance to participate in additional non-mandatory training courses, such as advanced SAR. In addition to these training activities, Rangers are paid when activated for official CAF tasks, which include emergency response activities and SAR operations. Importantly, beyond their paid service, Rangers perform their “eyes and ears” function as part of their everyday lives and are always present in their communities, ready to respond as required (Canadian Army, 2018; Lackenbauer, 2013).

## A Ready and Willing Community-Based Organization

Canadian Rangers view the protection of their communities as one of their primary responsibilities (see Table 2). A 1CRPG Ranger from Taloyoak, Nunavut, asserted that “we are the eyes and ears of the military, but we are also the eyes and ears of our community. We protect our communities.”<sup>2</sup> Another Ranger from 1CRPG explained that “we [Rangers] are the people to call when things go sideways—period.”<sup>3</sup> This willingness to help extends to emergencies involving outsiders operating in and around their communities. When asked about the possibility of a cruise ship running aground near their communities, for example, each of the Ranger patrols we interviewed said it would respond to such an incident. “We may not be happy that you’ve brought this trouble, but we will try our best to help you out of it,” a Ranger noted at the Kitikmeot Roundtable on SAR.<sup>4</sup> The Rangers’ sense of social responsibility ensures that they are willing to respond to emergencies and disasters.<sup>5</sup> When the CAF decided to activate Rangers as part of its response to COVID-19, for example, it was able to secure sufficient volunteers, even though this was an unusual and intimidating role for many people (Stefanovich, 2020). Likewise, 4CRPG recruited a group of volunteers when wildfires ripped through 1.2 million hectares of British Columbia in 2017. As one Ranger explained, “being here and helping out my community really brings out a sense of pride and joy from being able to assist those who need it” (Lookout, 2017).

Table 2. Possible hazards facing communities with Ranger patrols

- Flood
- Forest and tundra fire
- Earthquake
- Avalanche
- Mudslide
- Prolonged, severe weather and extreme cold
- Blizzard
- High wind
- Tsunami
- Storm surge
- Epidemic or medical evacuation
- Obstructed transportation corridor
- Oil or fuel spill
- Mining accident
- Industrial accident
- Dam failure
- Plane crash
- Maritime disaster
- Systems failure (generator breakdown)

While many people join the Rangers out of a desire to safeguard their communities, the modest pay, annual training, and additional tasks they are given also serve to keep them prepared and engaged.<sup>6</sup> In comparison, local emergency response teams often struggle to retain personnel and secure the funding they require for training and equipment, and have few opportunities to practice as a team or with other organizations. Referencing Community Emergency Response Teams (CERT) in the United States, Brennan and Flint underline that, because disasters generally occur relatively infrequently in most areas, many teams are “without a mechanism for maintaining coordination, structure, communication, and interaction necessary for them to function at optimal efficiency”; and during long periods of downtime, CERT members lose interest and “local channels of communication, interaction, and capacity for quick response became noticeably diminished due to lack of action” (Brennan & Flint, 2007, p. 122). The Ranger organization bypasses many of these challenges: patrols do not have to fundraise for training and equipment, annual exercises and assigned tasks keep them active and ready to respond, and modest military pay supports retention.

The organization of the Rangers into patrols at the community level ensures that they can respond as a group almost *immediately*: an important consideration in austere northern environments. The unique context of the Canadian North (and other parts of the Arctic)—remote and isolated communities, limited physical and human infrastructure, and insufficient response capabilities coupled with low temperatures and extreme weather—has led some scholars to argue for the establishment of a special category of “cold disasters” (Lauta et al., 2018, p. 1276–1277). Given the vast distances involved, outside help often takes a long time to arrive and, without an effective and timely initial local response, cold disasters can cascade and worsen quickly (Funston, 2009).

Due to their presence and state of readiness, Ranger patrols can provide an effective and timely response. Canada’s northern communities rely on diesel generators for power, and their failure for extended periods in the winter can pose a serious risk to human life (e.g., Sanikiluaq, Nunavut, in 2000; Kuujuarapik, Nunavik, in 2001; Pangnirtung, Nunavut, in 2015; Wawakepiwan and Muskrat Dam in northern Ontario in 2018). In these situations, Rangers quickly assist by establishing emergency shelters, going house-to-house to perform wellness checks, assisting Elders, providing information about food and alternative housing, preparing meals, ensuring that people have access to a heat source, and informing residents about potential dangers such as carbon monoxide poisoning from using camping stoves indoors (Government of Nunavut, 2015; Lackenbauer, 2013, p. 422–436; Moon, 2019a). Through these efforts, the Rangers directly

contribute to the health, well-being, and morale of their fellow community members and provide an additional safety net to ensure that no one slips through the cracks of the emergency response.

The avalanche that struck the community of Kangiqsualujjuaq (the easternmost settlement in Nunavik) on New Year’s Eve in 1999 also highlights the value of the Rangers as a rapid reaction force. As 300 of the community’s 650 residents celebrated in the school gymnasium, a wall of snow from an adjacent hill smashed through the building, burying many. The community’s Ranger patrol quickly mobilized and helped pull dozens of injured men, women, and children from the carnage throughout the night and following day. Eighteen Rangers from the nearby community of Kuujjuaq also mobilized within a few hours and took civilian aircraft to Kangiqsualujjuaq to assist in the search and ultimate recovery of the bodies of four adults and five children killed by the avalanche. Within days, Rangers from eleven of the fourteen communities in Nunavik deployed to offer assistance to Kangiqsualujjuaq as it recovered from the disaster, performing wellness checks, assisting with funerals, and providing fresh country food (freshly harvested caribou). For their efforts, the Chief of the Defence Staff awarded 2CRPG with a Canadian Forces Unit Commendation (Bourdon, 2000; Lackenbauer, 2013, p. 4–5).

1CRPG also earned a Canadian Forces’ Unit Commendation for the role Rangers played in the response to the crash, near the Resolute airport, of First Air Flight 6560 on 20 August 2011. Rangers were amongst the first on scene—had the military not been deployed to Resolute as part of Operation Nanook, the community’s Rangers would likely have been the first and primary responders. After the crash, Rangers guarded the site all day and night and provided predator control against polar bears drawn to the smell of rotting food from the plane. Hay River Ranger Kevin Lafferty reflected that “to switch gears so quickly for something so obviously so tragic, wasn’t the easiest thing ... [There were] a lot of sleepless nights initially, as everybody tried to get a handle on what had actually happened. Everybody did their job, their duty.”<sup>7</sup> Rangers have also responded to smaller-scale plane crashes in the Northwest Territories. In January 2019, they responded to the crash of an Air Tindi King Air 200 aircraft outside Wha Ti, which claimed the lives of two pilots. The forced landing of a Buffalo Airways plane 169 km from the Hay River airport runway in May 2019 also necessitated a Ranger response. Working with fire crews and the Royal Canadian Mounted Police (RCMP), members of the Hay River patrol rushed to the crash site with their ATVs and helped to retrieve two people.<sup>8</sup> These incidents illustrate the quick response times made possible by the presence of community-based Ranger patrols.

## Training, Experience, and Knowledge Sharing

The Canadian Armed Forces provides Canadian Rangers with flexible training that is tailored to local terrain and environmental conditions but generally involves several elements directly related to emergency and disaster management capabilities: first aid, wilderness first aid, ground search and rescue, constructing emergency airstrips on land and ice, and communications. Depending on the hazards faced by a Ranger patrol's community, training might also include flood, fire, and/or earthquake evacuation, major air disaster response, and other location-specific emergency scenarios (Office of the National Defence and CAF Ombudsman, 2017a). Patrols are taught how to work together as a cohesive unit (a necessity during an emergency), and training exercises sometimes involve patrols from multiple communities and other CAF personnel with whom they might have to respond to a disaster.<sup>9</sup> In 2017, Rangers from several patrols in British Columbia participated in wildfire response, working with the RCMP to establish and operate highway checkpoints, providing local knowledge to deployed CAF units, sharing information with local residents, and assisting in ground evacuation efforts and in the delivery of essential aid (Chung, 2020). Private John Hill of the Vanderhoof Ranger patrol highlighted how, in these dangerous conditions, "after many years of training and working with the military and other units, everything came into place" (Lookout, 2017).

In all of the Canadian Ranger Patrol Groups, advanced SAR training courses and exercises also bolster community resilience. In 3CRPG, for example, Rangers can take the two-week long Ontario Provincial Police SAR course that is mandatory for personnel in its elite emergency response teams. That patrol group also holds an annual RANGER TRACKER exercise, which brings together Rangers from across Northern Ontario to conduct SAR-related scenarios (Moon, 2019b). Ranger patrols have also practiced SAR exercises with local search and rescue associations, community volunteers, and other agencies to share knowledge and skills (Cornet, 2019; Ranger Foundation, 2017). Ranger Sergeant Jean Rabbit-Waboose from Eabametoong First Nation (3CRPG) emphasized the value of SAR education, explaining that "the army's training and funding for us has been a blessing for all our communities. It has saved a lot of lives" (Moon, 2017).

Over the decades, Canadian Rangers have put their SAR training to good effect, executing hundreds of searches across some of the harshest terrain in the country, often acting as individual volunteers, or in small groups with other community-based organizations when not officially activated as full patrols.<sup>10</sup> A member of the Taloyoak Ranger patrol emphasized how "the Rangers can make a big difference in search and rescue. We are organized and trained. We know how to work together."<sup>11</sup> Between 2015 and 2018, Rangers in 3CRPG in Northern Ontario rescued ninety people in seventy-nine official ground and marine SAR

operations (Moon, 2019c). The Ranger SAR role is essential—the loss of a hunting party, for instance, could be disastrous to the general health and well-being of a small community. As climate change exacerbates the risks that forest fires, flooding, and severe weather pose to northern communities, Ranger SAR skills will become even more important.

Rangers also partake in major domestic military exercises that mimic disasters and other emergency management scenarios. Over the past thirteen years, Rangers from 1CRPG have participated in Canada's annual northern training exercise, Operation NANOOK, which has simulated major oil spills, a petrochemical leak, ships in distress, air disasters, mass rescue operations, an earthquake, wildfires, evacuations, and even epidemic response. During NANOOK 2015, for example, Rangers from Fort Smith, Northwest Territories, had the opportunity to assist in testing their community's wildfire response, practised evacuating Elders, and were taught how to FireSmart at-risk areas (e.g., thinning out the forest and clearing deadfall) (Muzyka, 2015). In NANOOK 2016, Rangers in the Yukon were involved in a scenario that simulated an earthquake hitting the territory (Rudyk, 2016). A major objective of these exercises is to practice cooperation and collaboration between all of the partners involved in responding to these disasters, from the municipal to the federal level (e.g., Public Safety Canada, Emergency Management Organizations, Public Health, local government). In their examination of the pre-disaster integration of Community Emergency Response Teams, Carr and Jensen highlight the importance of this objective, noting that "trust-based relationships with other emergency management relevant organizations" are essential, and that local responders must be able to coordinate and cooperate with outside agencies as required (Carr & Jensen, 2015, p. 1554). Ranger participation in disaster response exercises teaches them new emergency management skills and builds relationships and experience working with outside organizations that they can leverage during emergencies in their communities.

Canadian Ranger patrols also serve as platforms for the transmission of local and Traditional Knowledge and skills, generally from Elders to younger members (Lackenbauer, 2005, 2013), but also to responders from territorial and federal agencies. For Indigenous people serving as Rangers, this Traditional Knowledge often includes information on how to identify natural hazards, reduce risks, and determine appropriate responses (e.g., how to predict flooding). Referencing the possibility of a cruise ship or commercial vessel running aground in the Northwest Passage, one Ranger participant at the Kitikmeot Roundtable on Search and Rescue highlighted the role this knowledge could play in a mass rescue operation: "We know the local weather. We know the conditions. We know the water and ice, the rocks. We know how the ice works. We know the best routes to take, the fastest, the safest routes to take. We know things that you can't get from a GPS or

a weather report. We know how the tides work. If you are coming in by zodiac or lifeboat, we can help you avoid dangers ... You have to listen.”<sup>12</sup>

Ranger Sergeant Roger Hitkolok, the patrol commander in the Inuit community of Kugluktuk, Nunavut, emphasizes the importance of this knowledge sharing.<sup>13</sup> Hitkolok focuses on teaching his younger Rangers how to respond and adapt effectively to changing environmental conditions. Within Inuit culture, people who maintain their equanimity in the face of difficulty and changing environmental conditions have *ihuma* (adulthood, reason) (Briggs, 1970). On the land, a hunter who uses their mind will be careful to look at each new situation they encounter in its totality, figuring out its implications and requirements. When new conditions make it imperative, the hunter with *ihuma* will respond with calmness and patience, adjust their conceptions, weigh options, and respond appropriately (Kikkert, 2017). Hitkolok and the other Elders in the patrol try to provide the younger Rangers with the extensive knowledge, training, and practice required to develop their *ihuma*.<sup>14</sup> Hitkolok explained that the mental processes involved in safely operating and surviving on the land also apply to other “hard” situations, such as emergencies and disasters. If an individual can function well while travelling during a blizzard, they will be able to respond quickly and effectively if their community faces unexpected flooding or a power failure.

The formal training provided to Rangers and the intergenerational transmission of knowledge that occurs amongst Rangers within patrols effectively address several gaps identified with disaster risk reduction in Canadian Indigenous communities (Benoit et al., 2016). More specifically, scholars and practitioners have pointed out the need to create space for Traditional Knowledge and practices in Canada’s broader disaster risk reduction efforts (Mackinaw, 2016; Justice Institute of British Columbia, 2015). Critics have also underlined the lack of opportunity provided to Indigenous communities to develop their local emergency response capabilities. Many remote Indigenous communities face difficulties in applying larger regional or national emergency response frameworks (such as the Canadian Coast Guard Auxiliary or the Civil Air Search and Rescue Association) to their unique contexts, as well as challenges working with outside agencies (including the Canadian Armed Forces) stemming from limited interactions and lack of trust (Benoit et al., 2016). Ranger patrols represent a community-based, culturally appropriate solution to many of these challenges.

### **Planning, Preparedness, and Hazard and Risk Analysis**

In order for community-based organizations involved in disaster management to be effective, capabilities and responsibilities should be clearly reflected in community emergency plans (Carr & Jensen, 2015, p. 1554). Various Ranger roles are defined in provincial and territorial emergency frameworks and in local

community plans across the country. Ontario’s mass evacuation plan for the province’s far north highlights Ranger involvement in community evacuations (Emergency Management Ontario, n.d.). In Newfoundland and Labrador, the Rangers of 5CRPG have a prominent role as the first (and sometimes only) line of emergency response in remote areas. In a discussion of emergency services in Labrador, one municipal official explained that “Canadian Rangers are here for natural disasters or if someone goes missing. No RCMP in community... if there’s a house fire the Canadian Rangers and members of the community pitch in with a bucket brigade” (Fang et al., 2018, p. 62).

The emergency plans of several coastal communities in British Columbia include local Canadian Rangers patrols to assist in evacuations in case of an earthquake and/or tsunami (Municipality of Ucluelet, n.d.; Village of Massat, n.d.; Village of Zeballos, 2019). In Manitoba, the Town of Snow Lake’s emergency plan gives the Rangers a central role in community outreach and house clearing, and the local government has involved the patrol in community-driven tabletop exercises to work through these plans (The Underground Press, 2016).

In the Yukon, the Village of Teslin’s emergency plan lists the community’s Ranger patrol on its resource list (Teslin Tlingit Council, 2014). Dawson City’s emergency plan provides the Rangers with a larger role, listing them as members of the Municipal Support Group (MSG) that advise and assist the mayor and Civil Emergency Measures Commission. Members of the MSG—which also includes municipal and non-governmental officials—collect and disseminate emergency information. The emergency plan also gives the Ranger patrol in Dawson a rescue role during major incidents—removing people from danger; providing medical treatment; establishing emergency health facilities, shelters, and refreshment centres; and transporting injured to medical facilities (Dawson City, 2013).

In the Northwest Territories, the emergency plan for the Town of Fort Smith places members of the Ranger patrol on the Emergency Response Advisory Group, which responds to requests given to it by the mayor (Town of Fort Smith, 2015). The Town of Hay River’s Emergency Plan notes that the Rangers can provide “support for searches, assist in dissemination of emergency notices, [and] assist in the transport of residents in evacuation” (Town of Hay River, 2019, p. 29). The town’s plan also gives the Rangers a role on the Flood Watch Committee, which monitors “changing breakup or flooding conditions to maintain situational awareness,” provides early warning to residents, and helps to protect private property and critical infrastructure (Town of Hay River, 2019, p. 42).

The Hay River Ranger Patrol’s participation in the town’s Flood Watch Committee reflects the contributions that Rangers can make to hazard risk analysis, prevention, and mitigation efforts. As the “eyes and ears” of the military and their communities, Rangers watch for potential natural hazards, such as



ice and water levels in nearby river systems, dangerous wildfire conditions, and ongoing tundra fires. A Ranger from Cambridge Bay, Nunavut, explained that when going out on the land, whether on official patrol duties or as an individual, he is constantly keeping an eye out for potential hazards: “[It is] important to get out of the community and report on the changes,” he noted, “because there are a lot of changes happening, and people need to hear about them.”<sup>15</sup> Some Ranger patrols use their monthly meetings to conduct informal hazard risk analysis by discussing what they have seen on the land and what might pose a risk to their communities.<sup>16</sup> By identifying hazards early, Rangers can play a part in preventing and mitigating possible dangers.

Simply knowing the local resources to which communities have access and relaying this information to relevant local and external agencies, is integral to disaster preparedness and response. Given how well Rangers know their communities, they are well placed to execute whole-of-community resource mapping to identify capacity, strengths, and deficits.<sup>17</sup> Ranger patrols are sometimes tasked with updating Local Area Resource Reports (LARR), which catalogue essential information about local infrastructure and community assets that could be used in disaster response. Through their LARR, the Quesnel Ranger Patrol (4CRPG) has tracked the state of local roads, fuel reserves, the size of the airport runway, where helicopters can land, and valuable logistical information (Chung, 2019). This in-depth knowledge of local resources proved vital during the patrol’s participation in the CAF’s response to the British Columbia wildfires in 2017. Master Corporal Juri Agapow of the Quesnel Canadian Ranger Patrol earned a Joint Task Force Command Commendation for his service, which highlighted that “his knowledge of the local area was an outstanding resource to the Task Force, specifically, his in-depth knowledge of the Chilcotin Plateau area was of great value during evacuation operations. This knowledge, combined with his personal connections, greatly contributed to the success of operations” (Chung, 2020). When integrated into the planning and preparation phase of disaster management, the local knowledge possessed by Rangers can contribute substantively to effective and efficient responses.

## Leadership

Strong formal organization and leadership, which delegates responsibilities and tasks in an expedient manner, are key enablers during an emergency (Carr & Jensen, 2015). Focus group participants emphasized that the Rangers organization provides important opportunities and space to develop a deep pool of leaders at the local level. “Communities need good leaders,” one Ranger explained, especially a “more diverse leadership” that can bring in new ideas, skills, and leadership styles.<sup>18</sup> Ranger patrols can identify potential leaders amongst their

ranks, provide opportunity to develop their leadership skills, and encourage them to take on leadership roles. Ranger sergeants and Elders in patrols often mentor younger members, encouraging them to become corporals and take on greater responsibilities.<sup>19</sup>

The CAF also provides ranger sergeants and master corporals with annual leadership training to help them organize, plan, coordinate, and solve problems more effectively. Ranger leadership training is highly practical—generally a task is given out and participants are taught how to break it down into its component parts. They are taught how “to solve the parts, delegate some of the work to other people, how to supervise and pull it all together to have everyone meet the same objective” (Greer, 2013). The training also teaches participants how to keep a patrol motivated, organized, and focused, and how to coordinate and cooperate with other members and units of the CAF (Gagnon, 2013). Major Charles Ohlke (3CRPG) emphasized that leadership trainees go back “to their communities with some planning tools in their toolbox that will enable them to react to any situation with a sound plan of action” (Moon, 2019d). The training brings Rangers together from different communities, allowing them to share best practices that are relevant when orchestrating responses to emergencies and disasters.

Some Ranger leadership training is specifically directed at bolstering emergency response. During a 3CRPG advanced leadership session in December 2019 at the Ontario Ministry of Natural Resources and Forestry wildfire forward attack base, Rangers learned how to “run a command post during an emergency, build an emergency landing zone for a helicopter to use during the day or at night, and how to deal with an emergency involving mass casualties” (Moon, 2019d). Master Corporal Lilly Kejick of Pikangikum First Nation relayed that the experience was “fun but difficult at the same time. It’s something I’ve never done before. I’ve learned stuff I never knew I could do. I’m going to be able to take that back to Pikangikum and pass it on to the other Rangers” (quoted in Moon, 2019d). In January 2017, Ranger patrol leaders from 1CRPG exercised a mock scenario involving a satellite re-entry that threatened a northern community, including planning, geographical analysis for the positioning of observation points, and preparations for mass medical evacuations. After the exercise, Sergeant Titus Allooooloo of Pond Inlet highlighted that “Ranger training helps remote Arctic communities build their ability to provide emergency response, by honing existing skill sets of Northerners”—an essential element of which is effective leadership (Brown, 2017).

## Relationships and Networks

Canadian Ranger patrols consist of individuals who are part of relationships, groups, and networks that span the social breadth of their communities. “Rangers wear a lot of hats,” one patrol member from Kugluktuk explained. “We are in local government, hunter and trappers organizations, Coast Guard Auxiliary units, housing associations. We are coaches. We volunteer at community events. We have coffee with elders. We go to church. We run bingo. We work with a lot of different people.”<sup>20</sup> At the same time, Ranger patrols foster new relationships and associations between members, ultimately forming a nexus that a community can draw upon during an emergency or disaster. The intersection of multiple social networks in a patrol ensures that its members know most or all community members, understand who is vulnerable, and who needs assistance (hence their prominent role in performing wellness checks during emergencies). When outside agencies respond to local emergencies and disasters, Ranger patrols provide a ready entry point into the community and offer immediate access to extensive networks, all of which facilitates response activities.

Many remote Canadian communities have had a Ranger patrol for decades, and the reputation that Rangers across the country have earned for contributing positively to their communities provides new patrols with a high degree of trust and respect. When a new patrol was set up in her community in Northern Ontario, Aroland First Nation Chief Dorothy Towedo noted that “I’m very pleased and very happy for my First Nation that we are finally getting the Canadian Rangers. It’s something that’s been needed in our community for a long time. Now we have our own Rangers. This is a good day” (Moon, 2019e). The high degree of trust that Rangers enjoy in Indigenous communities also flows from their respect for and understanding of local cultural norms (which they actively work to strengthen) and their fluency in Indigenous languages—an important asset during emergency scenarios, particularly when explaining complex evacuation plans.

The Rangers’ presence at the community level, training and experience, knowledge and leadership, and their extensive relationships and social networks make many Ranger patrols key contributors to community disaster resilience. “I think the red hoodie does matter [in an emergency]. People know us and trust us. They’d listen to us,” one Ranger from Kugluktuk insisted.<sup>21</sup> Several Rangers at the Kitikmeot Roundtable on Search and Rescue also emphasized the positive psychological impact that seeing the red hoodie and an organized military unit has during emergencies, whether a community-level event or during the evacuation of a cruise ship.<sup>22</sup>

## Putting it all Together: Community Evacuations

Many northern Canadian communities have a heightened need for evacuation preparedness given their remoteness and susceptibility to wildfires and floods. Existing research identifies myriad challenges and issues in evacuating isolated Indigenous communities, and how government efforts to do so tend to be poorly conceptualized and executed at every stage: from initial communication of an evacuation order (sometimes hampered by poor connectivity in remote communities and language barriers), to coordination and execution on the ground, to the placement of evacuees in temporary facilities or host communities, to the process of returning evacuees to their communities. Indigenous community members emphasize a lack of translation services, medical care, and mental health supports, as well as weak lines of communication to raise emerging needs and concerns. They also identify problems with the initial registration of evacuees, the transportation of people to evacuation sites, and the general lack of capacity building in communities prior to a disaster or emergency (Pierce et al., 2017; Standing Committee on Indigenous and Northern Affairs, 2018; McGee et al., 2018; Christianson et al., 2019; Asfaw, 2019; McGee, 2020). When Rangers are involved in evacuating remote Indigenous communities, their training, experience, networks, leadership, and trust relationships enable them to mitigate some of these issues.

During wildfire and flood evacuations in Northern Ontario, 3CRPG Rangers have carried out the essential public safety tasks that they have performed in other emergencies, while also registering evacuees, moving them to evacuation sites, providing emotional support for evacuees, acting as intermediaries while in host communities, and organizing social activities and church services. Rangers have also volunteered to remain in evacuated communities to conduct safety patrols and to assist in running essential services (Asfaw, 2018; Lackenbauer, 2013, p. 422–423; Ranger Foundation, 2017). Two large-scale community evacuations in 2019 reveal their essential roles. Between May and July 2019, Rangers assisted in the evacuation of Pikangikum First Nation (a community of over 4,000, 510 km northwest of Thunder Bay) where a Ranger patrol with thirty-four members had been established that February (Moon, 2019f). At the end of May, when fire approached to within 2 km of the community, Pikangikum declared a state of emergency and started to evacuate vulnerable persons. In this first wave, military and civilian aircraft flew out 1,700 of the community’s 4,300 residents, while others left by boat. The community’s Rangers quickly applied their new training, skills, and organization to the situation. Chief Amanda Sainnawap later described how “the situation was chaotic,” but the Rangers helped “just by being there in their red (Ranger) sweaters. It gave me peace of mind that they were trained. I don’t know what we would have done without them” (Moon, 2019g).

Two Ranger instructors flew into the community on the first day of the evacuations to support the patrol's efforts. With the Rangers, they established a system to determine who should be evacuated first due to health and other considerations, and assisted with the movement of people and baggage to the evacuation planes. All of the Rangers could speak Ojibway, which proved pivotal for relaying essential information to community Elders who spoke little to no English. After the first wave of evacuations, the community's Rangers stayed behind to perform wellness checks on people who chose not to evacuate. Meanwhile, evacuees were spread across six host communities in Northern Ontario and Winnipeg, where they were housed in hotels and motels. Rangers from six other First Nations communities deployed to these host communities to provide translation services, perform wellness checks, reassure the evacuees, organize activities for adults and children, support Elders, and work with the provincial and federal agencies and officials involved (Moon, 2019g).<sup>23</sup>

In 2019, 3CRPG also assisted in the evacuation of Kashechewan First Nation in the face of serious flooding—a near-annual recurrence. The Rangers worked sixteen- to eighteen-hour days, helping evacuees at the airport as they prepared to fly out of the community and monitoring water levels (Moon, 2019i). Lieutenant Colonel Matthew Richardson summarized how the “situation shows the interplay and the inter-operability between the Rangers and their community. It's what allows the Rangers to be so successful” (Moon, 2019j). The Rangers also coordinated with outside agencies, including Emergency Management Ontario and the Canadian Red Cross, to make the evacuation go as smoothly as possible (Moon, 2019j). These demonstrations of effectiveness during complex community evacuations reinforce the value of having modestly trained, locally-available people who are woven into the community fabric and highly attuned to community needs.

## Moving Forward

As climate change exacerbates the natural hazards that threaten many of Canada's remote and isolated communities (Government of Canada, 2019), the Rangers' role in building community disaster resilience is likely to increase in importance. We offer several practical ways—many of which have been suggested or co-developed with our Ranger participants—to enhance this role through modest additional funding and an increase in the number of paid annual service days available to Rangers.

To support capacity building, Ranger training and exercises could integrate more emergency management training opportunities along the lines of the fire and flood watch training that some patrols already receive. Courses on hazard risk analysis, prevention, and mitigation could be offered in partnership with Public

Safety Canada or provincial and territorial emergency management organizations. For example, in communities threatened by wildfires, patrols could be given regular FireSmart training, which teaches participants how to plan for fires, work with first responders, and minimize fire risks, particularly by controlling vegetation growth around communities and private homes (FireSmart Canada, n.d.). In communities where flooding is a common issue, Ranger patrols could be taught advanced techniques on how to protect critical infrastructure.

Rangers might also benefit from training at the patrol level on how to set up emergency operation centres, communicate vital information to responding agencies, work with the incident command system, and respond to mass rescue operations or mass casualty events (particularly for those patrols situated on the Northwest Passage, which has attracted a growing volume of vessel traffic) (IMO, 2003). As one Ranger from Cambridge Bay highlighted: “If a major emergency happened, like if a cruise ship ran aground, people would come from the community to help. That's just the way it is up here. I guess it would be helpful to know how we could help. So, if we go out as Rangers, what could we do? Maybe not a lot, but something. People are going to go out anyway, can't we get some direction on how we might be able to help the most? I think that the Rangers would have something to contribute.”<sup>24</sup> Rangers could also receive training similar to that provided to most community-based organizations involved in emergency response (particularly those modelled after the United States CERT program), including how to extinguish small fires, remove fuel sources, shut off utilities, assess and communicate damage, and conduct urban and interior SAR (Federal Emergency Management Agency, 2019).

We suggest that annual Ranger exercises might include a routine preparedness component in which patrols practice possible disaster response tasks, including evacuations, flood relief activities, and power failures. As Sergeant Roger Hitkolok of the Kugluktuk Ranger Patrol noted, “we need to find out what we can do [in an emergency]. We need to talk about it. We need to plan this out and train. Something will happen ... We need to be ready, we need to talk about it.”<sup>25</sup> Where possible, these exercises should include the other groups and organizations that operate at the community level. A Ranger at the Kitikmeot Roundtable on Search and Rescue explained that,

Because people in these groups often know one another and there is usually a lot of crossover between them with all the hats people wear, there might be an idea that they can work together no problem. But in an emergency, when groups have different ways of communicating, different ways of doing things, different mandates from the South, we can quickly run into trouble. We need to practice cooperating. We need to practice working together.

Exercises should be informed by the lessons learned and best practices shared by Rangers who have been involved in disaster management activities—observations that should be disseminated throughout the Ranger organization.

Ranger patrols should also be more engaged in planning and preparedness activities at the community level. Monthly patrol meetings could include formalized hazard risk analysis (as some patrols are already doing), with patrol commanders passing pertinent information to their patrol group headquarters for dissemination to other government stakeholders. These activities might extend to include conducting community-level hazard risk assessments in cooperation with other local stakeholders. Likewise, Ranger patrols should be encouraged to participate in prevention and preparedness measures (such as flood watch committees), either on a voluntary basis or as part of their formal duties. Undertaking low-scale mitigation efforts, such as clearing away underbrush to reduce fire risks around their communities, or marking tsunami evacuation routes, also contribute to community safety. Based upon best practices in some communities, Rangers should work with local governments to ensure that community emergency plans reflect their capabilities and provide patrols with clear roles and responsibilities—a process that can be facilitated by Public Safety Canada and provincial/territorial emergency management organizations. Furthermore, we recommend that Ranger patrols should complete Local Area Resource Reports regularly to ensure that their communities and responding agencies have ready access to up-to-date information.

## Conclusion

For governments looking to invest in relatively low-cost, resilience-building measures with short- and long-term benefits, the Canadian Rangers offer a model for other jurisdictions with remote and isolated communities (particularly those susceptible to cold disasters). An extensive body of literature warns how accelerating climate change exacerbates the threats posed by natural hazards to communities throughout the Circumpolar North. As Lauta et al. have argued, we should expect more cold disasters in the future owing to natural phenomena (such as changing ice conditions, earthquakes, volcanoes, and landslides) and “changing economic, political and social activities, [such as] ... commercial shipping, tourism, off- and onshore natural resource exploitation” (2018, p. 1277). Remote communities in Canada’s North, Greenland, and Alaska face similar disaster management challenges—limited local capacity, long distances that delay the arrival of outside assistance, and harsh environmental conditions.

We suggest that the Canadian Rangers represent a resilience-building measure that might be adopted for and adapted to Alaska Native and Greenlandic communities. Beyond providing these jurisdictions with a strong “first responder”

capacity in the case of local emergencies, the Ranger model also offers United States Northern Command and Denmark’s Joint Arctic Command with a military presence in isolated communities that reflects local cultures, enhanced human surveillance capabilities, and a pool of experienced individuals who can teach southern-based units how to operate safely and effectively in diverse regions.<sup>26</sup> In short, the application of the Ranger model in Alaska and Greenland could enhance community disaster resilience while contributing to the broader national security priorities of the United States and Denmark in the Arctic, particularly around improved surveillance and domain awareness.

As this overview reveals, Rangers are involved in every phase of the disaster management spectrum: prevention and mitigation, preparation, response, and recovery. They have effectively responded to avalanches, forest fires, severe weather, power outages, and even pandemics. The training, organization, structure, leadership, local knowledge, cultural competence, and relationships of the Rangers allow many patrols to become cornerstones for disaster resilience in their communities. The Canadian Rangers are not a panacea, and remote northern and coastal communities in the country require enhanced government support for essential infrastructure and other preventative measures. Nevertheless, we have shown how widely dispersed and locally rooted Ranger patrols play substantive roles in disaster response. Targeted training and activities to sustain and enhance the Rangers’ functional capabilities in this respect represent an opportunity to build upon their proven effectiveness and to bolster community resilience in regions that are particularly vulnerable and exposed to natural hazards.

## Notes

1. While definitions of community disaster resilience abound (Patel et al., 2017), we have chosen to use the definition employed by the Justice Institute of British Columbia, which has created systematic planning guides to build both Rural Disaster Resilience and Aboriginal Disaster Resilience in Canada.
2. Taloyoak Range Patrol focus group, 15 April 2019. Similar sentiments were expressed by members of every patrol.
3. Focus group discussion during 1CRPG Leadership Training Session, Yellowknife, 14 October 2018.
4. Ranger participant, Kitikmeot Roundtable on Search and Rescue, Canadian High Arctic Research Station, 31 January–1 February 2020.
5. All Rangers interviewed explained that they would respond to emergency situations.
6. Kugluktuk Ranger Patrol focus group, 23 April 2019; Taloyoak Ranger Patrol focus group, 15 April 2019; and Gjoa Haven Ranger Patrol focus group, 23 October 2019.
7. CBC News, “Canadian Rangers honoured for Resolute crash response,” 23 May 2012.

8. CBC News, “Buffalo Airways makes ‘forced landing’ 9 kilometres off Hay River runway,” 3 May 2019.
9. Gjoa Haven Ranger Patrol focus group, 23 October 2019 and Cambridge Bay Ranger Patrol focus group, 21 October 2019.
10. Every patrol that participated in our focus groups highlighted their involvement in SAR activities, both as volunteers and acting officially as Rangers.
11. Ranger participant, Kitikmeot Roundtable on Search and Rescue, Canadian High Arctic Research Station, 31 January and 1 February 2020.
12. Ranger participant, Kitikmeot Roundtable on Search and Rescue, Canadian High Arctic Research Station, 31 January and 1 February 2020.
13. Author interview with Sergeant Roger Hitkolok, Kugluktuk, 18 October 2019.
14. Kugluktuk Ranger Patrol focus group, 17 October 2019.
15. Cambridge Bay Ranger Patrol focus group, 21 October 2019.
16. Kugluktuk Ranger Patrol focus group, 17 October 2019 and Gjoa Haven Ranger Patrol focus group, 23 October 2019.
17. Kugluktuk Ranger Patrol focus group, 17 October 2019.
18. Focus group with Junior Canadian Rangers leadership, Yellowknife, 18 January 2019.
19. Gjoa Haven Ranger Patrol focus group, 23 October 2019 and Kugluktuk Ranger Patrol Focus Group, 17 October 2019.
20. Author interview with member of the Kugluktuk Ranger Patrol, 20 October 2019.
21. Author interview with member of the Kugluktuk Ranger Patrol, 20 October 2019.
22. Ranger participant, Kitikmeot Roundtable on Search and Rescue, Canadian High Arctic Research Station, 31 January and 1 February 2020.
23. When a second fire again threatened Pikangikum in July, patrol Sergeant Buster Kura-hara noted that his Rangers “learned from the first fire. We quickly got set up for this one and I didn’t have to tell them what to do. They knew.” Master Corporal Lilly Kejick explained that “the fires are the first time the Rangers have been able to serve our community and our people are proud of what we’ve been able to. We’re proud to have been able to do it for them” (Moon, 2019h).
24. Author interview with member of the Cambridge Bay Ranger Patrol, 18 April 2019.
25. Ranger participant, Kitikmeot Roundtable on Search and Rescue, Canadian High Arctic Research Station, 31 January and 1 February 2020.
26. For an extended discussion about how Canadian Ranger pay and equipment usage compensation, training, community service, and on-the-land capacity building serve both military and community needs, see Lackenbauer and Kikkert, 2020. For corrections to myths about the Ranger organization as an inadequate military force or as a haven for right-wing extremism, see Lackenbauer, 2018, 2020b.

## References

- 4th Canadian Ranger Patrol Group. (2020, April 28). *On April 26, 2020, the Fort Vermilion Canadian Ranger Patrol responded to a Request for Assistance* [images attached] [status update]. Facebook. <https://www.facebook.com/4CRPG/posts/on-april-26-2020-the-fort-vermilion-canadian-ranger-patrol-responded-to-a-reques/2690262827744603/>
- Aldrich, D. (2012). *Building resilience: Social capital in post-disaster recovery*. University of Chicago Press.
- Ampomah, G., & Devisscher, T. (2013). *Adaptation toolkit: Guidebook for researchers and adaptation practitioners working with local communities*. Stockholm Environment Institute. \_
- Asfaw, H.W. (2018). *Wildfire evacuation and emergency management in remote First Nations: The case of Sandy Lake First Nation, Northern Ontario* [Doctoral dissertation]. University of Alberta.
- Asfaw, H.W., Sandy Lake First Nation, McGee, T.K., & Christianson, A.C. (2019). Evacuation preparedness and the challenges of emergency evacuation in Indigenous communities in Canada: The case of Sandy Lake First Nation, Northern Ontario. *International Journal of Disaster Risk Reduction*, 34, 55–63. <https://doi.org/10.1016/j.ijdrr.2018.11.005>
- Benoit, L., Murphy, B., & Pierce, L. (2016). *Sharing lessons learned about disaster resilience for First Nations communities: A summary report*. Canadian Risks and Hazards Network. [https://www.crhnet.ca/sites/default/files/library/CRHNet%20Report%20to%20INAC\\_March%2031\\_Final.pdf](https://www.crhnet.ca/sites/default/files/library/CRHNet%20Report%20to%20INAC_March%2031_Final.pdf)
- Bhatt, M., & Reynolds, T. (2012). Community-based disaster risk reduction: Realizing the primacy of community. In C. Emdad Haque & D. Etkin (Eds.), *Disaster risk and vulnerability: Mitigation through mobilizing communities and partnerships* (pp. 71–92). McGill-Queen’s University Press.
- Brennan, M.A., & Flint, C.G. (2007). Uncovering the hidden dimensions of rural disaster mitigation: Capacity building through community emergency response teams. *Southern Rural Sociology*, 22(2), 111–126. <https://egrove.olemiss.edu/jrss/vol22/iss2/7>
- Brown, B. (2017, January 16). Rangers work on leadership. *Nunavut News/North*.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–58). Greenwood.
- Bourdon, B. (2000, February 15). The experience was very hard to go through. *Ottawa Citizen*.
- Bowles, R., & Ursuliak, D. (2014). *Building resilient communities workshop report*. <https://www.jibc.ca/sites/default/files/research/pdf/DRDC-RDDC-2014-C131-Document.pdf>
- Briggs, J. (1970). *Never in anger: Portrait of an Eskimo family*. Harvard University Press.
- Cabinet Office. (2011). *Strategic national framework on community resilience*. Government of the United Kingdom.

- Canadian Army. (2018). *Canadian Rangers: Frequently asked questions*. <http://www.army-armee.forces.gc.ca/en/canadian-rangers/faq.page>
- Canadian Army. (n.d.). *Canadian Rangers*. <http://www.army-armee.forces.gc.ca/en/canadian-rangers/index.page>
- Carr, J., & Jensen, J. (2015). Explaining the pre-disaster integration of Community Emergency Response Teams (CERTs). *Natural Hazards*, 77(3), 1551–1571. <https://doi.org/10.1007/s11069-015-1664-3>
- CBC News. (2015, April 21). *Canadian Rangers: A closer look at our “eyes and ears” in the North*. CBC News. <https://www.cbc.ca/news/canada/canadian-rangers-a-closer-look-at-our-eyes-and-ears-in-the-north-1.3040483>
- City of Dawson. (2013). *Municipal Civil Emergency Plan*.
- Chandra, A., Acosta, J., Howard, S., Uscher-Pines, L., Williams, M., Yeung, D., Garnett, J., & Meredith, L.S. (2011). Building community resilience to disasters a way forward to enhance national health security. RAND Corporation. [https://www.rand.org/pubs/technical\\_reports/TR915.html](https://www.rand.org/pubs/technical_reports/TR915.html)
- Chandra, A., Williams, M., Plough, A., Stayton, A., Wells, K.B., Horta, M., Tang, J. (2013). Getting actionable about community resilience: The Los Angeles County community disaster resilience project. *American Journal of Public Health*, 103(7), 1181–1189. <https://doi.org/10.2105/AJPH.2013.301270>
- Christianson, A.C., McGee, T.K., & Whitefish Lake First Nation. (2019). Wildfire evacuation experiences of band members of Whitefish Lake First Nation 459, Alberta, Canada. *Natural Hazards*, 98(1), 9–29. <https://doi.org/10.1007/s11069-018-3556-9>
- Chung, L. (2019, August 6). *4CRPG standing up a new patrol in Quesnel*. BC Local News. <https://www.bclocalnews.com/news/4crpg-standing-up-a-new-patrol-in-quesnel/>
- Chung, L. (2020, March 2). *Canadian Ranger recognized for his work during 2017 wildfires*. The Williams Lake Tribune. <https://www.wltribune.com/news/canadian-ranger-recognized-for-his-work-during-2017-wildfires/>
- Conference Board of Canada. (2014). *Building community resilience in Whatì, Northwest Territories*. <https://www.conferenceboard.ca/topics/northern-aboriginal/publications.aspx>
- Cornet, D. (2019, August 13). *Rangers hold weekend exercise in conjunction with CASARA*. Laronge NOW. <https://larongenow.com/2019/08/12/rangers-hold-weekend-exercise-in-conjunction-with-casara/>
- Cox, R. (2007). Capacity building approaches to emergency management in rural communities: Recommendations from survivors of the British Columbia wildfires, 2003. *International Journal of Emergency Management*, 4, 250–268.
- Cox, R. (2014). Disaster preparedness in Canada’s North: What’s resilience got to do with it? *Northern Public Affairs*, 2(3), 43–45. <http://www.northernpublicaffairs.ca/index/wp-content/uploads/2015/04/COX.pdf>
- Cox, R., & Hamlen, M. (2015). Community disaster resilience and the rural resilience index. *American Behavioral Scientist*, 59(2), 220–237. <https://doi.org/10.1177/0002764214550297>
- Cretney, R.M. (2016). Local responses to disaster: The value of community-led post disaster response action in a resilience framework. *Disaster Prevention and Management*, 25, 27–40. <https://doi.org/10.1108/DPM-02-2015-0043>
- Defence Administration Order and Directive (DAOD). (2015). 2020–2, *Canadian Rangers*. Retrieved April 15, 2020, from <https://www.canada.ca/en/department-national-defence/corporate/policies-standards/defence-administrative-orders-directives/2000-series/2020/2020-2-canadian-rangers.html>
- Demiroz, F., & Haase, T. (2018). The concept of resilience: A bibliometric analysis of the emergency and disaster management literature. *Local Government Studies*, 45(3), 308–327. <https://doi.org/10.1080/03003930.2018.1541796>
- Drennan, L., & Morrissey, L. (2019). Resilience policy in practice — Surveying the role of community based organisations in local disaster management. *Local Government Studies*, 45(3), 328–349. <https://doi.org/10.1080/03003930.2018.1541795>
- Emergency Management Ontario. (n.d.). *Ontario mass evacuation plan part 1: Far North*. Retrieved March 25, 2019, from [https://www.emergencymanagementontario.ca/english/emcommunity/response\\_resources/plans/mass\\_evacuation\\_plan.html](https://www.emergencymanagementontario.ca/english/emcommunity/response_resources/plans/mass_evacuation_plan.html)
- Emery, M., & Flora, C. (2006). Spiraling-up: Mapping community transformation with community capitals framework. *Journal of the Community Development Society*, 37(1), 19–35. <https://doi.org/10.1080/15575330609490152>
- Federal Emergency Management Agency. (2011). *A whole community approach to emergency management: Principles, themes, and pathways for action*. Federal Emergency Management Agency, Washington, DC.
- Federal Emergency Management Agency. (2019). CERT basic training: Instructor guide. Retrieved June 4, 2020, from [https://www.ready.gov/sites/default/files/2019.CERT\\_Basic\\_IG\\_FINAL\\_508c.pdf](https://www.ready.gov/sites/default/files/2019.CERT_Basic_IG_FINAL_508c.pdf)
- FireSmart Canada. (n.d.). *What is FireSmart?* Retrieved November 10, 2020, from <https://firesmartcanada.ca/>
- Flint, C., & Brennan, M. (2006). Community emergency response teams: From disaster responders to community builders. *Rural Realities*, 1(3), 1–9. Retrieved June 5, 2020, from <https://www.ruralsociology.org/assets/docs/rural-realities/rural-realities-1-3.pdf>
- Forester, B. (2020, May 7). *Kashechewan expects ice breakup ‘anytime’ as water rises on Albany River*. APTN News. <https://www.aptnnews.ca/national-news/kashechewan-expects-ice-breakup-anytime-as-water-rises-albany-river/>
- Fournier, S. (2012). *Getting it right: Assessing and building resilience in Canada’s North*. Report for the Conference Board of Canada.
- Funston, B. (2009). Emergency preparedness in Canada’s North: An examination of community capacity. Northern Canada Consulting. [http://www.mun.ca/harriscentre/Emergency\\_Preparedness.pdf](http://www.mun.ca/harriscentre/Emergency_Preparedness.pdf)

- Funston, B. (2014). Emergency preparedness in Canada's North: An examination of community capacity. *Northern Public Affairs*, 2(3), 48–51.
- Gagnon, J. (2013, February 11). More than just camping. *Northern News Service*.
- Giles, D. (2020, April 6). Canadian Rangers support northern Saskatchewan communities during coronavirus pandemic. *Global News*. <https://globalnews.ca/news/6828250/canadian-rangers-northern-saskatchewan-coronavirus/>
- Government of Canada. (2019). *Canada's changing climate report*. Retrieved June 4, 2020, from <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/what-adaptation/canadas-changing-climate-report/21177>
- Government of Canada. (2020). Deployment of Canadian Rangers to Nunavik. Retrieved June 3, 2020, from <https://www.canada.ca/en/department-national-defence/news/2020/04/deployment-of-canadian-rangers-to-nunavik.html>
- Government of Nunavut. (2015). UPDATE: Local state of emergency in Pangnirtung - April 3, 2015. Retrieved June 4, 2020, from <https://www.gov.nu.ca/in/node/17729>
- Greer, D. (2013, February 27). Learning to command: Leadership skills focus of Canadian Rangers training. *Northern News Service*.
- Justice Institute of British Columbia. (2015). *Aboriginal disaster resilience planning guide*. Office of Applied Research, JIRB.
- Kikkert, P. (2017). Finding Ihuma: Inuit leadership norms and Canadian Ranger operations. In A. Lajeunesse & W. Lackenbauer (Eds.), *Canadian Armed Forces Arctic operations, 1941-2015: Lessons learned, lost, and relearned* (pp. 370–86). Gregg Centre for the Study of War & Society, Fredericton. Retrieved June 5, 2020, from <https://www.unb.ca/fredericton/arts/centres/gregg/what/publications/CdnArcticOps2017.pdf>
- Kikkert, P., Lackenbauer, P.W., & Pedersen, A. (2020a). Kitikmeot Roundtable on Search and Rescue: Summary report / Qitiqmiuni Katimatjutauyuq Qiniqhiayinit Annaktinillu – Naunaitkutut. Report from a workshop hosted at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, 31 January & 1 February 2020. <https://Kitikmeotsar.ca>
- Kikkert, P., Lackenbauer, P.W., & Pedersen, A. (2020b). Kitikmeot Roundtable on SAR: General report and findings. Report from a workshop hosted at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, 31 January & 1 February 2020. <https://Kitikmeotsar.ca>
- Kikkert, P., Lackenbauer, P.W., and Pedersen, A. (2020c). Kitikmeot Roundtable on SAR: Mass rescue tabletop exercise report. Report from a workshop hosted at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, 31 January & 1 February 2020. <http://Kitikmeotsar.ca>
- Lackenbauer, P.W. (2006). The Canadian Rangers: A postmodern militia that works. *Canadian Military Journal*, 6(4), 49–60.
- Lackenbauer, P.W. (2011). Aboriginal peoples in the Canadian Rangers: Canada's "eyes and ears" in northern and isolated communities. In C. Voyageur, D. Newhouse, & D. Beavon (Eds.), *Hidden in plain sight: Contributions of Aboriginal Peoples to Canadian identity and culture, Vol. 2* (pp. 306–328). University of Toronto Press.
- Lackenbauer, P.W. (2013). *The Canadian Rangers: A living history*. University of British Columbia Press.
- Lackenbauer, P.W. (2015). *Vigilans: The 1st Canadian Ranger Patrol Group*. 1st Canadian Ranger Patrol Group, Yellowknife.
- Lackenbauer, P.W. (2018). 'Indigenous communities are at the heart of Canada's North': Media misperceptions of the Canadian Rangers, Indigenous service, and Arctic security. *Journal of Military and Strategic Studies*, 19(2), 157–192. <https://jmss.org/article/view/62819/46851>
- Lackenbauer, P.W. (2020a). The North's Canadian Rangers. In A. Edgar, R. Mangat, & B. Momani (Eds.), *Strengthening the Canadian Armed Forces through diversity and inclusion* (pp. 67–86). University of Toronto Press.
- Lackenbauer, P.W. (2020b). The Canadian Rangers, "watching for illegal immigrants," and far-right extremism. North American and Arctic Defence and Security Network *Quick Impact*, 9 September. <https://www.naadsn.ca/wp-content/uploads/2020/09/20-sep-9-Lackenbauer-Quick-Impact-Rangers-Far-Right-Extremism.pdf>
- Lackenbauer, P.W., & P. Kikkert. (2020). *Measuring the success of the Canadian Rangers*. North American and Arctic Defence and Security Network, Peterborough. <https://www.naadsn.ca/wp-content/uploads/2020/10/Rangers-Success-Metrics-Lackenbauer-Kikkert-upload.pdf>
- Lauta, K.C., Vendelø, M.T., Sørensen, B.R., & Dahlberg, R. (2018). Conceptualizing cold disasters: Disaster risk governance at the Arctic edge. *International Journal of Disaster Risk Reduction*, 31, 1276–1282. <https://doi.org/10.1016/j.ijdrr.2017.12.011>
- Lookout: Navy News. (2017, August 26). *Vanderhoof Ranger supports CAF wildfire efforts*. Lookout: Navy News. <https://www.lookoutnewspaper.com/vanderhoof-ranger-supports-caf-wildfire-efforts/>
- Mackinaw, C. (2016). First Nations disaster risk resilience and reconciliation. Presentation at the 13th Annual Symposium, Canadian Risk and Hazards Network, Hyatt Regency, Montreal, Quebec, 23–25 November.
- Mackwani, Z. (2016). *Understanding and enabling volunteer emergency management in Canada*. Voluntary Sector Working Group (VSWG) of Canada's Platform for Disaster Risk Reduction.
- McGee, T. (2020). Evacuating First Nations during wildfires in Canada. *Fire Safety Journal*, 120, 1–12. <https://doi.org/10.1016/j.firesaf.2020.103120>
- McGee, T.K., Christianson, A.C., Asfaw, H., & Mottershead, K. (2018). Advice for emergency managers from the First Nations wildfire evacuation partnership. HAZNET: The Magazine of the Canadian Risks and Hazards Network, 18–21. <http://haznet.ca/wp-content/uploads/2018/05/Spring-2018-Vol.10-No.-1-Webversion-single-pages.pdf>

- Moon, P. (2017, November 13). *Canadian Rangers hone search and rescue skills*. NetNewsLedger. <http://www.netnewsledger.com/2017/11/13/canadian-rangers-hone-search-rescue-skills/>
- Moon, P. (2019a). *Canadian Rangers a growing community resource in Northern Ontario*. The Maple Leaf. <https://ml-fd.caf-fac.ca/en/2019/05/29373>
- Moon, P. (2019b, December 11). *Canadian Rangers complete challenging OPP search and rescue training*. NetNewsLedger. <http://www.netnewsledger.com/2019/12/11/canadian-rangers-complete-challenging-opp-search-and-rescue-training/>
- Moon, P. (2019c, April 26). *The Canadian Rangers are a success story – Lt. Col. Richardson*. NetNewsLedger. <http://www.netnewsledger.com/2019/04/26/the-canadian-rangers-are-a-success-story-lt-col-richardson/>
- Moon, P. (2019d, December 16). *Canadian Rangers complete advanced leadership training*. NetNewsLedger. <http://www.netnewsledger.com/2019/12/16/canadian-rangers-complete-advanced-leadership-training/>
- Moon, P. (2019e, December 9). *Canadian Rangers expand their presence in Northwestern Ontario*. NetNewsLedger. <http://www.netnewsledger.com/2019/12/09/canadian-rangers-expand-their-presence-in-northwestern-ontario/>
- Moon, P. (2019f, July 11) *Pikangikum Canadian Rangers settling into fire evacuation routine*. NetNewsLedger. <http://www.netnewsledger.com/2019/07/11/pikangikum-canadian-rangers-settling-into-fire-evacuation-routine/>
- Moon, P. (2019g, June 7). *Canadian Rangers assisting evacuees in six Ontario host communities*. <http://www.netnewsledger.com/2019/06/07/canadian-rangers-assisting-evacuees-in-six-ontario-host-communities/>
- Moon, P. (2019h, December 10) *Canadian Rangers assist in North Spirit Lake FN and Bearskin Lake FN crisis situations*. NetNewsLedger. <http://www.netnewsledger.com/2019/12/10/canadian-rangers-assist-in-north-spirit-lake-fn-and-bearskin-lake-fn-crisis-situations/>
- Moon, P. (2019i). *Canadian Rangers assisting in emergency evacuation of Kashechewan*. The Maple Leaf. <https://ml-fd.caf-fac.ca/en/2019/05/29660>
- Moon, P. (2019j, April 22). *Canadian Rangers assisting in Kash evacuation*. Timmins Daily Press. <https://www.timminspress.com/news/local-news/canadian-rangers-assisting-in-kash-evacuation>
- Morley, P., Russell-Smith, J., Sangha, K., Sutton, S., & Sithole, B. (2018). Evaluating resilience in two remote Australian communities. *Procedia Engineering*, 212, 1257–1264. <https://ajem.infoservices.com.au/items/AJEM-31-04-15>
- Municipality of Ucleulet. (n.d.). *Ucleulet Emergency Network*. <https://ucleulet.ca/34-community/district-office/emergency-management?start=4>
- Murphy, B. (2012). Community-level emergency management: Placing social capital. In C.E. Haque & D. Etkin (Eds.), *Disaster risk and vulnerability: Mitigation through Mobilizing communities and partnerships* (pp. 45–70). McGill-Queen's University Press.
- Murphy, B., Anderson, G.S., Bowles, R., & Cox, R.S. (2014). Planning for disaster resilience in rural, remote, and coastal communities: moving from thought to action. *Journal of Emergency Management*, 12(2), 105–120. <https://doi.org/10.5055/jem.2014.0165>
- Muzyka, K. (2015, August 25). *Operation Nanook tests wildfire response in Fort Smith, N.W.T.* CBC News. <https://www.cbc.ca/news/canada/north/operation-nanook-tests-wildfire-response-in-fort-smith-n-w-t-1.3203339>
- National Research Council. (2012). *Disaster resilience: A national imperative*. National Academies Press.
- Norris, F.H., Stevens, S.P., Pfefferbaum, B., Wyche, K.F., & Pfefferbaum, R.L. (2008). Resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127–150.
- Office of the National Defence and CAF Ombudsman. (2017a). *Canadian Rangers*. Retrieved June 4, 2020, from <https://www.canada.ca/en/ombudsman-national-defence-forces/education-information/caf-members/career/canadian-rangers.html>
- Office of the National Defence and CAF Ombudsman. (2017b). *Canadian Rangers tasks and operations*. Retrieved June 4, 2020, from <https://www.canada.ca/en/ombudsman-national-defence-forces/education-information/caf-members/career/canadian-rangers.html>
- Patel, S.S., Rogers, M.B., Amlôt, R. & Rubin, G.J. (2017) What do we mean by “community resilience”? A systematic literature review of how it is defined in the literature. *PLOS Currents Disasters*, February 1. <http://currents.plos.org/disasters/index.html%3Fp=28783.html>
- Pierce, L., Murphy, B., & Chretien, A. (2017). *From displacement to hope: A guide for displaced Indigenous communities and host communities*. Canadian Risks and Hazards Network. <https://www.crhnet.ca/sites/default/files/library/From%20Displacement%20to%20Hope%20A%20Guide%20ENGLISH.pdf> (last accessed 3 June 2020).
- Pruys, S. (2020, May 5). *Hay River evacuees watch and wait with flood danger yet to pass*. Cabin Radio. <https://cabinradio.ca/36430/news/south-slave/hay-river-evacuees-watch-and-wait-with-flooding-danger-yet-to-pass/> (last accessed 2 June 2020).
- Public Safety Canada. (2019). *Emergency management strategy for Canada: Toward a resilient 2030*. Retrieved June 2, 2020, from <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/mrgncy-mngmnt-strtyg/index-en.aspx>
- Quinn, E. (2020, April 3). *Canada's PM OKs use of local reserve forces in Arctic Quebec during COVID-19 pandemic*. Radio Canada International. <https://www.rcinet.ca/eye-on-the-arctic/2020/04/03/canadas-pm-oks-use-of-local-reserve-forces-in-arctic-quebec-during-covid-19-pandemic/>



- Rudyk, M. (2016). *Operation Nanook comes to a close for another year*. *CBC News*, 2 September. CBC. <https://www.cbc.ca/news/canada/north/operation-nanook-comes-to-a-close-1.3747087>
- Sithole, B., Campion, O. & Hunter-Xénié, H. (2017). Hazard-smart remote communities in northern Australia: community-led preparedness. *Australian Journal of Emergency Management*, 31(4), 28–34.
- Standing Committee on Indigenous and Northern Affairs. (2018). From the ashes: Reimagining fire safety and emergency management in Indigenous communities. House of Commons Canada. <https://www.ourcommons.ca/Content/Committee/421/INAN/Reports/RP9990811/inanrp15/inanrp15-e.pdf>
- Stefanovich, O. (2020, April 16). “Nothing like I’ve ever done before”: COVID-19 poses new challenge for Canadian Rangers. *CBC News*. <https://www.cbc.ca/news/politics/stefanovich-canadian-rangers-help-first-nations-covid19-1.5531538> (last accessed 4 June 2020).
- St-Onge, J. (2020). *Fort Vermilion residents deal with extensive flood damage*. *CBC News*. <https://www.cbc.ca/news/canada/edmonton/fort-vermilion-flood-damage-mackenzie-county-1.5562641>
- Teslin Tlingit Council. (March 2014). *Emergency Measures Plan: Village of Teslin*.
- The National Academy. (2012). *Disaster resilience: A national imperative*. National Academies Press.
- The Ranger Foundation. (2017). *The Talking Stick, 2017*. Retrieved June 3, 2020, from <http://therangerfoundation.ca/TalkingStick2017.pdf>
- The Underground Press. (2016, June 30). Synopsis of an emergency evacuation exercise. *The Underground Press*.
- Tiernan, A., Drennan, L., Nalau, J., Onyango, E., Morrissey, L. & Mackey, B. (2019). A review of themes in disaster resilience literature and international practice since 2012. *Policy Design and Practice*, 2(1), 53–74.
- Town for Fort Smith. (2015). *Bylaw 399 – Emergency Management Plan*.
- Town of Hay River. (2019). *Town of Hay River Emergency Plan*. 20 February. Retrieved May 15, 2020, from <https://hayriver.com/wp-content/uploads/2019/02/Hay-River-Emergency-Plan.pdf>
- Village of Zeballos. (2019). *2019 Annual Report*. Retrieved March 15, 2020, from [http://www.zeballos.com/Zeballos2016/wp-content/uploads/2019/06/2019-Annual-report-on-2018-operations\\_JUNE-10-2019.pdf](http://www.zeballos.com/Zeballos2016/wp-content/uploads/2019/06/2019-Annual-report-on-2018-operations_JUNE-10-2019.pdf)
- Village of Massett. (n.d.). *Emergency planning*. Retrieved March 15, 2020, from <http://massetbc.com/residents/emergency-planning/>
- Vullierme, M. (2019). Towards human security in the Arctic: Lessons learned from Canadian Rangers and Junior Canadian Rangers. *Arctic Yearbook 2019*, 1–14. [https://arcticyearbook.com/images/yearbook/2019/Scholarly-Papers/7\\_AY2019\\_Vullierme.pdf](https://arcticyearbook.com/images/yearbook/2019/Scholarly-Papers/7_AY2019_Vullierme.pdf)
- Vullierme, M. (2018). The social contribution of the Canadian Rangers: A tool of assimilation or means of agency? *Journal of Military and Strategic Studies*, 19(2), 193–211.
- Vullierme, M. (2020). Questions soulevées par les impacts de la crise de la COVID-19 sur les Rangers et sur les communautés du Nunavik. *North American and Arctic Defence and Security Network Policy Briefs*, June 2020. Retrieved from October 10, 2020) from <https://www.naadsn.ca/wp-content/uploads/2020/06/Magali-Vullierme-Note-DOrientation-Impact-de-la-crise-de-la-COVID-19-sur-les-Rangers-et-sur-les-communaute%CC%81s-du-Nunavik-final.pdf>
- Wilkin, J., Biggs, E., & Tatem, A.J. (2019). Measurement of social networks for innovation within community disaster resilience. *Sustainability*, 11(7), 1–16.
- World Health Organization. (2018). Capacity-mapping package: Four-core capacity method. Retrieved August 7, 2020, from [https://www.euro.who.int/data/assets/pdf\\_file/0004/380254/02a-erc-eng.pdf](https://www.euro.who.int/data/assets/pdf_file/0004/380254/02a-erc-eng.pdf)