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Collaborative Disaster Training For Canadian Forces Bases And Civilian Partners[1]

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Focus and Framing

Introduction

Over the last 60 years, a number of changing factors have contributed to an increase in the complexities and impacts with regard to responding to disasters in and around communities. These factors include: urbanization; population growth; environmental

[1] I am grateful to my academic supervisor, David Etkin, for his support, encouragement and timely feedback. I also want to recognize David's work as an instructor for the Emergency and Disaster Management program at Royal Roads University and his tremendous ability to engage and inspire his students. I appreciate the support and assistance provided by my academic sponsors, the Canadian Forces Base of Comox, Lieutenant Colonel Jim Benninger, Major Dhrur Jagat and the dedicated and professional staff at the base. I would also like to thank the Comox Valley Emergency Program and its members for their offer to serve as an academic sponsor and the assistance they provided in circulating the survey to the disaster and emergency organizations of the Comox Valley.

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degradation and technological changes. More than 75 percent of the world's population now lives within major disaster risk areas, with floods, extreme weather, wild fires, oil spills and epidemic flu being only a few examples of the hazards to which people are exposed.[2] People's and communities' safety, economies and lifestyle are more vulnerable now than ever.

Due to this increase in the number of people living in high disaster risk areas, as well as the increased incidence and magnitude of disasters (Figure 1), there is a greater need to collaborate and coordinate relief planning and aid between military and civilian organizations to improve community resilience through better preparedness. Effective relationships between military resources and civilian organizations save time, resources and skills and knowledge capabilities during emergencies and disasters.[3]

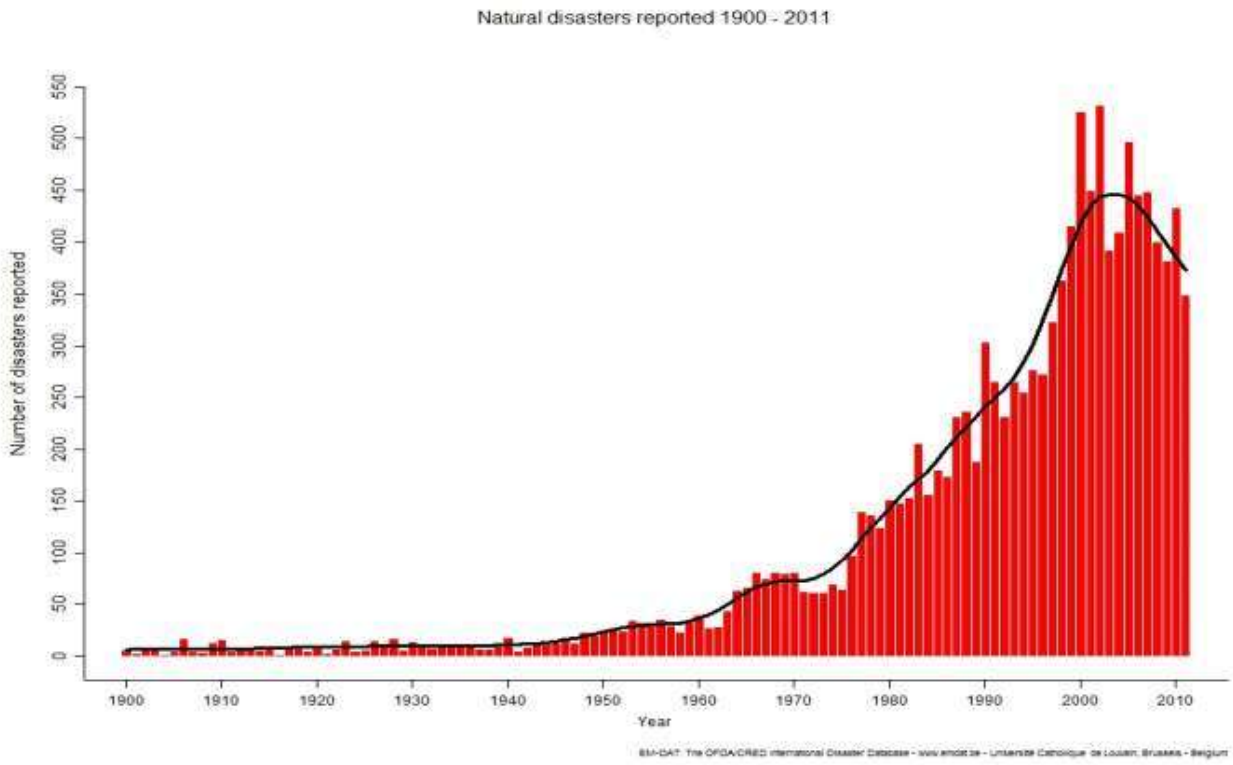
In recent years, the Canadian Forces have provided assistance with many national and international disasters, thereby receiving much visibility in certain communities and with the public-at-large. Nevertheless, the Forces' ability to operate at peak efficiency in times of disaster has been limited by poor adaptability and inappropriate operations related to the complexities of disaster and emergency management.[4]

[2] D. P. Coppola, *Introduction to International Disaster Management, (*Oxford: Butterworth- Heinemann (Elsevier)), 2007.

[3] D. Hentra and G. McBean, *Canadian Public Policy – Analyse de Politiques. Canadian Disaster Management Policy: Moving Toward a Paradigm Shift?* 2005; R. Kuban "Shortcomings of the Canadian Crisis Response." Vanguard: September/October, pp. 22-3.,.

[4]R. Kuban, "Paradigm shift: Training the military for emergency relief." Vanguard, September/October, 2005: pp. 20-1; _____, "Edmonton's Urban Villages: The Community League Movement." Edmonton, AB: University of Alberta Press. Vanguard July/August, 2005: pp. 10, 11, 29.

Figure 1. Trends in number of natural disasters reported 1900-2011



Source: (EM DAT: The OFDA/Centre for Research on the Epidemiology of Disasters International Disaster Database. (2009). Number of disasters reported 1900-2011. Universite Catholique de Louvain Brussels, Belgium. Retrieved from www.emcat.bc)

Professional organizations, including disaster and emergency responders and managers, see the value in updating and enhancing their education and credentials to continue meeting future demands. The Emergency Management Framework for Canada calls for partnership between all levels of society to foster an inclusive, collaborative emergency management network nationwide.[5] Interestingly, it has now been stated that the US Federal Emergency Management Agency is shifting its philosophy in catastrophe preparedness planning from the "government-centric" approach that it has adopted in the past, to a collaborative approach that recognizes the need to coordinate with other partners and utilize community members as assets

[5] Public Safety Canada, *An Emergency Management Framework for Canada" Second Edition, Ministers Responsible for Emergency Management*, 2011. http://www.publicsafety.gc.ca/prg/em/emfrmwrk-2011-eng.aspx

rather than assuming them to be liabilities. Therefore, the importance of readiness and collaboration between all organizations, including military, requires further assessment with a view towards improvement.

Purpose of Study

The purpose of this study was to examine aspects of the collaborative disaster response system that exists between the Canadian Forces Base (CFB) Comox and its partners, in particular to gather data to assess the effectiveness of disaster preparedness in the military-civilian community. The findings will aid in the improvement of preparedness and response in both military and civilian sectors, thereby increasing the resilience of communities situated near military installations. Specifically, this research presents conclusions and recommendations related to the quantity, frequency of training and exercises, and the perception from the leaders all the way to the individual personnel. It also looks at their general DEM knowledge and their point of view about capacity, resources and networking. Identifying and investigating the multi-faceted perspectives of the many parties involved in disaster simulations and exercises provides a unique opportunity for learning about building collaborative responses.

Specific Research Question

> ***How can current training for Canadian Forces Base disaster response personnel and civilian partners be improved to more effectively prepare them for disaster response?***

This research focuses on two sub-questions. First: How do present emergency and disaster plans and training integrate all players in the case of a disaster? Second: What aspects of these collaborative plans are effective? The goal of these research questions is to gather data that provide evidence to help increase disaster and emergency plan effectiveness for responders' training and operations in the military-civilian community.

Relationship between Proposed Topic and Academic Portion

This Major Research Project (MRP) will complete the academic requirements for a Master of Arts in Disaster and Emergency Management (MADEM), which is being done in

collaboration with the Canadian Forces. This MRP also relates to the academic portion of the MADEM program by focusing on an issue that is currently under debate regarding the use of national resources and personnel for response to emergency and disaster management events.[6] Royal Roads defines the essence of this MADEM program by stating that it "…supports the notion that disaster and emergency management processes and practices can and should contribute to risk reduction, community resilience and sustainable communities".[7] The institutional core approach maintains the notion that disasters are a consequence of intersecting factors within environmental, social, political and economic spheres.

This research looks at the possibility of increasing the effectiveness of preparedness through better training. Adequate training can improve a community's resilience to disaster based on its preparedness and ability to respond and recover. The input of those who receive training is crucial for mandating the most appropriate and best-practice preparedness strategies. Also related to the MADEM program are research insights that can contribute to an increased understanding of leaders' and managers' perceptions, which may have either impeded or facilitated preparedness measures within the military-civilian community.

Assumptions:

The assumptions for this research are:

1) Responders' perceptions in a civilian-military set-up will identify both strengths and weaknesses in education, training and exercises, which will have the potential to improve disaster and emergency planning and preparedness. Previous studies have proven that exercises, training and simulations are the best way to increase the resilience of a community faced with coping with a disaster;[8]

[6] Hentra and McBean, 2005 ; Kuban, 2006, pp. 22-3; T. Bruneau and Cristiana, F. "Toward a New Conceptualization of Democratization and Civil-Military Relations." *Democratization* 15(5) 2008: pp. 909-29. Doi:10.1080/13510340802360525.

[7] Royal Roads, *Royal Roads University Research Ethics Policy* (2011). Accesses at http://research.royalroads.ca/sites/default/files/web_files/RRU_EthicsPolicy_16Feb2011r.pdf

[8] Henstra and McBean 2005; R. W. Perry,. "Disaster exercise outcomes for professional emergency personnel and citizen volunteers," *Journal of Contingencies and Crisis Management*. 12(2) 2004 : pp. 64-75, doi:10.1111/j.0966-0879.2004.00436.x; D. M. Peterson and R.W. Perry. "The impacts of disaster exercises on participants." *Disaster Prevention and Management*. 8(4) 1999. pp. 241-54. doi: 10.1108/09653569910283879; D. A. McEntire, *Disaster Prevention and Management* 14(2), 2005: pp. 206–22. doi:

2) CFB Comox and the surrounding community is sufficiently representative of other CF bases and their communities, such that the research results are transferrable.

Limitations:

Understanding the limitations of this research is vital because all research has constraints regarding time, resources, knowledge and understanding. There was an element of subjectivity in the research, however, regular debriefings with the sponsors and supervisors, including discussions with regard to recommendations and comments, ensured objectivity.

This research was undertaken in a civilian-military community in proximity to military installations. CFB Comox is an example of a CF base, and extrapolation should be done with care. For example, the ratio of civilian: military organizations might be different in other settings, although a parallel exists.

Because of the current employer of the researcher, bias leans towards the Department of National Defence (DND) in terms of which factors are considered important. With the inclusion of many points of view and observations from researchers, collaborators and the organizations, the chances of identifying and rectifying blind spots or biases have been greatly improved.

Overview of the Existing Literature

Canada is the world's second largest country, with borders along three oceans. Disaster response resources are limited due to the vastness of the 10 million square kilometer landmass.[9] Because of the size of this country and the limited resources available to help communities when disasters occur, each and every response person is essential. The different arms of the military are among the partners involved in responding to disasters, and they are playing an increasingly important role.[10] This new paradigm for the military entails a shift to more frequent

10.1108/09653560510595209; United Nations Office for the Coordination of Humanitarian Affairs. "Disaster preparedness for effective response: Guidance and indicator package for implementing priority five of the Hyogo Framework," 2008, http://www.preventionweb.net/files/2909_Disasterpreparednessforeffectiveresponse.pdf

[9] Global Forest Watch. *Canada overview*, 2012. http://www.globalforestwatch.org/english/canada/index.htm

[10] W. A. Anderson, "Military organizations in natural disaster: established and emergent norms." *American Behavioral Scientist*, 13, 1970: pp. 415-22; T. E. Drabek, "Commentary," *Social Science and Natural*

and ever-more crucial interactions with various sectors of civilian Disaster and Emergency Management (DEM) responders. This shift creates greater training challenges: the types of pre-disaster-planning training and practice drills have to be changed in order to remain effective, given the involvement of these players.[11] The best way to help people in emergencies is to integrate all of the available resources and knowledge.[12] Of course, this suggests that it would be beneficial for military and civilian responders to collaborate more effectively.

Disasters are inevitable and have been increasing in number, affecting more people and impacting our social, fundamental economic and security systems.[13] The preparedness of emergency responders is an element that can greatly influence the response and the recovery of a community.[14] Therefore, responder organizations must constantly work to find more effective ways of responding to and being prepared for disaster situations. The United Nations described the preparedness of responders as one of the most important priorities for a community that is facing disaster management challenges.[15]

An effective preparedness and response system requires people skilled in disaster management to be in place at all levels of the system. These participants must have a clear understanding of their roles within that system. This capacity and development should include

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Hazards., 1981, pp. 160-170. Retrieved from http://training.fema.gov/EMIWeb/edu/docs/Drabek percent20- percent20Quarantelli percent20Theory percent20Award percent20Lecture percent20-percent20Social percent20Problems percent20.doc

[11] Hentra and McBean 2005; K. J. Tierney, "Recent developments in U.S. homeland security policies and their implications for the management of extreme events,. *Handbook of Disaster Research*, Missing editor info., (New York,: Springer, 2006): pp. 405-12; C. L. Williams, S. D. Solomon, and P. Barton, "Primary prevention in aircraft disasters: Integrating research and practice," *American Psychologist* 43(9), 1989: pp. 730-9. doi:10.1037/0003-066X.43.9.730.

[12] N. Joyce, "Civilian-military coordination in the emergency response in Indonesia," *Military Medicine* 171(10 Suppl 1), 2006:pp. 66-70. Retrieved from Academic Search Premier; D. A. McEntire, *Disaster Prevention and Management* 14(2), 2005: pp. 206–22. doi: 10.1108/09653560510595209; M. Stephenson, Jr. "Making humanitarian relief networks more effective: Operational coordination, trust and sense making." *Disasters* 29(4) 2005: pp. 337-50. doi:10.1111/j.0361-3666.2005.00296.x; W. Thompson, "Success in Kashmir: A positive trend in civil-military integration during humanitarian assistance operations." *Disasters* 34(1) 2010: pp. 1-15. PubMed.

[13] P. B. Andreatta, E. Maslowski, S. Petty, W. Shim, W., M. Marsh, T. Hall, S. Stern, and J. Frankel, "Virtual reality triage training provides a viable solution for disaster-preparedness," *Academic Emergency Medicine* 17, 2010: pp. 870–76. doi:10.1111/j.1553-2712.2010.00728.x; G. McBean and C. Rodgers, "Climate hazards and disasters: the need for capacity building," *Wiley Interdisciplinary Reviews: Climate Change*. 1(6), 2010: pp. 871-84; P. R. Trim, "An integrative approach to disaster management and planning." Disaster Prevention and Management 13(3), 2004:pp. 218-25; UNCHA, 2008.

[14] McEntire, 2005; UNCHA, 2008.

[15] Hentra and McBean, 2005.

community members and should create dialogue and learning between all actors who form part of the disaster management system.[16] Finding and presenting the perspectives of different members involved in disaster and emergency management could help facilitate a more holistic and thereby more beneficial approach to planning preparedness training for these events. Since disaster and emergency managers use simulation and training to plan their development strategies and the implementation of them, it is appropriate to focus on expanding and improving these areas.

Loque[17] and Manoj and Baker[18] maintain that crises require disaster and emergency managers to make rapid decisions in situations that often have insufficient resources. To manage effectively in these challenging situations, responders and their managers should be trained to think proactively and in collaboration. Members and leaders of organizations on the front lines of crises are now called upon to make decisions that will have larger consequences than ever before. Moats, Chermack, and Dooley discuss the importance of decision-making,[19] noting that decisions are forced to be made with partial or inaccurate information, imprecise goals, with time pressures and constantly changing environments. This changing paradigm with regards to decision-making means that much thought must be given to the important components of the training of responders and their managers and leaders. According to these authors, training for disaster preparedness needs to focus on improvements in these areas: participation, knowledge gain and the increase of collaborative coordination.

Literature Review Themes

Three themes have been identified in the literature surrounding this research. These are: the influence of multiple responders in DEM; the education and learning experience of the responders and leaders; and anticipation-participation behaviors.

Regarding the first theme, the literature shows that the influx of a large group of responders into a disaster zone influences the quality of post-disaster recovery by controlling negative collateral effects. By using better and frequent participation drills, for example, large

[16] UNCHA, 2008.
[17] J. Loque, "The public health response to disasters in the 21st century: Reflections on Hurricane Katrina," *Journal of Environmental Health* 69(2), 2006: pp. 9-13.
[18] Manoj and Baker "Communication challenges in emergency response," *Communication of the ACM* 50(3), 2007: pp. 51-3.
[19] Moats, Chermack and Dooley, "Using scenarios to develop crisis managers: Applications of scenario planning and scenario-based training," *Advances in Developing Human Resources* 10, 2008: pp. 397-424.

groups will experience improvement of their understanding and comprehension of a real situation.[20]

The literature discusses how the education of responders from training and simulations provides them with new strategies to implement during disasters.[21] Sharing the lessons learned from doing well balanced exercises reaching the maximum number of levels and organizations increases the experience and knowledge of responders.[22] While combined and realistic DEM strategies address the challenges of working collaboratively with other health care team members and providing holistic care to clients from diverse cultural backgrounds, they do not always necessarily provide the proper environment to prepare participants to respond in the event of a disaster.[23] Uncoordinated and unplanned assistance such as that provided during Hurricane Katrina have been primarily an issue for the United States and are for the majority of the countries around the world. [24] Multi-agency collaboration is now more common and includes military resources and personnel.[25] The implementation of a chain of command is important for making sure that all services, time and resources are efficiently utilized and not duplicated.[26] Local DEMs need guidance with decisions; coordination is often enhanced as a result of training exercises or by actual large-scale emergency incidents.[27]

The final theme in the literature addresses the way that different individuals handle disaster situations, depending on their different levels of anticipation and expectation about

[20] Perry, 2004, pp. 64-75; Peterson and Perry, 1999, pp. 241-54.
[21] H. W. Fischer, *Response to disaster: Fact versus fiction and its perpetuation: The sociology of disaster,* (University Press of America, 1998); B. G. Kaplan, A. Connor, E. P. Ferranti, L. Holmes, and L. Spencer, "Use of an emergency preparedness disaster simulation with undergraduate nursing students," *Public Health Nursing* 29(1), 2012: pp. 44-51. doi:10.1111/j.1525-1446.2011.00960.x.
[22] A. Bitto, "Say what? Who? Me? Right here in the trenches? Collaborate on what? Seeking common ground in regional all-hazards preparedness training," *Journal Of Environmental Health* 69(6), 2007: pp. 28-33. Retrieved from Business Source Premier; Peterson and Perry, 1999, pp. 241-54.
[23] Kaplan, 2012, pp. 44-51.
[24] E. P. Embrey, R. Clerman, M. F. Gentilman, F. Cecere, F. and W. Klenke, "Community-based medical disaster planning: A role for the Department of Defense and the military health system," *Military Medicine* 175(5), 2010: pp. 298-300. Retrieved from Academic Search Premier; R. C. Larson, M. D. Metzger, and M. F. Cahn, "Responding to emergencies: Lessons learned and the need for analysis," *Interfaces* 36(6), 2006: pp. 486-501, 616-617.
[25] Embrey, 2010, pp. 298-300.
[26] H. Shover, "Understanding the chain of communication during a disaster," *Perspectives in Psychiatric Care* 43(1), 2007: pp. 4-14. doi:10.1111/j.1744-6163.2007.00100.x.
[27] For example, see: Larson, Metzger, and Cahn, 2006.

being involved in emergencies.[28] The trauma experienced during disasters affects the sympathetic nervous system, which is responsible for stimulating activities associated with the fight-or-flight response. Responders exposed to realistic simulations are made more aware, more trusting and less nervous of helping others, compared to those who have not had such training. Kaplan's research of hospital employees and procedures,[29] and other similar research,[30] shows increased confidence in other responders who work within and with other organizations after completing simulations and exercises. In other words, if responders are exposed to well organized and realistic exercises, they will be more confident and effective during a real incident.

Empirical studies have been conducted on the relationship between training and responder effectiveness. These studies have focused on participation, education, coordination/communication and comfort, and they show the close relationship between responder training and subsequent effectiveness in disaster management situations.[31] However, there is a gap in research and in the literature concerning the effectiveness and understanding of the professional demographic who are located and responding within a civilian-military community during a disaster.

Various questions about civil-military relations have been raised, for example, regarding the use of military resources to assist local authorities in the case of a major disaster.[32] Some discussion can be found on the military role that has been played in some disasters, but not with respect to local Canadian disasters.[33] While health personnel and civilian fire responders have a range of research about this subject,[34] Canadian Forces Base literature and research are notably absent. As a result, identifying and investigating perspectives by incorporating civilian

[28] V. Basolo, L.J. Steinberg, R. J. Burby, J. Levine, A. Cruz, and C. Huang, "The effects of confidence in government and information on perceived and actual preparedness for disasters," *Environment and Behavior* 41(3), 2009: pp. 338-64. doi:10.1177/0013916508317222

[29] Kaplan, 2012, pp. 44-51.

[30] Hentra and McBean, 2005; United States Joint Forces Command, "Multinational Experiment 3 Executive Report," Department of Defense: United States. Working Group Number 33, 2004 http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA428147.

[31] Bitto, 2007, pp. 28-33; A. Karanci, B. Aksit, and G. Dirik, "Impact of a community disaster awareness training program in Turkey: Does it influence hazard-related cognitions and preparedness behaviors?" Social Behavior and Personality 33(3), 2005: pp. 243-58. doi:10.2224/sbp.2005.33.3.243.; S. Mishra, D. Suar, D., and D. Paton, "Self-esteem and sense of mastery influencing disaster preparedness behavior," *Australasian Journal of Disaster and Trauma Studies* 2011(1): pp. 1-11. Retrieved from University of Tasmania; Perry, 2004, pp. 64-75; Shover, 2007, pp. 4-14.

[32] UNCHA, 2008.

[33] Stephenson, 2005, pp. 1-15.

[34] Embrey, 2010, pp. 298-300; Trim, 2004, pp. 218-25; Stephenson, 2005, pp. 1-15.

and military agencies into disaster simulations and training could provide a unique opportunity for learning about collaborative efforts which are absent in the literature.

Relevance of the Proposed Topic

The findings of this research were significant for gaining an enhanced understanding of how to increase the preparedness and resilience of communities within the proximity of military installations. Resilience in disaster and emergency management is based, in part, on the effectiveness of the managers and participants.[35] By addressing the gaps related to the preparedness of the civilian-military communities and the use of military assets during disaster relief situations, Canadian communities become less vulnerable.

This research provides additional information and data from the CFB Comox which has a great interest in maintaining and improving CF mandates. These mandates are: 1) to protect Canada and it sovereignty; 2) to defend North America; and, 3) to contribute to international peace and security. The National Defense's website includes the following statement under the category "Protecting Canada":

> The Canadian Forces deliver effective disaster relief to Canadians in distress with unique capabilities to provide support to civilian rescue authorities during forest fires, floods, avalanches, hurricanes or whenever disasters strike. Search and rescue crews respond rapidly to distress calls anywhere in our vast country and its surrounding seas. Every year, daring rescues, often conducted under hazardous conditions, save more than 1,000 lives and assist thousands more people in distress.[36]

This highlights the CF's clear responsibility for effective disaster response and its primary mandate of protecting Canadians in case of distress or emergency, which subsequently motivated this research. Increasing the effectiveness of preparedness, through better training, would improve a community's resilience to disaster. In the case of a disaster near a military base, many organizations will rapidly respond. For example, at the CFB of Comox and the YQQ Comox Valley Airport (located at the base), the responders include: On Scene Command Post

[35] Bitto, 2007, pp. 28-33; Karanci, 2005, pp. 243-58; Mishra, 2011, pp. 1-11; Perry, 2004, pp. 64-77; Shover, 2007, pp. 4-14.

[36] National Defense, "About the Canadian forces: What we do," 2012. http://www.forces.gc.ca/site/acf-apfc/index-eng.asp.

CFB Comox, firefighters, rapid intervention groups, military police, search and rescue technicians, the 442 Squadron, and many others.

Local DEM should use simulation and training to validate development strategies and implementation within their organizations.[37] It is a great way to feel the pulse of their DEM's, including places to build on, restructure and consider changing. Finding and presenting the perspectives of the various responders could help facilitate a holistic approach to their learning all phases of a disaster: preparedness, mitigation, response and recovery. Within the last year, CFB Comox has been refocusing its local disaster response trainings which center upon the surrounding area of the base. The On Scene Command office wished to receive feedback on this training, its perceived effectiveness, and how it might become more effective. The suitability and effectiveness of training sessions were measured on each disaster-training occasion.

Sources of Information

The sources of information available for this research project consisted of academic literature, local directives and policies, and surveys. The literature concerning DEM, social sciences, emergency plans, policies and directives was accessed online or from library databases. Meetings with the MRP sponsor (the CFB Comox authority) helped to ensure that questionnaires were completed by participants in a timely manner and used proper chain of command and distribution methods.

Research Methodology

This research addressed issues of preparedness of emergency responders, and coordination between the various groups with regards to: 1) assessing the respondents' present emergency and disaster training comfort level; 2) identifying various factors that influence respondents' perceptions of preparedness and the collaborative process among the military-civilian responder members; and, 3) analyzing and locating the gaps related to increasing the effectiveness of DEM responses. A positivist and utilitarian approach frames this research, which helps build positive recommendations and conclusions. These frameworks emphasize a transparency and a participatory approach which increases the validity of the recommendations.

[37] UNCHA, 2008.

A mixed approach to data collection, including the collection of both quantitative and qualitative data, addresses the challenges of training and coordination. This increases responders' empowerment and promotes positive changes by using the feedback coming directly from the respondents (Creswell 2004). The quantitative side allows for tests of statistical significance, while the qualitative side gives opportunities for in-depth insights.

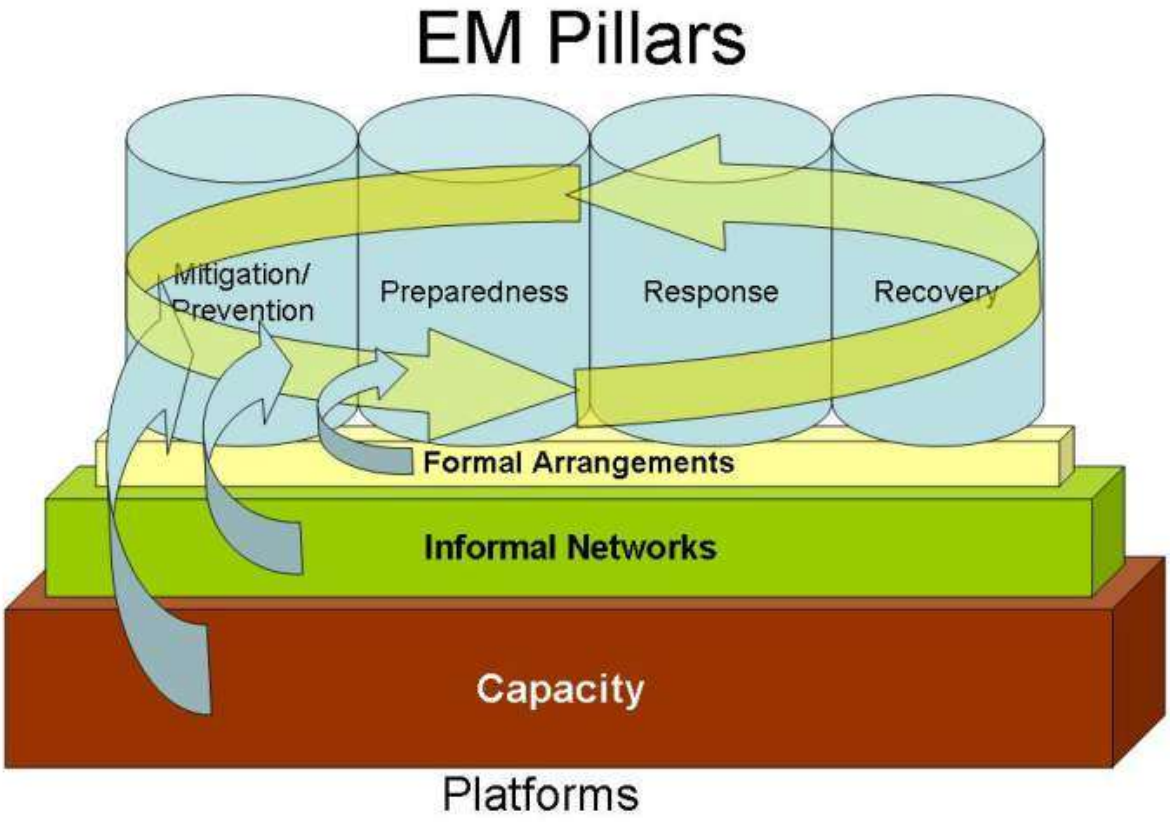
The research was performed in the following order:

1. Literature review
2. Survey design
3. Survey testing
4. Survey application
5. Analysis

Theoretical Frameworks

The comprehensive emergency management model (CEM) forms the basis of how DEM is carried out within governments in Canada, and is therefore the model of choice for this research. Though it has flaws, such as creating silos between different aspects of disaster management and assigning actions to specific pillars when they can fit into more than one category, its focus on preparedness is a good fit with how DND organizes its activities. A modified version of the CEM model is shown in Figure 2, which more explicitly includes the areas of capacity and networks.

Figure 2. Modified version of the Comprehensive Emergency Management Model



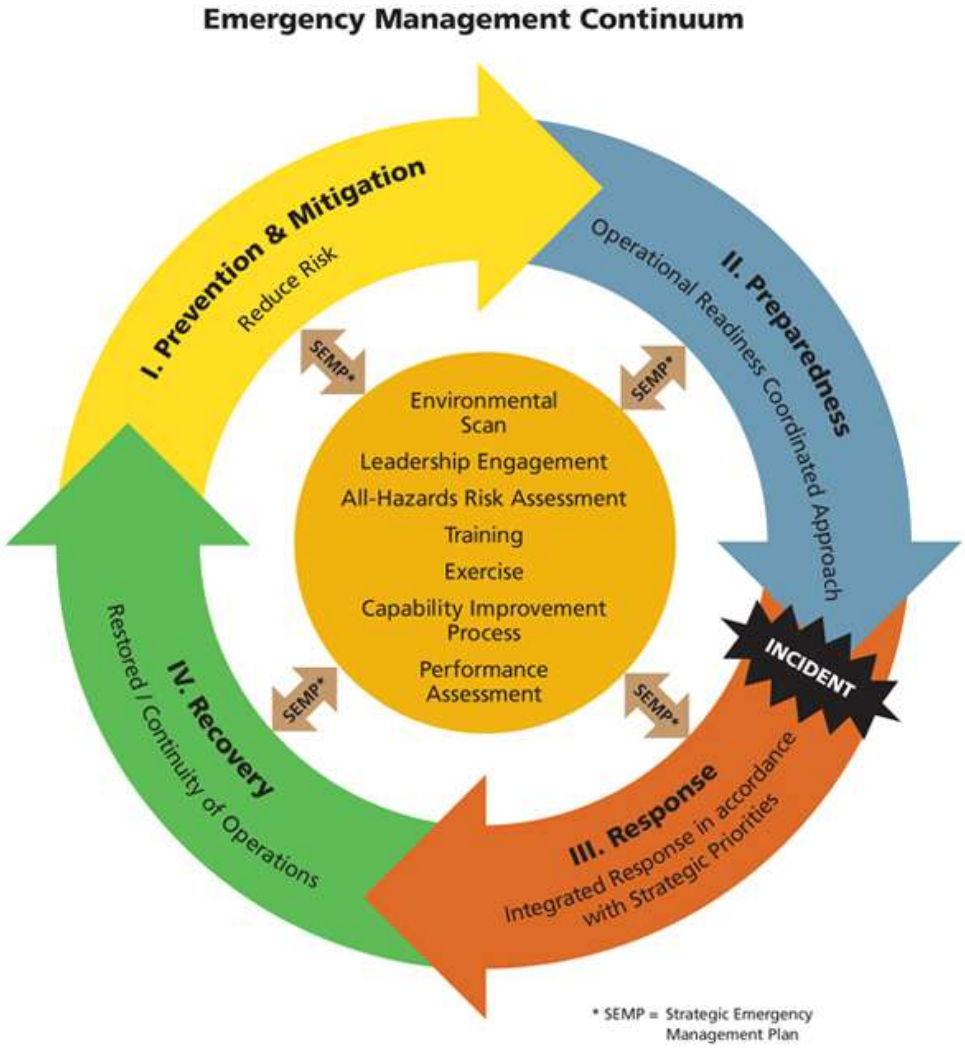
(Source: D. Etkin, personal communication)

Public Safety Canada uses the Emergency Management Framework model, represented in Figure 3 below (prevention and mitigation, preparedness, response, and recovery), which is essentially the same as the CEM.[38] This model is very similar and is commonly used in the disaster and emergency field.[39]

[38] Public Safety Canada, *An Emergency Management Framework for Canada,* Second Edition, Ministers Responsible for Emergency Management, 2011. http://www.publicsafety.gc.ca/prg/em/emfrmwrk-2011-eng.aspx.

[39] E. P. Hughey, *A longitudinal study: The impact of a comprehensive emergency management system on disaster response in the commonwealth of the Bahamas* (Doctoral dissertation, University of South Florida, 2008); Kaplan, 2012, pp. 44-51; Federal Emergency Management Agency (FEMA), "Federal Insurance and Mitigation Administration," 2010. http://www.fema.gov/about/divisions/mitigation.shtm; Public Safety Canada, 2011; United Nations, *Living with Risk: A Global Review of Disaster Reduction Initiatives* (New York

Figure 3. Emergency Management Continuum.



Source: (Public Safety Canada 2010. Emergency Management Planning Guide 2010–2011. Retrieved from http://www.publicsafety.gc.ca)

In the model, the term *mitigation* means the lessening or elimination of the adverse impacts of hazards and related disasters (United Nations International Strategy for Disaster Reduction.[40] Mitigation can be subdivided into structural and non-structural elements. Structural elements

and Geneva: United Nations International Strategy for Disaster Reduction Secretariat, 2004). ISBN/ISSN 9211010640 ; UNOCHA, 2008.

[40] United Nations International Strategy for Disaster Reduction (UNISDR), *Terminology on Disaster Risk Reduction,"*(Geneva, Switzerland: United Nations International Strategy for Disaster Reduction (UNISDR), 2009). http://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf.

are the physical measures: relocating people or building protections. Non-structural elements include educating people, modifying behaviors, implementing and writing policies.

Preparedness can be defined as making decisions and taking measures in advance of an emergency, in order to be ready to effectively respond to and recover from disasters when they happen.[41]

Response is taking action immediately before, during or immediately following a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.[42] It includes notifications, warnings, protection and welfare.

Recovery is defined as those activities needed to return people's lives to a normal state that is acceptable or is as similar as possible to the state that existed before a disaster.[43] Because of the variety and extensiveness of the DEM field, this research paper focuses explicitly on the preparedness and response training of the responders and their managers.

Sample Selection

The sample was based upon and builds from the people involved in military-civilian exercises in the proximity of the Canadian Forces Base in Comox, British Columbia. Military and civilian organizations were approached and invited by the researcher to participate in the research. The participants include: On Scene Command Post, firefighters, the rapid intervention group for Hospitals, search and rescue technicians and other essential organizations. A list of the highest-level leaders and managers of the CFB Comox and Comox Valley area was found through the Comox Valley Emergency Preparedness (cvep.com) database. This same database was used during the research to record the organizations present. From this list, research invitations were distributed with appropriate directives.

[41] Public Safety Canada, *Building a Safe and Resilient Canada* (Federal Policy for Emergency Management, 2009). ISBN 978-1-100-54206-5. http://www.publicsafety.gc.ca/prg/em/_fl/fpem-12-2009-eng.pdf.
[42] UNISDR, 2009.
[43] Public Safety Canada, 2009.

Data Collection

First, comprehensive and deep literature reviews guided an inductive methodology for this research project. Inductive reasoning constructs general propositions from specific and parallel examples in the literatures.

Second, a questionnaire was piloted with 5 professionals in the DEM field and altered according to their feedback prior to distribution to all participants. These pilot questionnaires allowed the researcher to ensure that the test participants properly understood all questions so that useful data was obtained during the data collection process.[44]

Third, approximately 200 copies of the finalized questionnaire, with both quantitative and open-ended qualitative questions were distributed to first line responders and their leaders/managers. The units and organizations involved were contacted and provided with the required materials, assistance and directives when they agreed to participate. The information obtained from the completed questionnaires provides in-the-field impressions about the training and synergy seen and felt by the participants during disaster preparedness. The data focuses on the understanding and collaboration between responders, managers and organizations during combined military-civilian exercises. The questionnaire is based on observation, feedback and knowledge from exchanges with DEM managers, the academic supervisor and the sponsor, to contribute to a well-rounded mixed-method approach. The collection of data was confidential and of a voluntary nature that respects all research review board and ethical standards, including approvals from the Royal Roads University and the Canadian Forces Social Science Research Review Board.

Data Analysis

As soon as the surveys were completed by the responders and managers; 1) the data were organized and reviewed in a 3-step structured manner; 2) inferences were made to obtain a general sense of the information gathered; 3) the data were coded through a process of organizing and segmenting it into categories; 4) the categories were built into layers; 5) the creation of focal point priority was generated by repetitive reading focusing on any convergence; and, 6) the data were analyzed and interpreted using computer data analysis

[44] J. Bell, *Doing Your Research Project: A guide for first-time researchers in education, health, and social science* (New York: McGraw Hill, Open University Press, 2010).

software (SPSS) from the fluidsurveys.com website. Correlations and tests of statistical significance were used to analyze the quantitative sections of the data.

Objectivity during this investigation was attained by meeting with project supervisors and sponsors on a regular basis. In addition, consultations with colleagues provided different viewpoints and helped to address researcher bias.

A solid link was created with the project sponsor at CFB Comox during the last year; trustworthiness for the integrity of this research within the comfort zone of the CF was essential for this endeavour. Meetings (past, present and future) have occurred and are planned in order to maintain a transparent process. The military and/or responders' communities have national security limitations and adhere to strict policies regarding imprudent comments by their members; this research enabled the participants to voice their concerns and feedback in a confidential, safe and neutral manner that should, in turn, benefit all involved.

Research Ethics

As described by the Tri-Council Policy Statement (TCPS2), research has been defined as expanding knowledge in the course of a disciplined investigation or systematic analysis.[45] Due to the use of human subjects during this research, the collection of data was confidential and of a voluntary nature that respects all Royal Roads University Policies on Ethical Research[46] and the Canadian Forces Ethical Standards.

The consent forms were signed, and directives explained, before the participants contributed voluntarily to the research, whether through the questionnaire or interview or both. The researcher provided documentation, forms and interactive briefs to the supervisors about the research itself and the way the data was collected from organizations. After being briefed by the researcher, supervisors of the organizations presented the proper documentation to the participants, once it had been deemed appropriate by their authorities.

[45] Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, "Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans," 2010. http://www.pre.ethics.gc.ca/pdf/eng/tcps2/TCPS_2_FINAL_Web.pdf.

[46] Royal Roads, 2011.

The researcher ensures that the forms and all collected information remain confidential, are stored in a secure area and are destroyed shortly after the research is completed. The following points outline the expectations with respect to confidentiality:

- participants' names are not to appear on any documentation or be referred to in any manner unless it is necessary to the achievement of the objective, and specific consent to do so has been obtained;
- where it is necessary to identify participants due to the nature of the methodology, the identifiers (code numbers) that link a response to a particular respondent will be destroyed at the end of all data gathering and analysis activities, and shall not be included in any report;
- only the sole researcher is permitted to work with material that has identifying data;
- questionnaires are to be kept in a locked cabinet;
- the means of storage and disposal of recorded material (questionnaires) must be communicated to the participant;
- publication of research findings cannot identify participants without their written consent;
- there shall be no greater intrusion into the privacy of the participant than is absolutely necessary to achieve the required results;
- the provisions of the Privacy Act and the TCPS2 shall apply to all research projects; and,
- third parties who may be referred to during the course of any discussion are to be afforded the same level of protection.

Analysis and Results

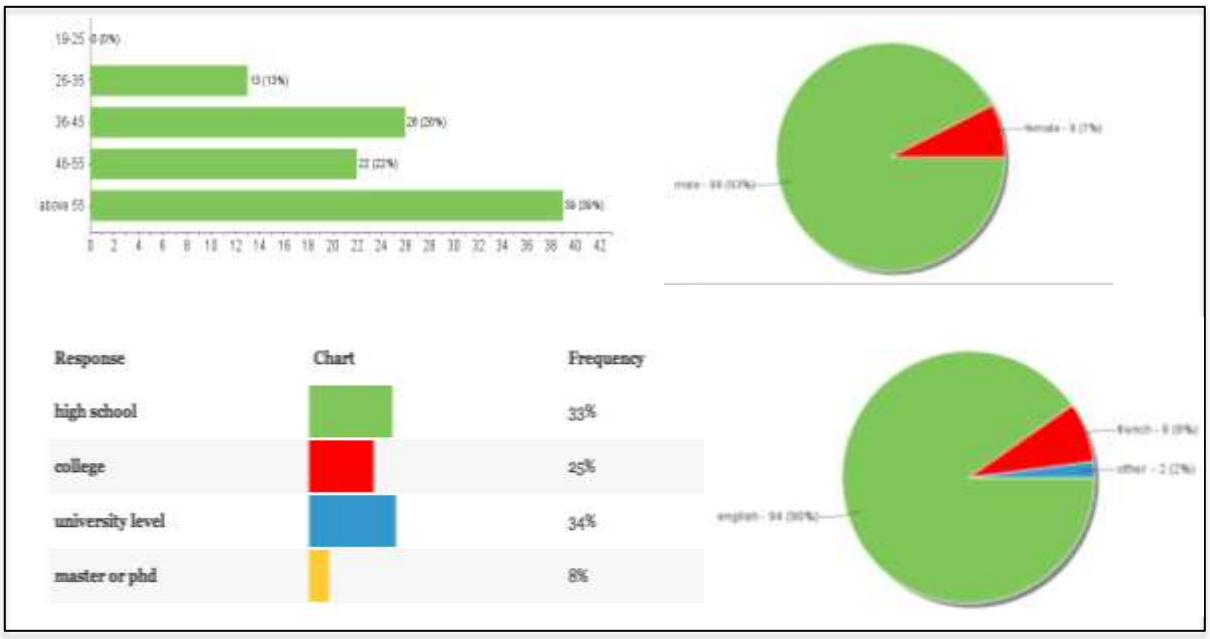
This research was conducted to examine the level of collaboration and training between Comox Valley's agencies in case of disaster. Qualitative and quantitative data were collected through questionnaires and analyzed by the researcher to address the research questions. This chapter presents the demographics of the respondents, as well as the findings on knowledge, networking, training and capacity perceptions. This chapter closes with a summary. A full

discussion of the implications and significance of the findings is provided in the section on Research Implications.

Response Rate and Demographics

There were 107 participants who completed the questionnaire, which consisted of 38 questions. There were 28 closed-ended questions that had a completion rate of 99 percent. The questionnaire also included eleven open-ended questions and sub-questions that examined knowledge (3), training (6) and capacity (2) perceptions and which had a completion rate of 76 percent. The demographic questions about age, sex, education, language, service, rank, employment, occupation, job profile and how long the participants have been working within their current responsibilities had an average completion rate of 96 percent. Overall, the responses provided sufficient qualitative and quantitative information to provide baseline data to address the research questions.

Figure 4. Age, sex, education and language of respondents



As shown in Figure 4, the respondents were predominately male (93 percent), English as first language (90 percent) and with the highest percentage of respondents being more than 55 years old (39 percent). Education level was distributed between having a high school diploma and having more than a PhD degree, with the highest percentage of respondents having a

university level or above (42 percent). In terms of job profile and time within the current responsibilities, 32 percent were team leaders who had 2-3 years of experience within their current responsibility.

A data collection strategy was employed that would achieve a sample ratio for service expected in case of disaster in the proximity of the CFB Comox to provide adequate representation. So, the sponsor organization and the researcher estimated this ratio to be 80 percent military to 20 percent civilian. This was reflected with 81 percent and 19 percent on this research.

Knowledge Questions

The questionnaire includes five questions that assess the participants' knowledge about disaster and emergency management. More specifically, three questions evaluate courses and readings about the topic and two are about the collaborative understandings between CFB and the Comox Valley community, and the latitude that the CFB commander has in the event of an emergency within the community. The responses were reviewed and the percentages, mean value, and average weighted score of each question were calculated to provide an overview of the findings. Following this, the data were compared from the point of view of different demographic variables, such as level of education, organization of service, job profile and responsibilities, to determine if there were any strong associations and themes that emerged. Appendix E displays the distribution of responses to each survey question, and Figure 5 displays the mean values of the responses by demographic subgroup.

Figure 5. Respondents' employment status versus last reading

7. employment status	read: in progress now	this week	last week	last month	last year	less 5 yrs	never	Totals
military reg	0 0%	4 57%	5 62%	13 62%	15 88%	15 75%	24 83%	76 74%
	0%	5%	7%	17%	20%	20%	32%	100%
military reserve	0 0%	1 14%	0 0%	0 0%	1 6%	3 15%	2 7%	7 7%
	0%	14%	0%	0%	14%	43%	29%	100%
civil full time	1 100%	1 14%	2 25%	6 29%	0 0%	2 10%	2 7%	14 14%
	7%	7%	14%	43%	0%	14%	14%	100%
civil part time	0 0%	1 14%	1 12%	1 5%	1 6%	0 0%	0 0%	4 4%
	0%	25%	25%	25%	25%	0%	0%	100%
civil volunteer	0 0%	0 0%	0 0%	1 5%	0 0%	0 0%	1 3%	2 2%
	0%	0%	0%	50%	0%	0%	50%	100%
Totals	1 100%	7 100%	8 100%	21 100%	17 100%	20 100%	29 100%	103 100%
	1%	7%	8%	20%	17%	19%	28%	100%

The knowledge section shows that 29 percent of the participants do not read about DEM. The data demonstrate that most respondents (60 percent) believe that in the event of the occurrence of a disaster, the CFB Comox Commander can help only after a formal request from the provincial government to the federal government to react to help the civilian community has been made, while the expected answer was chosen by only 27 percent of the participants. This varied slightly, from 38 percent for participants younger than 36 years old to 12 percent for those older than 55.

Overall, the findings of this section indicate that the majority of the participants have been working in their current responsibilities for more than one year but do not read about the DEM field. As well, the majority of the participants are not aware of the military resource's latitude to assist the community in case of spontaneous disaster.

Networking Questions

It was necessary to clarify the amount of communication that occurs between individual responders, their supervisors, and higher-level DEM managers. In order to make this clarification, three closed-ended questions assessed the numbers of discussions and meetings held between individual responders and their supervisors (all the way to the highest authority manager in case of emergency). The majority of the respondents (66 percent) do not know any DEM managers (Figure 6). Of those who do know the DEM personnel, 47 percent did not meet them in the past year, and 56 percent neither met with a DEM nor with their supervisor more than twice in the past year to talk about the DEM.

Figure 6. Respondents who know their DEM Manager

	civilian	military	Total Responses	Mean	Median	Variance
none	49 (68%)	47 (65%)	72	1.5	1.0	0.3
1 or 2	23 (68%)	15 (44%)	34	1.4	1.0	0.2
3 to 5	14 (70%)	8 (40%)	20	1.4	1.0	0.2
6 to 10	10 (53%)	10 (53%)	19	1.5	1.5	0.3
11 to 25	5 (50%)	5 (50%)	10	1.5	1.5	0.3
more 25	5 (23%)	19 (86%)	22	1.8	2.0	0.2

Figure 7 displays the distribution of responses to the frequency of meeting with a DEM during the last year, and Figure 6 compares the mean values by subgroup. It is clearly shown that the participants of this research were not meeting DEM Managers on a regular period. This influences considerably their knowledge and education about DEM.

Figure 7. Frequency with which respondents met their DEM Manager during the last year

Response	Chart	Frequency	Count
0		47%	50
1 or 2		16%	17
3-5		11%	12
6-10		11%	12
11-20		6%	6
21-40		1%	1
more 40		8%	8

Training Perception Questions

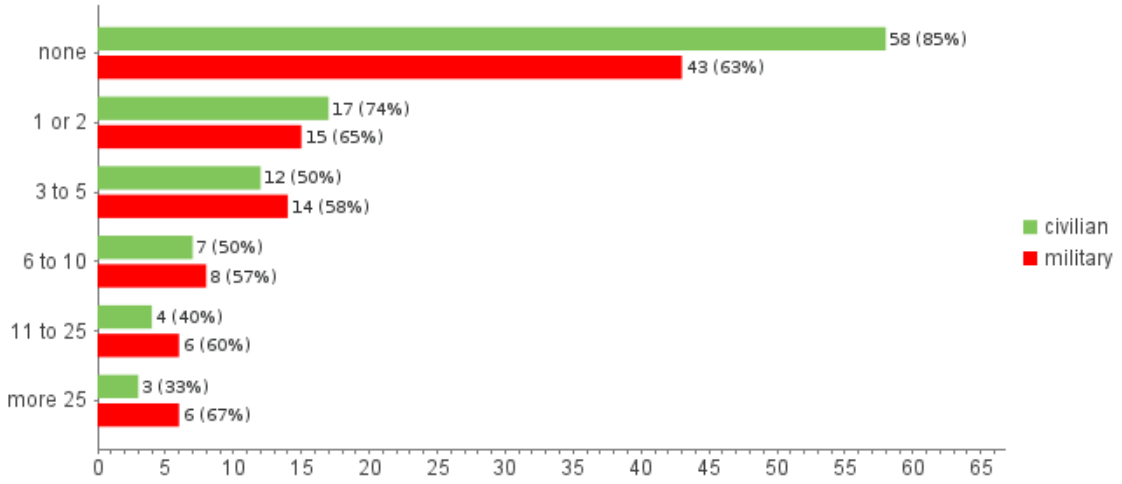
The survey includes 12 multiple choice and six open-ended questions that assess the survey participants' perception about training. All participants either strongly agree with or agree to the following statements:

1. Mutual training occasions, which include military and civilian organizations, adequately facilitate proper collaboration and cooperation strategies (33 percent strongly agree and 36 percent agree)
2. The learning experience of combined military-civilian trainings is suitable or appropriate (26 percent and 35 percent)
3. Training and/or meetings are the best way to facilitate best practices during disaster and emergency responses (50 percent and 44 percent)
4. Training and/or meetings are relevant to the current risks and hazards that might be faced during a major local disaster (35 percent and 44 percent)
5. Leadership during exercises is well coordinated and cooperative amongst all leaders/managers (neutral at 44 percent)

The majority (60 percent) of the responders did not have any other players or organizations present during their last exercise and only 15 percent were in contact with any elements of CFB Comox (Figure 8). The participants recommend that amalgamated disaster and emergency exercises including both military and civilian responders take place twice per year (45 percent), or at least once per year (34 percent) (Figure 9). When asked which agencies they expected to assist during a disaster, participants answered: RCMP/police (44 percent), military

(35 percent), search and rescue (24 percent) and Comox Valley Emergency Preparedness or the township managers (only 18 percent).

Figure 8. Representation of players present during last exercise



Most of the participants of the survey (80 percent) said that their organization uses training and exercises to prepare in case of disaster. However, only 38 percent participate in exercises, and only 15 percent participate in disaster training. Those who do participate in training and exercises, agree that an increase in coordination between agencies occurred following their last disaster exercise (43 percent).

Figure 9. Participants recommend amalgamated DEM exercises

Response	Chart	Frequency	Count
1x/month		1%	1
1x/3months		11%	12
2x/yr		45%	48
1x/yr		34%	36
1x/2-3yrs		7%	7
other		2%	2
comment		14%	15

The participants express that their management disaster plans, roles and challenges were not shared or were shared less that once per year (70 percent). Only half of the members (49 percent) were involved in making changes to DEM procedures and the implementation of those changes; and when they were, the information was only passed or discussed during the disaster's exercise, education event or training (10 percent).

Commitment levels for the participants' organizations were extremely (32 percent) or somewhat committed (39 percent) to increasing their disaster and emergency preparedness by the use of training and exercises (80 percent), education (62 percent), monitoring and review processes (34 percent), resource allocation (33 percent) and motivational exercises (22 percent).

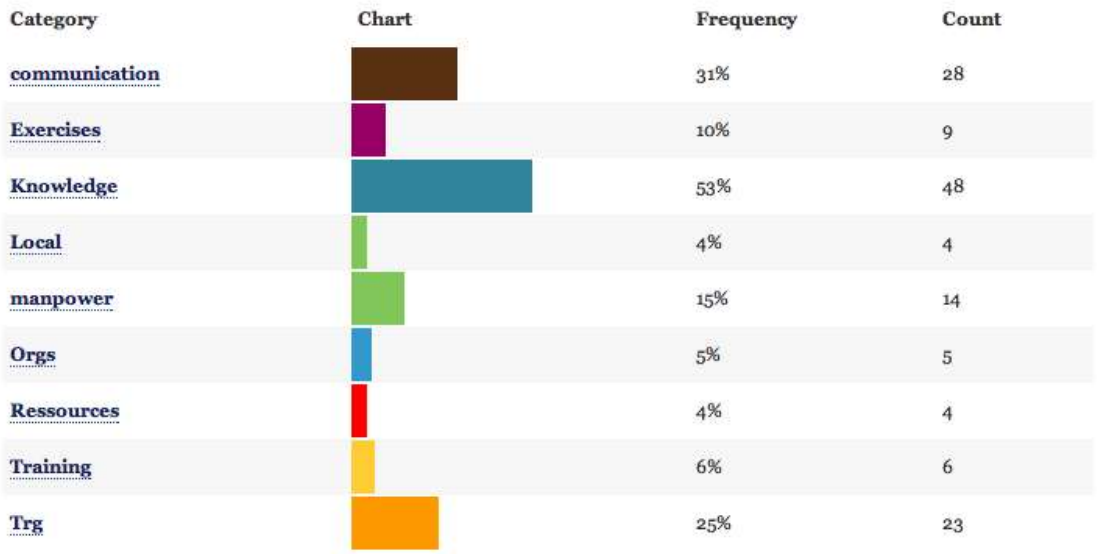
Figure 10. Respondents' perspectives on strength of preparedness

Category	Chart	Frequency	Count
Education		4%	4
Equip		6%	6
experience		3%	3
knowledge		9%	9
Leadership		6%	6
Medical		4%	4
Personal		3%	3
Prep		7%	7
Ressources		4%	4
Sar		5%	5
Training		4%	4
Trg		22%	21

Regarding greater organizational collaboration and coordination, open-ended questions #32 (Figure 10, 92 answers) and #33 (Figure 11, 89 answers) examined respondents' feelings about strengths and weakness, while question #34 (89 answers) was looking at the challenge of greater organizational collaboration and coordination (Figure 12). From these answers, "training" was identified as a strength (at 22 percent) and weakness (for 25 percent) with respect to preparedness.

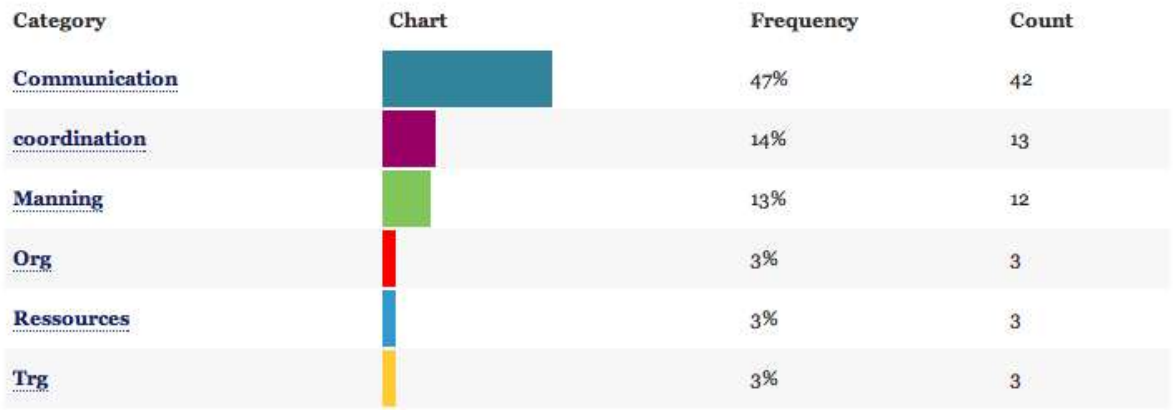
Communication was absent as a strength to greater collaboration and coordination in their organizations but was a weakness for 32 percent and a challenge for 47 percent. And *knowledge* was identified as a strength for 9 percent compare to a huge 53 percent of respondents who see it as a weakness. Finally, manpower had 3 percent for strength, 15 percent and 13 percent respectively for weakness and challenge. Therefore, these two terms, *communication* and *knowledge*, are key words for this research.

Figure 11. Respondents' perspectives on their weakness of preparedness



Category	Chart	Frequency	Count
communication		31%	28
Exercises		10%	9
Knowledge		53%	48
Local		4%	4
manpower		15%	14
Orgs		5%	5
Ressources		4%	4
Training		6%	6
Trg		25%	23

Figure 12. Respondents' challenge to their greater collaboration and coordination



Category	Chart	Frequency	Count
Communication		47%	42
coordination		14%	13
Manning		13%	12
Org		3%	3
Ressources		3%	3
Trg		3%	3

In the final part of the questionnaire, the participants were asked whether they think adequate and necessary resources are being put towards preparedness and response to a disaster. Two questions evaluated the level of agreement about the increase and the sufficient level of resources toward disaster and emergency preparedness. At first glance, both seemed to come back as neutral (52 percent and 41 percent) but, if the responses are compared with the age of the responders, we can observe a clear loss of positive perception with the increase of age. Of the respondents, 46 percent agree and 38 percent were neutral among the 19-25 year olds, and 23 percent agree and 62 percent were neutral among the 46-55 year old age group. This demonstrates that as participants age, their perception seems to change from thinking that

adequate resources are being put towards disaster and emergency preparedness, to feeling that the resources are inadequate.

The two last questions of the questionnaire are open-ended. They ask which assets, resources and responses are important or could be helpful in case of a disaster. The answers can be summarized as follows: 16-24 percent of respondents believe that managers are the most important asset, 14-24 percent say the most important assets or resources are personnel and manpower, 16-20 percent say medical, ambulance and hospital resources are paramount, 14-17 percent list firefighters and 15 percent say police and RCMP.

Summary

The findings indicate that the respondents predominately feel that it is likely that training and exercises help facilitate the best disaster collaboration and response. However, responses also indicate that it is unlikely that the different organizations are including or sharing the most important resources during training, exercise or DEM plans. Also the age of the participants in this research seems to have a minimal influence on their perceptions of knowledge, networking, training and capacity.

The findings also indicate that training, communication, knowledge and manpower have a substantial influence on the perceptions of the responders, regarding perceptions of their behaviors about their strengths and weaknesses. The findings on networking indicate that the

majority of the respondents do not meet or talk with disaster managers and would benefit from learning about the field. As well, results indicate that a large majority believes that coordination between the various responder groups would be improved by participating in collaborative training and exercises, despite possibly having only minimal participation levels.

As for DEMs' capacity to respond, the findings indicate that there are clear expectations to train and exercise with military, search and rescue, firefighter, police, and medical personnel, and that managers, communication, knowledge and manpower are key elements of these trainings. The significance of these findings is discussed in the next chapter.

Research Implications (Discussion, Conclusions, Recommendations)

The purpose of this study is to examine the collaborative disaster response and training techniques used by the Canadian Forces Base (CFB) Comox and its partners. The primary research question was, "*How can current training for Canadian Forces Base disaster response personnel and civilian partners be improved to more effectively prepare them for disaster response?*" Two sub questions arose from the main question. First, how do present emergency and disaster plans and training integrate all players in the case of a disaster? Second, what aspects of these collaborative plans are effective?

Discussion

The aim of this research was to gather data to increase the understanding of disaster responses through military-civilian disaster collaboration. Adequate data were generated to provide baseline results to address the research questions. Due to the scope of the Major Research Project, an exhaustive study was not attempted; rather, an attempt was made to provide baseline information on knowledge, networking, training and capacity perception. In this section, a brief discussion of the findings is presented. The significance of these findings is discussed in the conclusion.

Demographics

A study by Krewski and associates demonstrated that several sociodemographic factors influence the public's risk perception, particularly age, sex, education and geographic location.[47] These factors are examined in this Major Research Project.

All the participants live in the Comox Valley and, at the same time, in the proximity of the CFB Comox. There were 107 participants who completed the survey. This was estimated by the Comox Valley Emergency Program to be 5 percent of the members of the organizations that would be called on in case of a major disaster. Compared with the 65, 000 citizens of the Comox Valley's population as reported by Statistics Canada Census in 2006, men were overrepresented by 39 percent and women underrepresented by 39 percent but were well balanced in relation to the group intended for this research. As for representation of the various age groups, the median ages of 44 years old for males and females for the Comox Valley were well balanced, with the means of participants of this study being 40 years old. These variances in age and sex have been considered when interpreting the findings, particularly in light of the fact that the results lean towards the disaster responders' perspectives.

Due to the scope of this project and the limited resources, the analysis of the findings was focused on the total combined results, as well as the employment status and education subgroups. Though data regarding job profiles and work experience of the participants were analyzed, only noteworthy findings were reported. Overall, the findings provided a better understanding of the perception of their training held by responders, as well as their knowledge and level of networking about of the CFB Comox members and civilian partners in case of disaster.

Knowledge and Networking Perceptions

Several dimensions of knowledge and networking perceptions are examined in this study. It is important to include all three types of perception: sharing lessons learned, education, experience and knowledge.[48] Equally important is to acknowledge that each type of perception could refer to the threat to the individual or to the community. Another dimension

[47] D. Krewski, L. Lemyre, M. Turner, J. Lee, C. Dallaire, L. Bouchard, and P. Mercier, "Public perception of population health risks in Canada: Risk perception beliefs," *Health, Risk and Society* 10(2), 2008: pp. 67–79. doi:10.1080/13698570801919830.

[48] Bitto, 2007, pp.28-33; Kaplan, 2012, pp. 44-51; Peterson and Perry, 1999, pp. 241-54.

examined in this study is the sociodemographic factors that can influence training and networking perceptions, such as age, employment status, education, job profiles and work experience of the participants.[49]

Fischer and McCullough conducted nation-wide research on local emergency management agency coordinators to assess the role of experience in influencing which mitigation activities were employed (Fischer and McCullough 1993, 123-129). Different variables were studied: education, training background, major emergency experience, years worked as local emergency management agency coordinator, and years of EMS experience. Only education impacted mitigation activity:

> College graduates were more likely than non-graduated to engage in mitigation adjustment. Training background, the number of major emergencies or disasters, the number of years of work experience, and the number of training seminars or disaster drills, had no (or virtually no) impact on the mitigation adjustment activity in which the [local emergency management agency] coordinator engaged.[50]

The results from the current research suggest that the majority of the respondents (66 percent) do not know any DEM, did not meet any in the past year (47 percent) and have neither met between themselves nor with their supervisor to talk or learn about the DEM more than twice in the past year (56 percent). Age and experience seem to have minimal influence on current knowledge and networking perceptions.

As expected from the literature review, the findings of this research demonstrate that neither education nor age influence the level of knowledge and networking of the respondents. Sharing lessons learned during training opportunities improves education, performance and quality during all phases of disaster: mitigation, preparedness, response and recovery.[51] When not apply to build harmonic and educate collaboration between participants, gaps were found into mitigation strategies and their acceptance. Also, even though there was a higher representation of leaders and managers than in normal organizations, the tendencies were the same.

Overall, the level of knowledge and networking of the respondents in CFB Comox and its civilian partners is fairly low and may influence their responses in case of disaster. Studies

[49] Bitto, 2007, pp. 28-33; Karanci, 2005, pp. 242-58; Mishra, 2011, pp. 1-11; Perry, 2004, pp. 64-75; Shover, 2007, pp. 4-14.
[50] H. W. Fischer, and K. McCullough, "The role of education in disaster mitigation adjustment," *Disaster Management*. 5(3), 1993: p. 151.
[51] Bitto, 2007, pp. 28-33; Peterson and Perry, 1999, pp. 241-54.

have shown that education during training and simulations provides responders with greater strategies.[52] The literature has demonstrated that training, focus on participation, education, networking and knowledge increase responders' effectiveness.[53] As noted in the next section, the perception of the participants during training with most organizations is limited, which may be associated with knowledge and networking perceptions.

Training Perception

This study examined training, with the recommendations to increase intra-organization collaboration and frequency. The results indicated that the respondents have a high level of agreement with:

1. Mutual educational training occasions adequately facilitate proper collaboration and cooperation strategies
2. Combined military-civilian training creates a suitable learning experience
3. Training and meeting are the best ways to facilitate the use of best practices and are relevant to current risks

The literature suggested that better and more frequent participation drills, for example, will enhance the responders' positive perceptions and comprehension for a real situation.[54] The majority of participants recommend that amalgamated DEM exercises with military-civilian responders take place more than once per year, despite the fact that the large majority never or rarely ever participate in any such exercises. The results also suggest that participants have noted an increase in disaster preparedness coordination after exercises. This supports the recommendation of Larson, Metzger, and Cahn that mentioned that coordination is often enhanced as a result of training exercises or large-scale emergency incidents.[55]

To conclude, almost half (47 percent) of the participants of this study wrote that communication was a challenge to greater collaboration and coordination in their organization. Despite having committed organizations, plans are not shared effectively to empower the members and community by making sure that all services, time and resources are efficiently

[52] Fischer, 1998; Kaplan, 2012, pp. 44-51.
[53] Bitto, 2007, pp. 28-33; Karanci, 2005, pp. 243-58; Mishra, 2011, pp. 1-11; Perry, 2004, pp. 64-75; Shover, 2007, pp. 4-14.
[54] (Perry, 2004, pp. 64-75; Peterson and Perry, 1999, pp. 241-54.
[55] Larson, Metzger, and Cahn, 2006, pp. 616-617.

utilized and not duplicated.[56]

Capacity

This investigation demonstrates that some assets and resources are expected to help in case of a disaster. Participants of this research feel neutral about the level of resources available to be put towards disaster preparedness. The principal resources expected are: managers, manpower, medical and first responders. In order to maximize the use of these assets, communication between these primary expected resources has to be a priority to increase a positive perception by everyone. By addressing the levels of anticipation and expectation that responders face in a disaster situation, people become psychologically more comfortable during training and during real situations.[57] Exposing participants to realistic simulations would increase awareness and trust amongst the organizations, as demonstrated in other similar research.[58]

Conclusion

Disasters and risks for communities are increasing.[59] Strategies to prepare, mitigate, respond and recover from them are now essential. Effective relationships between military resources and civilian organizations save time, resources and capacities during these critical periods.[60] Therefore, examining the people involved during these situations is vital to developing effective training and response strategies.

This study examines the knowledge, networking, training and capacity of these essential organizations, and their collaboration with each other. It also examines the correlation between the respondents' perception and their demographic. The findings provide valuable information that could help us understand the perspectives of multiple involved parties during disaster

[56] Shover, 2007, pp. 4-14.
[57] Basolo, 2009, pp. 338-64.
[58] Hentra and McBean, 2005; United States Joint Forces Command, 2004.
[59] D. P. Coppola, *Introduction to International Disaster Management* (Oxford: Butterworth- Heinemann (Elsevier), 2007)
[60] Hentra and McBean, 2005; R. Kuban, "Shortcomings of the Canadian Crisis Response." *Vanguard* June/July (2005): pp. 22-3.

simulations and exercises. This presents a unique opportunity for learning about collaborative response, thereby increasing the Comox Valley's resilience to disaster.

This study provides valuable information about the research topic. Although there are a few exceptions, this study demonstrates that the respondents have a fairly low opinion about their training and capacity. Also, education is the only major variable found to have affected mitigation strategies or their adoption by the local emergency management agency coordinator.[61]

This information is encouraging because these results are transferable and can be used by these organizations to promote and justify multiple-agency exercises, meetings and training to increase their preparation, responses and capacities within their area of responsibility.

Furthermore, this study identifies vulnerable aspects of the training and preparedness of these organizations or similar structures, groups or communities. Although the majority of respondents feel that a disaster in the Comox Valley might happen, that the impacts would be severe, and that they would need well-coordinated and collaborative responses, only 30 percent stated correctly the responsibility of the CFB Comox Commander to respond.

Also, the majority of the participants have never met any DEM or completed a major disaster exercise with military involvement. This study also demonstrates that the respondents' believe in supporting the DEM fundamentals and principals about the importance of collaborative major disaster exercises. They see training and education as the answers to better DEM for them. This project has contributed new information and insight that is beneficial to planners and decision makers as they develop collaborative major disaster training and plans.

Recommendations

Current training for Canadian Forces Base disaster response personnel and civilian partners can be improved through these following recommendations:

- Knowledge: Disaster and emergency information about all current possibilities and possible options should be discussed with all members of the organization twice per year.

[61] Fischer and McCullough, 1993, pp. 123-129.

- Networking: Multiple-agency education, training and exercises that introduce each organization to the others should be constructed to be more military-civilian inclusive.
- Training: Increase the educational and informative exercises to include every sphere and participant that will potentially be asked to collaborate during disasters (RCMP/police, military, SAR and CVEP).
- Capacity: Explore which management, communication, manpower and resource issues would increase the quality and learning experience of all participants and organizations.

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