

Levels of Risk: Perspectives from the Lost Creek Fire

Kulig, Edge, Reimer, Townshend and Lightfoot's research findings say perceptions of risk are just as important as more objective measures of risk.

Abstract

Risk has been considered as the probability of experiencing adverse events. Understanding risk and vulnerability is essential to disaster management and recovery. Through qualitative interviews in a community that experienced a wildfire, 'at-risk' and 'feeling at-risk' themes were identified for both the individuals and community in this study. Internal and external circumstances along with varying levels of dependence influenced the reports of risk. Individual and community risk during a major wildfire is discussed in order to explain links to community resiliency. Such understandings can aid in the development of appropriate measures to reduce short- and long-term impacts from natural disasters.

the ability of a community to deal with adversity and develop an improved level of functioning in the process (Brown & Kulig, 1996/97; Kulig, 1996; 1998; 1999; 2000). It is a process through which the community continually adjusts to the dynamic conditions they face (Kulig & Hanson, 1996) whereby residents' interactions as a collective unit ("getting along") lead to a "sense of community" (community togetherness and sense of belonging), finally producing community action, through visionary leadership and conflict-resolution (Figure 1) (Brown & Kulig, 1996/7; Kulig, 2000; Kulig, Edge & Joyce, 2008).

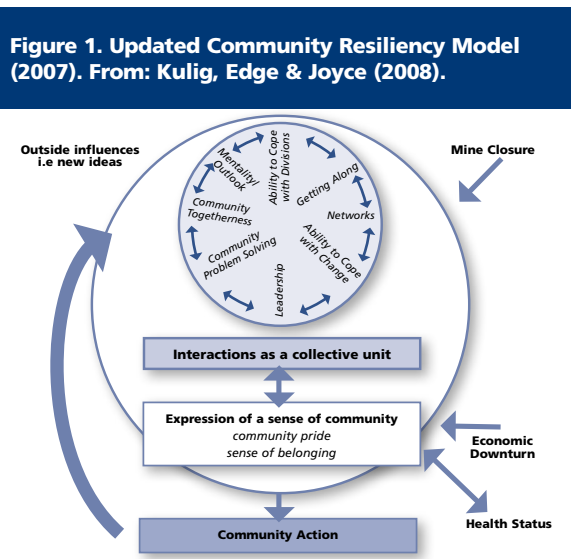
Assuming that a more resilient community provides a cushion against risks associated with disasters, many agencies have advocated for increased resiliency as a means of humanitarian, development and risk reduction (Walter, 2004). Yet, seldom is this assumption investigated. Therefore, a primary focus of this project is to investigate whether community resiliency provides such protection. Four key community risks served as initial points of reference: risks to economic security, risks to property, risks to health, and risks to social exclusion (Rakow, et al, 2003). In these instances, risk refers to the possibility of experiencing an adverse event (Bradbury, 1989; Renn, 1998).

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The rising frequency of natural disasters in Canada is generally attributed to global climate change (Public Safety & Emergency Preparedness Canada, 2005a & b). Rural communities in Canada are particularly at-risk for wildfires. Over the last 10 years, for example, 250 communities and 700,000 people have been threatened by wildfires (Public Safety & Emergency Preparedness Canada, 2005b). Following the suggestion of the Red Cross that resiliency be used as a framework for disaster management (Walter, 2004), this article describes individual and community perception and experiences of risk following a major wildfire that occurred in Southern Alberta, Canada in the summer of 2003.

Background to the Study

Resiliency is suggested as a useful framework to understand community responses to disaster (Buckle, Marsh & Smale, 2002). High community resiliency is



Study Purpose

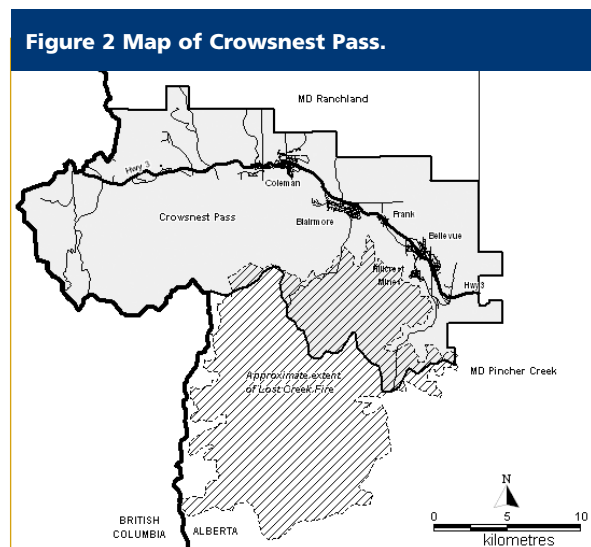
The purpose of this study was to examine the nature of risk within a rural community that experienced a wildfire disaster and to consider its relationship to community resiliency. We focused on identifying individuals at-risk, during and immediately after, the disaster, the reasons persons were at-risk and the relationship between the level of risk and individual characteristics. For this study, rural was defined as communities under 10,000 population that are outside the commuting zone of urban areas (duPlessis, Beshiri, Bollman & Clemenson, 2001).

Methods

Two methodological approaches were conducted concurrently in order to maximize their complementary strengths (Johnson & Turner, 2003). Qualitative interviews using an interview guide were completed while quantitative data was collected and analyzed from available census, surveys, historical and local administrative data. This article focuses on the data generated from the qualitative interviews.

Study Setting

The Crowsnest Pass, in Southern Alberta, Canada was chosen as the study site because it experienced the devastating Lost Creek Fire¹ in 2003 (See Figure 2). The "Pass," as it is commonly known, originally consisted of two individual towns (Coleman, Blairmore) two hamlets (Bellevue and Frank) and parts of an improvement district (Hillcrest Mines) before amalgamation to one municipal government in 1979. The amalgamation was publicly and privately debated, but ultimately passed because it was perceived as the more economically viable option. Despite the amalgamation, individual town names and postal codes remained, although other aspects of the previous administrations, such as the school system, were integrated across towns. At one time, the Pass was an underground coal mining community but the mines closed, requiring local workers to commute to the neighboring province of British Columbia and work in the coal strip mines. Individually, and collectively, the area has dealt with a number of significant historical events including the Frank Slide in 1903 (i.e., fall of Turtle Mountain which buried part of one town) and the 1914 Hillcrest Mine Disaster, the worst mine disaster in Canadian history. Both of these events led to the loss of lives and the rebuilding of families and the physical structures of the communities.



Situated in the Rocky Mountains, the Pass offers outdoor recreation. It has become a tourist destination with many part-time residents who reside there only on weekends and in the summer months. In 2007, absentee landowners made up nearly 31% of home-owners. Similar to many rural communities, the Pass struggles with the loss of youth, closing of schools, and a lack of economic opportunities for local individuals.

The Summer of 2003

The Pass has become well known for Rum Runner Days® (<http://www.rumrunnerdays.com/>), a weekend of activities that acknowledges the community's early involvement with the clandestine shipment of alcohol during the period of prohibition when alcohol was not legally available. The event is supported by the entire municipality; the community population swells from just over 6,000 to more than 40,000 and is a major economic boost for the community.

In 2003, Rum Runners Weekend ended on July 20. A few days later, July 23, the Lost Creek Fire started (see Box 1). On July 26, a State of Emergency was called that lasted for 31 days (until August 25). Some of the participants talked about how the community as a whole did not have sufficient time to recuperate from the Rum Runners Weekend prior to the outbreak of the worst wildfire in the community's history.

How the fire started is still open to debate. However, the conditions were ripe for a major wildfire. The temperatures were hot and remained so for several weeks, an unusual occurrence in the community. On the day the fire began, the temperature reached 34.7°C. In subsequent days temperatures as high as 33.9°C (August 2) were attained. At its height, the Lost Creek Fire travelled at close to 89 feet per minute and required over 800 Sustainable Resource

1. In Canada, forest fires are given specific names based upon geographical locations of the fire.

Development (SRD) firefighters and personnel and a coordinated team of over 868 identified workers including all local 104 fire and rescue personnel plus equipment (21 helicopters, 8 water bombers, over 30 dozers and more than 20 water trucks) to contain it. Over 2,000 residents were evacuated from Hillcrest Mines and the southern part of Blairmore; approximately 100 residents used the local evacuation centre as their primary residence during their evacuation. By the time the fire was under control, 21,000 hectares (51,800 acres) had been burned. The cost, to the municipality, which was fully reimbursed by the Provincial government, was \$2,394,180 and the SRD cost was approximately \$38 million.

Lost Creek Fire Timeline

- July 23, 2003. Fire started.
- July 26. State of Emergency declared (31 days)
- July 27. Adanac Road and East Hillcrest evacuated; all others in Hillcrest received 1 hour alerts.
- August 2. All of Hillcrest evacuated.
- August 3. South of the tracks in Blairmore evacuated.
- August 6. Return of Hillcrest residents.
- August 8. Return of Blairmore residents.
- August 11. Evacuated same area of Blairmore.
- August 17. Return of Blairmore residents.
- August 25. State of Emergency removed.

Study Population

In order to ensure a broad coverage of key personnel, four groups were targeted for inclusion in the interviews: (1) participants who were directly involved in dealing with the fire, either as fire fighters, volunteers or administrators; (2) participants who were directly involved with the fire and were simultaneously evacuated; (3) participants who were evacuated; and, (4) participants who were not involved in the fire and were not evacuated.

Data Collection & Analysis

Data were collected from September, 2006 to January, 2007 until data saturation was achieved. Other investigations have noted that recall is not an issue with sentinel events such as the wildfire discussed in this study (Berney & Blane, 1997; Nadalin, Bentvelson & Kreiger, 2004). In total, 30 tape-recorded interviews were conducted with the interviews focusing on: the participant's experience in the fire, their

perceptions of those at-risk and how the fire affected their community's resiliency. Data collection and analysis occurred simultaneously in an iterative process; to ensure that all aspects of the fire were addressed. Data analysis included frequent reading of the transcripts, and identification of themes and categories (Creswell, 2003).

The first author is from the community and has many family members and friends who reside there. She conducted the qualitative interviews while a local transcriber confidentially transcribed the information from the tapes. A local community advisor arranged community meetings and recruited participants. The municipal government provided support and access to information and available data. A student research assistant (RA) worked with the first author to assist with data collection, analysis and report preparation. Credibility was improved by discussing the emerging themes with the student RA and working with the local community advisor who read drafts of the final report.

Results

Participant Characteristics

Most of the 30 participants were male ($n = 17$), aged 41 to 50 years, married ($n = 13$) and claimed the Pass as their birthplace ($n = 13$) and primary residence ($n = 27$). The majority ($n = 23$, 77%) had always lived in a rural community.

The Experience of the Lost Creek Fire

Most of the participants talked about seeing the smoke in the region of Lost Creek on July 23, 2003 before they were aware that a major fire was brewing. Local individuals (Fire and Rescue Squad) notified the Mayor who then contacted the Chief Administrative Officer (CAO). Local personnel from SRD met with the Mayor and CAO to advise them about the fire and the potential impact on the community. Once the state of emergency was declared on July 26, 2003, the Mayor and CAO met to develop a plan of action. All regular work at the Municipal Office was suspended and all vacations cancelled while the disaster was being handled according to the mandated provincial disaster plan.

The Municipal Office handled communications through the local radio station that announced evacuations and general information to the public. Communication was also guaranteed through the 24-hour telephone line that was administered at the Municipal Office. The staff dealt with a variety of calls related to the fire including addressing general questions, advice about evacuation and even assuring individuals from other provinces or countries that their relatives in the Pass were safe. Another source of communication was the SRD fire information booths that were set up throughout the community.

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Fire on the Crowsnest pass.

Perspectives on the Fire

Despite the three-year gap between the time of the Lost Creek Fire and the interviews, the participants all described vivid memories of the experience. The following quote from a female participant exemplifies this recall while also illustrating that the participant was feeling emotionally at-risk:

I was walking down main street in Blairmore, and I looked at the skies and just the colours, and I was just sobbing, I was crying and I could not believe that this was my community and it was going up in flames.

Participants varied in their reaction to the fire. In the interviews, wives of the local volunteer firefighters spoke of the concerns they had for their husbands' safety. Evacuees talked about the challenges of living away from their primary residence combined with their concerns about the possible loss of property. One female participant said: "I never thought that it would get to the point that we would be evacuated, and then once they tied the blue ribbon to your door, well then you knew it was a possibility, but when they said, you guys had to get out, it was like, pow. It was a panicky feeling."

Local administrators, business owners and SRD personnel focused on the larger collective issues of handling a large-scale community disaster as a result of the wildfire. The impact of the fire upon children was described by their mothers in a variety of ways, ranging from seeing the fire as an adventure, particularly if they had to evacuate and live somewhere else to a stressful time when their children worried about their belongings that had to be left behind.

Several local groups were involved in the evacuations since they required considerable organization and coordination. One of the groups, the "Quad Squad," is a community group comprised of individuals who enjoy riding their all-terrain vehicles (ATV) in the back country. During the Lost Creek Fire, this group assisted with evacuations by going to residents' homes to notify

them of the evacuation order and then patrolled the streets to secure the area. In more than one instance, they provided emotional support for the evacuees—particularly with the elderly who were alone and frightened. The local Royal Canadian Mountain Police (RCMP) detachment, provided assistance with the evacuation of individuals who refused to leave or who demonstrated behaviors (i.e., intoxication) that were not conducive to an orderly evacuation.

Most of the evacuees relocated to family or friends' homes in the other Pass communities that were not evacuated (Coleman, Bellevue and parts of Blairmore). This is one example of the extent of informal social support in the Pass—where—the family and friendship relationships were facilitated by the relatively close geographic locations of the communities. Those who were evacuated to the Learning Centre were given a private room and had all meals provided.

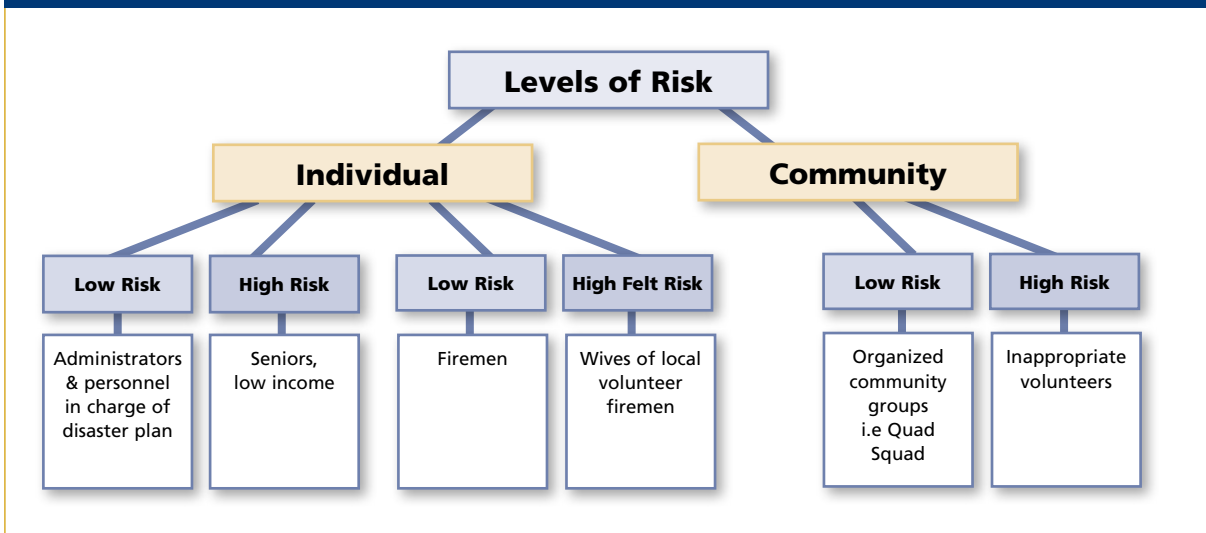
Some of the participants talked about not having a choice to evacuate and did not always agree that they should be forced from their homes. All of them indicated that they had sufficient insurance coverage but added that some seniors did not have insurance. The participants were also asked if they made any changes in personal habits regarding disaster preparation for the future. The majority did not check their insurance coverage and did not have a permanently packed bag of extra clothing or other necessities. Only one participant noted that their family has always had a bag ready in case they had to leave their home quickly.



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Safety of firefighters was a major concern of their families.

Figure 3. Perceptions of Being and Feeling At-Risk.



The Lost Creek Fire was a physically and emotionally demanding experience for the municipal staff, Learning Centre staff and volunteers, local firemen, local SRD personnel and local elected officials. Long days that often stretched into 18 to 20 hours of solid work were commonplace among those responsible for addressing all aspects of the fire. Local social workers offered on-the-spot counseling to fire fighters as needed. Participants in these roles talked about feeling physically and emotionally drained afterwards. After the fire was contained, most took several days off to recuperate, although they reported not feeling fully recovered for months afterwards. During the fire, some of the local fire fighters became so fatigued that they needed to leave the community to obtain enough sleep to resume their duties. Critical incident team members from a nearby city offered to come to the community and help local staff deal with the stress of the fire.

When asked, the participants noted that the Pass demonstrated resiliency during the fire. This was shown through the volunteers available to assist with evacuations, and how the community took the event in stride. Stories about family members and friends working together to serve meals for the evacuees supported components of the resiliency model (i.e., getting along).

Who is At-Risk?

Participants were asked about being at-risk due to the wildfire. The comments in the interviews indicate that both individuals and the community were vulnerable but in different ways (Figure 3). Individual vulnerability was further differentiated as being at-risk and feeling at-risk. Being at-risk then divided on the basis of the source of stress; circumstances that were internal or external to the individual.

Internal circumstances include their age, development status, income level, available support systems, lifestyle behaviors such as substance abuse, health status, or primary residence. Some of these individuals were perceived as relatively independent since they had support systems and access to other resources. However, individuals were identified as dependent upon others to help them perform their activities of daily living. One participant described this group as: “the shut-ins, the disabled folks that require extra assistance, you know whether they be wheel chair bound having to use a walker, just generally need assistance to do their regular course of life activities.”

Individuals also faced external circumstances that led to their vulnerability, including: those who did not have house insurance; and people like business owners or who were unable to work during the fire. Since the Pass is a “weekend home” to many individuals, property sales are common occurrences. However, when a state of emergency is declared, insurance coverage on existing policies cannot be altered and new policies cannot be negotiated. Individuals who had purchased homes in the evacuated areas had to wait and hope that the wildfire would be contained without the loss of their new property. Some of the participants felt that those people who could afford a second property did not have financial concerns. Of greater concern were the seniors who had never had insurance and faced losing their only property. The other group considered at-risk was local individuals unable to work at their regular job because of the wildfire, including the local firefighters.

The wives of the fire fighters felt at-risk because their husbands’ volunteer work was physically demanding and dangerous. The fire fighters, however, did not personally acknowledge feeling at-risk but instead felt an obligation to assist in helping to control the wildfire.



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One of the 8 fire bombers employed to help fight the fire.

There was also a community level of being at-risk. Economic risks included the decline of retail sales for local businesses. Tourism suffered during the wildfires with the closure of campgrounds and bans on open fires. Thus, local business owners who normally sold retail items including groceries and gasoline, restaurant owners and independent operators who offered local tours did not fare as well during this time. The trees that were destroyed in the fire reduced the logging operations, and subsequently, the income of individual operators and residents who were logging their land. However, during and after the fire, there were some economic benefits to the community including the sale of t-shirts advertising the Lost Creek Fire and a year later the high volume of morel mushrooms that provided income to the local pickers.

Another source of risk for the community was the selection of volunteers with the assumption that all were appropriate in this role. During a wildfire, for example, criminal record checks are not possible due to the lengthy time they take in addition to their cost. A number of respondents felt that some individuals would not be suitable for security or other related activities because of their past record.

Conclusions

The Lost Creek Fire provides a valuable source of information regarding the people, conditions, and responses relating to risk, vulnerability, and resiliency in the face of wildfires. Further research is required to elaborate the nature of these relationships, but our initial examination provides some insights regarding strategic foci for that research.

Among the participants there was an appreciation that events such as wildfires can lead to both individual and community vulnerability. Individual vulnerability was experienced by specific groups who were at-risk (i.e., seniors) or felt at-risk (i.e., firefighters' wives) from either internal or external circumstances. Furthermore, there were different ranges of independence and interdependence. Rural community's firefighters and their partners/families may both need support and counseling at the time of the event, but also during the aftermath. The firefighters may also need follow-up for any long-term impacts on their physical or mental health. Both of these actions will enhance individual and community resiliency.

Community vulnerability was identified as the immediate loss of employment and the potential future economic losses within the community due to the loss of logging. Rural communities already struggle with economic challenges and limited employment opportunities. Wildfires jeopardize these circumstances further and need consideration when disaster recovery is underway.

We concluded that vulnerability and risk must be considered separately for individuals and communities. Individuals may be vulnerable in communities which are reasonably resilient, just as vulnerable communities may contain many low-risk individuals. We also found that individual vulnerability dynamics are likely to be different with respect to the personal characteristics and social support networks of the person from those that are more 'external'—arising from the economic situation of the individual. Community members respond differently to residents which are vulnerable because of alcohol abuse, for example, as compared to those who are vulnerable because their business is at risk. In addition, the perception of risk is likely to vary considerably by individuals. This makes the perception of risk an important focus for social support independent from more objective measures of risk.

Finally, experiences of individual and community vulnerability also challenge how the community deals with adversity and ultimately its level of resiliency (Brown & Kulig, 1997/97; Kulig, 2000). Future studies in other communities that have experienced wildfires can incorporate specific questions that link individual and community vulnerability to resiliency adding to our understanding of these concepts.

References

- Berney, L., & Blane, D., (1997). Collecting retrospective data: accuracy of recall after 50 years judged against historical records. *Social Science and Medicine*, Vol 45, pp. 1519-152.
- Bradbury, J., (1989). The policy implications of differing concepts of risk. *Science, Technology & Human Values*. Vol 14 No 4, pp 380-399.
- Brown D, Kulig J. (1996/97). The concept of resiliency: theoretical lessons from community research. *Health and Canadian Society* Vol. 4, pp 29-50.
- Buckle P, Marsh G, Smale S. (2002). *Assessing the implementation of community resilience and vulnerability analysis*. EMA Project 04/2001. Final report.
- Creswell, J. (2003). *Research design: Qualitative, quantitative & mixed methods approaches*. 2nd ed. Thousand Oaks, CA: SAGE.
- du Plessis V, Beshiri R, Bollman R, Clemenson H. (2001). Definitions of rural. *Rural and Small Town Analysis Bulletin* Vol. 3: pp. 1-17, 21006-XIE.
- Johnson B, Turner L. (2003). Data collection strategies in mixed methods research. In *Handbook of Mixed Methods in Social and Behavioral Research* (pp. 297-319). In: Tashakkori A, Teddlie C, (Eds.). Thousand Oaks, Ca: Sage Publications.
- Kulig, J., Edge, D., & Joyce, B. (2008). Understanding Community Resiliency in Rural Communities through Multimethod Research, *Journal of Rural and Community Development*. 3(3) (online).
- Kulig J. (2000). Community resiliency: the potential for community health nursing theory development. *Public Health Nursing* Volume 17 pp 374-385.
- Kulig J. (1998). *The enhancement of community resiliency by community-based workers in central Appalachia*. Lethbridge, AB: University of Lethbridge, Regional Centre for Health Promotion & Community Studies.
- Kulig, J. (1999). Sensing collectivity and building skills: rural communities and community resiliency. pp. 223-244. In: Ramp W, Kulig J, Townshend I, McGowan V, eds. *Health in rural settings: Contexts for action*. Lethbridge, AB: University of Lethbridge.
- Kulig J. (1996). *Surviving and thriving in the Crowsnest Pass*. Lethbridge, AB: University of Lethbridge, Regional Centre for Health Promotion & Community Studies.
- Kulig J, Hanson L. (1996). *Discussion and expansion of the concept of resiliency: summary of a think tank*. Lethbridge, AB: University of Lethbridge, Regional Centre for Health Promotion & Community Studies.
- Nadalin, V., Bentvelson, K. & Kreiger, N. (2004). Reliability of self-reports: data from the Canadian Multi-Centre osteoporosis study (CaMos). *Chronic Diseases in Canada* Vol 25, pp. 28-31.
- Public Safety and Emergency Preparedness Canada. *About the Canadian disaster database*. (2005a) [retrieved June 21, 2005]. Available at: <http://www.ocipep.gc.ca/disaster/default.asp>
- Public Safety and Emergency Preparedness Canada. *Towards a national disaster mitigation strategy*. (2005b) [retrieved June 21, 2005] Available at: http://www.ocipep.gc.ca/NDMS/index_e.asp
- Rakow L, Belter B, Dyrstad H, Hallsten J, Johnson J, Indvik K. (2003). The talk of movers and shakers: Class conflict in the making of a community disaster. *Southern Communication Journal* Vol 69, pp. 37-50.
- Renn, O. (1998). Three decades of risk research: accomplishments and new challenges. *Journal of Risk Research* 1998, Vol 1, No. 1 pp 49-71.
- Walter, J. *World disasters report 2004: focus on community resilience*. (2005). Geneva: International Federation of Red Cross and Red Cross Societies.

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