

# FIRE NOTE

## TOPICS IN THIS EDITION

- INFORMATION AND WARNINGS
- RISK
- COMMUNITY EDUCATION

ISSUE 122 MARCH 2014

## WARNING FATIGUE IS NOT A MYTH UNDERSTANDING WHY PEOPLE DO OR DON'T RESPOND TO WARNINGS



▲ This PhD research confirms that people can become desensitised to warnings for emergencies with a prolonged lead time, such as bushfires. *Photo: Nathan Maddock*

### SUMMARY

This PhD research examines the role that warning fatigue plays in the risk perceptions, warning response and decision-making processes of people living in bushfire-prone areas. The study showed that warning fatigue reduced attention to bushfire warnings, changing the way those surveyed thought about their bushfire risk and affecting their response to warnings. Unexpectedly, it was found that warning fatigue was highest at the beginning of the fire season, and decreased during the season. This was connected to 'unofficial' warnings, such as media reports during winter of the upcoming bushfire season – when official warnings were issued at the beginning of the fire season, the public were already tired of the message.

It is proposed that if emergency and disaster agencies differentiate between rapid-onset and prolonged lead-time disasters, understand the complexities of warning fatigue and design their warnings accordingly, then disaster risk communication will become more effective, thereby increasing public engagement and improving disaster response.

This new understanding of warning fatigue can help disaster-response agencies to improve their risk communications to communities, thereby better protecting lives and property.

### ABOUT THIS PROJECT

This *Fire Note* reports on a completed PhD project within the *Effective communication – communities and bushfire* theme, and is based on the author's PhD thesis, *Warning Fatigue: Insights from the Australian Bushfire Context*.

### AUTHOR

Dr Brenda Mackie (right) is a disaster sociologist and a recent Bushfire CRC PhD scholarship recipient. For more information contact [bmackie10@gmail.com](mailto:bmackie10@gmail.com)



### CONTEXT

'Warning fatigue' or the 'cry-wolf' effect refers to the phenomenon that can result from being 'over-warned', that is, repeatedly warned about disasters that do not eventuate. The terms 'warning fatigue' or 'cry-wolf' describe situations where individuals who are over-warned become cynical, apathetic and 'tired' of hearing warnings. They may become desensitised to the risk, thereby endangering them even more by not preparing for the natural disaster to which they have been alerted, such as a bushfire.

Most disaster research theorists have dismissed warning fatigue as a myth, concluding that it does not influence risk perception. However, some practitioners, such as emergency managers and governmental policy-makers, assume that it is a very real problem. They perceive it as presenting emergency agencies with a conundrum: they want to avoid being accused of panicking the public, but worry that they may risk under-preparing them. As a result, they may be tempted to err on the side of caution, which can delay the issuing of a warning or downplay the possible severity of a potential disaster.

This research explored whether warning fatigue is a real factor in how people respond to disaster warnings.

### BACKGROUND

A review of the disaster literature revealed that previous investigations of warning fatigue were very limited and conducted in

### PROLONGED EXPOSURE TO RISK

Bushfires can occur very quickly, and do not always last a long time, but their risk is prolonged. Fire seasons can last for six months, with a risk of fire throughout this time. This research investigated warning fatigue in the context of a long period of risk exposure, not a rapid-onset emergency.

## HOW RISK IS PERCEIVED AND ASSESSED

The ways that risks are assessed are complex and depend on a great many elements which are constructed through social interpretations and mediated by scientists, journalists and emergency agencies. How people view their worlds and how they construct ideas of risk and vulnerability contribute to an individual's 'mental model', that is, a person's beliefs, values and use of their surrounding environments. Similarly, world views predict how people prioritise and interpret risk, including technological, economic, political and environmental risks.

There is no doubt that the public and the experts view risk differently, and some people can react emotionally to risks in ways that the experts find puzzling. Studies exploring the public perception of risk communication agree that the assessment of risk depends greatly on how much the source of the message is trusted. Trust and credibility are central to any effective risk communication.

American risk communications consultant Peter Sandman has confronted the criticism often levelled at the public from emergency agencies of 'irrationality', suggesting that it is unhelpful to think that emotional responses are irrational, whilst thinking or measured responses are rational. Furthermore, agencies often link 'irrationality' to ignorance. Sandman asserts that just because the public may be ignorant of scientific facts, does not mean their reaction to a scenario, about which they have experience but no knowledge, is irrational.

a laboratory setting or within the context of rapid-onset disasters, such as a cyclone. This study focused on warning fatigue in the natural environment – in the everyday lives of people living in bushfire-prone areas. It is the first recorded study of warning fatigue where the risk from the disaster is prolonged.

Although disaster theorists had dismissed the existence of warning fatigue, previous research also suggested there was a direct relationship between warning time, preparedness and response. This raised the possibility that warning fatigue may not be a myth, but a function of the type of disaster, the frequency of disaster warnings and warning lead-time.

From the outset this author hypothesised that people respond to prolonged lead-time



▲ Warning fatigue appears to be a major reason that warnings are dismissed and bushfire risk underestimated.

*Photo Nathan Maddock*

## DEFINITIONS FOR THIS STUDY

**Official warning:** All bushfire information from the Country Fire Authority, NSW Rural Fire Service and Tasmania Fire Service that warns people who are at risk from an impending disaster and enables those people to make decisions and take action.

**Unofficial warning:** News media reports and information individuals access through their social networks (not just social media).

disasters in very different ways than rapid-onset emergencies. Bushfires provide this prolonged lead-time context because they are repeatedly warned about, yet rarely result in

a major disaster (about once every 10 or 20 years) or impact regularly on individuals.

The research sought to establish what the phenomenon of warning fatigue 'looked like' – was it a single entity or multi-faceted? If it was the latter, what defined warning fatigue as a concept and what did it look like in reality? Having answered those questions, the next challenge was to measure warning fatigue. If this were possible, it could offer insights into why some people disregard bushfire warnings, and make poor decisions about bushfire safety.

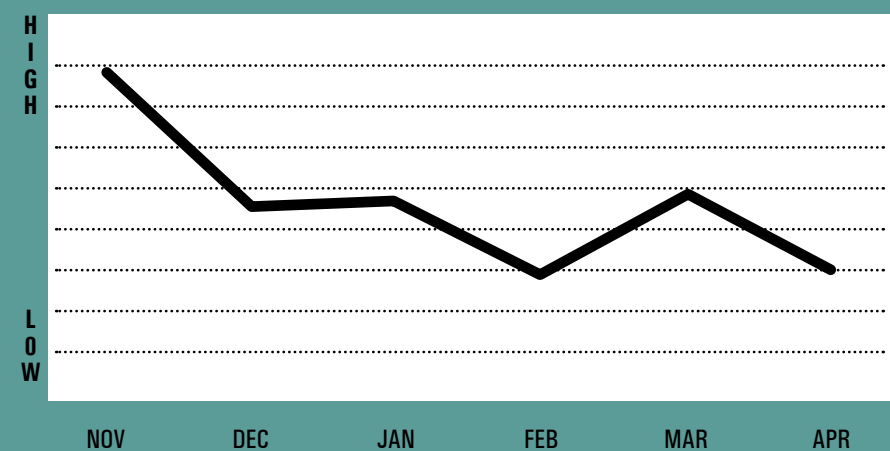
## BUSHFIRE CRC RESEARCH

The research took a novel, interdisciplinary approach to understanding warning fatigue by drawing upon psychology, sociology, mass

## BUSHFIRE WARNING FATIGUE

NOV 2011 – APR 2012

BUSHFIRE WARNING FATIGUE (MEAN)



▲ Unexpectedly, the research showed that warning fatigue was highest at the beginning of the fire season, and decreased during the season.

communication, disaster and emergency management perspectives.

The project combined qualitative and quantitative methods to produce a more complex understanding of the issues related to risk perception. It started with a substantive literature review, followed by two rounds of semi-structured interviews. The first round of interviews were with people living in bushfire-vulnerable locations of Tasmania and Victoria who were involved in community bushfire safety education programs (such as Community Fireguard). The results led to a much more focused second round of interviews, this time with people who did not actively engage with community bushfire-mitigation activities; these later interviews concentrated on warnings and risk perception.

The analysis of the two case studies led to the development of a bushfire warning fatigue measure. The measure was validated by applying it in a survey of at-risk communities and it was then revised, using an empirical statistical analysis. This revised instrument was then used to measure the change in warning fatigue levels over a fire season in semi-rural areas of Victoria, New South Wales and Queensland (November 2011-April 2012).

### RESEARCH OUTCOMES

Despite disaster theorists dismissing it as a myth, warning fatigue appears to be a real barrier to decision-making in times of disaster. Analysis showed that warning fatigue appears to be multi-faceted, comprising five aspects: trust and credibility; over-warning; false alarms; scepticism; and helplessness.

It was also found that warning fatigue responses are contextual and interconnected with 'unofficial' warnings, such as reports in

### END USER STATEMENT

This research puts flesh on the bones of some long-held beliefs about how communities respond to disaster warnings. Emergency authorities and governments are increasingly under pressure to provide timely, relevant and accurate information and warnings before and during events. Their ability to do so effectively is limited by a lack of understanding about whether people understand the warnings that are being given and knowledge of how and when they will respond to them. This research provides a basis for a better understanding of why people do or don't respond and act to warnings, the consequences of too many warnings and the need for more targeted approaches.

– John Schauble, Manager Policy and Planning, Fire Services Commissioner Victoria

the media. The direction of the change and analysis of the qualitative component of the survey implied that unofficial bushfire reports from the media during the winter months may produce a warning fatigue effect, so that when the official warnings were issued at the beginning of the bushfire season, the public were already 'tired' of the message.

The current practice is that risk communicators rarely distinguish between rapid-onset disasters and prolonged lead-time disasters. This leads to a 'one-size-fits all' approach to warnings, which is much less effective for disasters that have a prolonged period of risk, such as bushfires.

Among its key findings, the research confirmed that warning fatigue is accepted among

disaster agencies and the public, although the phenomenon is not quantified or factored into communications in any way.

The study established that warning fatigue is a real issue for residents of bushfire-prone areas, and a major reason that warnings are dismissed and the bushfire risk underestimated.

It also found that warning fatigue changes in intensity during the course of a fire season and may be influenced as much by unofficial warnings (media reporting) as official ones. Interestingly, the study showed that warning fatigue was highest at the beginning of the fire season, and decreased during the season. This was an unexpected finding, with warning fatigue hypothesised to increase throughout the season.

Although the five factors associated with warning fatigue were previously recognised, this research is the first to confirm that, when combined, these factors can produce warning fatigue.

Warning fatigue's five characterising factors are:

- 1. Trust:** People are distrustful of the message source, which in turn, renders the message less credible.
- 2. Helplessness:** People feel helpless and have less belief in their ability to respond appropriately to warnings about imminent disasters of frightening proportions.
- 3. False alarms:** People factor in false alarms to similar events when evaluating warnings, especially if there have been multiple false alarms for similar events with little or no explanation from authorities about the reasons for the false alarms.
- 4. Over-warnings:** People can disregard valid warnings when there have been many and repeated warnings over a prolonged period and long in advance of the threatened event.
- 5. Scepticism:** People become sceptical as a result of the above factors, combined with their own evaluation of their situation, which draws together knowledge about their environment, their assessment of their ability to cope, the actions they took in a previous threat event (and the outcomes) and their perceived social resources.

The uncertainties associated with prolonged lead-time disasters make it difficult for emergency authorities and the public alike to know when to pay attention and act upon warnings. More specifically, trust, helplessness, over-warning, false alarms and scepticism play



▲ An outcome of this study is an improved understanding of why people do or don't respond to warnings.

a large part in these perceptions and responses. This research has shown it is important to pay attention to the relationships between emergency agencies and the community because the credibility of the warning source leads to greater trust in the warnings.

Emergency managers may also need to take into account the false alarm rates for similar disasters in the past. Moreover, when a false alarm happens (as commonly occurs for prolonged lead-time disasters), it is imperative to explain to the public why the false alarm was issued.

Related to false alarms is the problem of over-warning; when events are warned about and do not happen. These warnings are sometimes interpreted by the public as 'happening too often', with the inference being that they are unnecessary. Disaster and emergency agencies must tread a fine line between over-warning and under-warning – it is neither an enviable task nor an exact science.

### HOW COULD THE RESEARCH BE USED?

Disaster management agencies could use this research to develop more accurately targeted and effective bushfire warnings.

Findings from this project could be incorporated into risk-communication

workshops for disaster management agency staff. Results could also inform changes in policies and practices among agencies.

Ultimately, this research could promote better preparation and safer decision-making by residents of bushfire-vulnerable communities. Overall, it is hoped this will result in more people believing the warnings and fewer people dismissing them – thereby potentially saving lives. This research suggests warning fatigue is real.

### FUTURE DIRECTIONS

Warning fatigue can influence how the public perceive, interpret and respond to uncertain disasters. This research has shown that over-warning contributes to warning fatigue and suggests that more research needs to be done to look at the specific content of the warnings. Perhaps warnings should be reserved for only the most urgent threat situations, with more general information conveyed about less urgent threats. The research also points to the need for more consideration of the timeliness of warnings to avoid over-warning the public. The warnings need to be both timely and relevant to the location, enabling the public to take the necessary actions.

## REFERENCES /FURTHER READING

Mackie B (in press), *Warning Fatigue: Insights from the Australian Bushfire Context*, thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy, School of Social and Political Sciences, University of Canterbury, Christchurch.

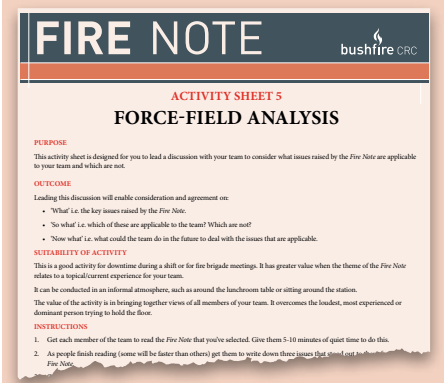
Mackie B, 2013, *Warning Fatigue – Myth or Misunderstanding: Insights from the Australian Bushfires*, *Canadian Risk & Hazards Network*, 5(1), pp 51-55.

Mackie B, 2011, *Warning Fatigue: what is it and why does it matter? An exploration and critique of the literature*, in R.P.Thornton (Ed), *Proceedings of Bushfire CRC & AFAC 2011 Conference Science Day*, Sydney.

Sandman PM, 1993, *Responding to community outrage: effective strategies for effective risk communication*, American Industrial Hygiene Association, Virginia.

## NOW WHAT?

What three things stand out for you about the research covered in this *Fire Note*? What information can you actively use, and how? Tools are available at [www.bushfirecrc.com/firenotes](http://www.bushfirecrc.com/firenotes) to help, along with activities you can run within your team.



Fire Note is published jointly by the Bushfire Cooperative Research Centre (Bushfire CRC) and the Australasian Fire and Emergency Service Authorities Council (AFAC). This Fire Note is prepared from available research at the time of publication to encourage discussion and debate. The contents of the Fire Note do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire CRC.

Bushfire Cooperative Research Centre  
Level 5/340 Albert Street  
East Melbourne VIC 3002  
Telephone: 03 9412 9600  
[www.bushfirecrc.com](http://www.bushfirecrc.com)

Bushfire CRC is a national research centre in the Cooperative Research Centre (CRC) program, formed in partnership with fire and land management agencies in 2003 to undertake end-user focused research. Bushfire CRC Limited ABN: 71 103 943 755

Australasian Fire and Emergency Service Authorities Council  
Level 5/340 Albert Street  
East Melbourne VIC 3002  
Telephone: 03 9419 2388  
[www.afac.com.au](http://www.afac.com.au)

AFAC is the peak body for Australasian fire, land management and emergency services, creating synergy across the industry. AFAC was established in 1993.