

# Exploring information for residents on websites of fire authorities — practical experiences

*Bernd Rohrmann outlines a research project investigating the usefulness of websites as bushfire information sources*

## Abstract

The project *Potential of the internet for enhancing residents' bushfire preparedness 2004–2006* (PIB) was carried out to analyse the capability and the utility of information sources provided by authorities for the public via the Internet/WWW. Crucial research questions were: How well are these risk communication means used by residents, and why or why not? How likely are they to significantly advance problem awareness, preparedness and coping with actual fires? How can the usability and effectiveness of these tools for individual emergency management be improved? Last year, sub-study PIB-E *Surveying bushfire events on websites – experience of people from different cultural backgrounds* was conducted. Participants were experienced students; they assessed internet information of fire authorities in South Australia, Victoria and N.S.W., focussing on then present bushfire events. Predominantly, these websites were found to be informative, comprehensive and helpful. However, the respondents also identified shortcomings, in both content and presentation of fire preparedness information for residents, and stated limitations of addressing cultural variety. Obviously there is considerable potential for the improvement of websites. Pertinent suggestions and resultant research needs are outlined.

## Problem area: Significance of bushfire websites

### **Websites as information source for residents**

In Australia, the bushfire hazard affects large areas, and residents are regularly exposed. Consequently, emergency management is a permanent task. Risk information/communication/education about bushfires near residential settings are crucial components. Residents need to be properly informed about relevant hazard characteristics, preventative measures and appropriate behaviours during the onset of an emergency situation and after the event. Information campaigns for enhancing disaster preparedness make use of media activities (television, radio, internet) meetings with residents, and a variety of visual communication means, such as information leaflets, brochures and video-tapes. Internet-based information provision, especially websites run by authorities, have been commonly established within the last decade. They are widely available and accepted as an essential and increasingly indispensable information source for both experts and residents; however, they are not yet 'mainstream' procedures.

### **Research on the value of fire websites**

Given the increasing relevance of fire authority websites, the capability and utility of information sources provided via the Internet became a significant issue. To get empirical data, the project *Potential of the internet for enhancing residents' bushfire preparedness* [PIB] was conducted from 2004 to 2006. Conceptually, this research is based on the author's socio-psychological Risk Communication Model. The investigation comprises six studies, which combine several approaches, including focus groups, experiments, surveys and expert panels. Last year, sub-study PIB-E *Surveying bushfire events on websites — experience of people from different cultural backgrounds* was conducted. The research questions to be clarified are summarised below in table 1.

**Table 1: RESEARCH ISSUES**

*Focus:*  
How are events, i.e., current bushfires in an area, represented and explicated on websites of pertinent fire authorities.

*Crucial research questions:*

- How well are new risk communication means using the Internet utilised by residents, and why or why not?
- How is information provided in websites perceived in comparison to reports in local newspapers?
- To what degree does website information advance problem awareness, preparedness and coping with actual fires?
- How can the usability and effectiveness of these tools for individual risk management be improved?

*Critical perspective:*  
Explorations and expectations of residents (rather than fire experts), and differences between people from diverse cultural backgrounds.

The focus of this study is experiences of residents, both local ones and those from a different linguistic and cultural background.

## Project design

### Designing the study

The research plan was to focus on a current bushfire during the 'fire season', to choose the three most relevant websites of the pertinent governmental fire authorities, to ask experienced people for a continuous appraisal of these internet information sources, to examine newspaper reports during the same time period, and to incorporate people from different cultural backgrounds into the study. Details are listed in table 2. In figures 1 to 4, sample pages from these four information sources are presented.

In January 2006, the largest bushfire happened in South Australia, claiming nine lives and destroying 83,000 hectares of farmland.

### Website assessment

The websites listed above were regularly inspected by the participants and finally assessed using the author's 'Questionnaires for the Appraisal of Website Utility for Residents'.

Furthermore, an agenda for describing and comparing reports in Melbourne newspapers was developed.

**Table 2: PROJECT DESIGN – STUDY PIB-E**

*Information sources:*  
Monitoring and assessing of three websites:

- CFS = South Australia's Country Fire Service (Adelaide; responsible for the area which had disastrous fires in Jan 2005) =>> <http://www.cfs.org.au/>
- CFA = Country Fire Authority of Victoria (Headquarter in Melbourne; a large institution; in parts progressive) =>> <http://www.cfa.vic.gov.au/>
- RFS = New South Wales (NSW) Rural Fire Service (located in Sydney; is the world's largest fire service) =>> <http://www.bushfire.nsw.gov.au/>

*Newspapers:*

- The Age;
- Herald-Sun (both from Melbourne).

*Participant Sampling:*  
Sampling of six people who are knowledgeable about bushfire issues from a residents point of view, familiar with Internet and website features, and are from different national and cultural backgrounds: South Australia & Victoria (i.e. Australia), Hong Kong & China (i.e. Asia), Germany & Netherlands (i.e. Europe).

*Timing:*  
Regular website observation for 1 month, mid-Jan to mid-Feb 2005; during the same time, checking for newspaper articles about bushfires.

## Empirical results

Only selected results can be presented here, regarding the appearance of the websites of fire authorities, their usefulness for residents' hazard preparedness, and the eminence of internet-based information in relation to newspapers.

### Appraisal of the 'face' of the websites

As the results in table 3 demonstrate, the governmental websites of interest were generally rated positively, including their navigation features. However, basic requirements, such as an organisation's name and contact provisions, are not always transparent.

### Assessment of information regarding 'fire preparedness'

In table 4, the main results regarding the convenience and utility of information for residents are presented, focussing on preparedness for fire hazards. The observed websites were found to be generally helpful and informative. Positive evaluations include: 'Understandibility', 'Clarity of fire safety actions' and 'Motivating for fire preparation'; they are seen as "Meeting own information need" and "Better than brochures".

**Table 3: Mean responses compared for the websites of CFS (S.A.), CFA (Victoria), RFS (N.S.W.)  
A: ASSESSMENT OF THE INTRODUCTORY PAGE**

Facet	Variable content	Response scale	CFS	CFA	RFS
A1	Name of authorisation stated	% "yes"	100%	50%	83%
A2	Contact details provided	% "yes"	100%	67%	83%
A3	Organisation of home page	1= very poor to 5= excellent	4.5	3.7	3.7
A4	Ease of navigation	1= not at all to 5= very	4.5	3.7	4.0
A5	Ease of locating relevant information	1= not at all to 5= very	4.2	4.5	4.0
A*	Ratings as favourite site	1= most, 3= least favourite	1.7	1.7	2.7

**Table 4: Mean responses compared for websites of CFS (S.A.), CFA (Victoria), RFS (N.S.W.)  
B: EVALUATION OF INFORMATION REGARDING "FIRE PREPAREDNESS"**

Facet	Variable content	Response scale	CFS	CFA	RFS
B1	Interesting to look at	1= not at all to 5= very much so	3.8	3.7	2.7
B2	Understandibility	1= not at all to 5= very much so	4.3	4.4	3.7
B4	Visual appeal	1= not at all to 5= very much so	4.0	4.0	2.2
B5	Helpfulness of pictures/illustrations	1= not at all to 5= very much so	3.2	3.7	2.4
B7	Comprehensiveness	1= not at all to 5= very much so	4.5	4.3	3.7
B9	Length section safety/preparedness	1= far too short to 5= far too long	3.3	3.0	2.7
B10	Keypoints & summaries provided	% "yes"	100	83	100
B11	Good examples given	1= not at all to 5= very much so	4.2	4.2	3.5
B12	Clarity of fire safety actions	1= not at all to 5= very much so	4.2	4.6	3.3
B13	Own info need is met	1= not at all to 5= very much so	4.0	4.0	3.8
B15	Extent of motivating fire preparation	1= not at all to 5= very much so	3.8	3.7	3.0
B16	Difficulty remembering information	1= not at all to 5= very much so	1.8	2.5	2.7
B17	Seen as reliable source of information	1= not at all to 5= very much so	4.2	4.3	3.7
B18	Clarity of where to get assistance	% "yes"	100	100	83
B19	Better than brochures	1= much poorer to 5= much better	3.6	4.0	2.8
B22	To be recommended to lay people	1= not at all to 5= very much so	4.0	4.0	2.8

**Relevance of linguistic and cultural background**

The ratings of the participants from a European or Asian background tended to be slightly less positive — they are less familiar with the English language (which dominates in websites) and the significance of bushfires for Australians.

**Evaluation of newspapers in relation to websites**

Regarding alternative media, the websites were appraised as far more comprehensive in scope, yet the respondents emphasised that newspapers are easier to obtain, usually less demanding and likely to be more explicit and emotive. This judgment is stricter for websites which deal with principal bushfire matters rather than current events.

**Conclusions and considerations for research**

**Evaluation of websites' strengths and weaknesses**

All study participants identified shortcomings, either regarding the content or the presentation of bushfire impacts and proposed procedures to enhance preparedness for hazardous events; see the list in table 5. Information complexity and comprehensibility for non-Australian citizens are core issues, i.e., limitations of addressing cultural variety were stated.

Clearly there is considerable potential for improving websites (cf. part 2 of table 5). When working on website enrichments, some audiences deserve particular attendance, e.g. children, elderly people, and residents with a non-Australian background.

**Table 5: APPRAISAL OF WEBSITES – CRITICISMS AND SUGGESTIONS**

*Perceived shortcomings:*

- Some information and instructions too 'texty',
- information about present bushfires not as current as newspaper or TV reports,
- some parts difficult to understand for people with a 'non-English' linguistic and cultural background,
- some summaries of key points too complex,
- explanation of technical terms occasionally hard to find and/or to understand,
- inconvenient if information comes in 'pdf' format and needs a printer.

*Suggested improvements:*

- Reflecting the (restricted) awareness and knowledge of residents,
- using more maps, pictures, diagrams, charts to convey information,
- providing downloadable videos for demonstrating fire risks and enhancing preparedness,
- including facilities for those with not-so-good eyesight,
- adding information aimed at children,
- placing up-to-date information about current bushfires on prominent frontpage position,
- making core information usable for all website users, including those who have restricted download capabilities, no flash player and can't print website texts,
- enhancing accessibility for the wider Australian audience, by providing information in languages other than English.

**Table 6: RESEARCH SUGGESTIONS**

- Comparing the communication efficiency of pictures versus diagrams versus charts versus videos as visual enrichments of text information,
- critically analyzing the options for providing multi-language bushfire information and preparedness advice,
- exploring differences in website utilization across people of high or low familiarity with internet & web-browser procedures,
- website utilisation regarding specific information needs 'before' versus 'during' versus 'after' bushfire events/disasters,
- empirically investigating the links between website features and the real behaviour when preparing for or coping with actual fires,
- testing the linkage and potential mutual enrichment of information provided by various media, such as websites, newspapers, television and meetings of community groups such as 'fireguard',
- investigating necessary features in case children and/or the elderly are to be addressed in websites.

**Considerations for further research**

Improving the potential utility and actual use of a website has better chances if based on empirical research about residents' responses to the content and appearance of forestfire information.

In table 6, a set of pertinent research topics are suggested. These issues refer to the presentation mode (e.g. the role of pictures), the links to other media (e.g. radio), the fire situation (before versus during versus after an event), linguistic and cross-cultural problems (e.g. non-Australian residents), and website requirements regarding specific groups (e.g. children).

Research projects about the soundness and efficiency of internet-based fire information should be conducted both before and after re-designing a website.

**Significance of bushfire websites**

It appears almost certain that 'electronic' information channels will become as commonplace in disaster preparedness as in many other fields of public information, communication and education. In fact, WWW-based risk communication has considerable advantages: The Information to be provided can be

updated regularly and quickly; users can bookmark and store relevant hazard info; access is fast; and blockage is unlikely (unlike telephone contacts).

**Concluding Remark**

To conclude, the results from the current study, *Surveying bushfire events on websites – experience of people from different cultural backgrounds*, will help to better identify (1) why and how residents seek and utilise information regarding forestfire preparedness, (2) whether current websites of fire authorities meet the reading style and information needs of residents, and (3) which features of websites are essential and deserve substantial improvement in order to maximise their potential for enhancing residents' preparedness.

Far-reaching website quality and information presented in several languages are crucial features in a country like Australia which has a multi-cultural society and numerous residents who live outside of towns and cannot easily reach a fire authority centre — internet facilities are of significant value to them.



Figure 1: CFA Website sample page

**COUNTRY FIRE AUTHORITY**

HOME CONTACT SITEMAP LINKS MEMBERS   FOR EMERGENCIES DIAL '000' find out more...

**Community Programs**

Residents in high bushfire risk areas need to be self reliant to ensure their safety from bushfire.

**fireready VICTORIA**

CFA, DSE, and MFB have implemented **Fire Ready Victoria**: a strategy to increase awareness of bushfire risk, and preparedness of the Victorian Community for bushfires. [Look for a meeting in your area...](#)

As part of the strategy, each summer CFA run education programs to inform residents of the need to be prepared and how to get started. These are delivered, free of charge, in high bushfire risk areas. The programs are **local community and street corner meetings** and **Community Fireguard**.

**Community Meetings**

These meetings are held in community halls or on street corners and leading up to summer a calendar of activities showing where meetings will be held is advertised through flyers, local newspapers, sign boards, and on this website. [Look for a meeting in your area...](#)

**Community Fireguard**

Local communities can also establish Community Fireguard groups and to get started a meeting is generally held in a resident's home with neighbours invited to attend. [Tell me more...](#)

For further information about how to participate in CFA's bushfire safety programs, contact the Community Education Co-ordinator at your nearest CFA Area office.

Figure 2: RSF/NSW Website: Sample Page

**NSW Rural Fire Service** Emergency 000

Home RFS Volunteers Joining the RFS Bushfire Prone Residents Students and Teachers Media Centre Search

**Family Fire Plan**

Asset Protection Zone (APZ)

If you live in a bushfire prone area you must be prepared for the possibility that you will have to defend your family and property against fire at some stage. A family fire plan involves taking preventative measures well in advance to protect your property, and ensuring everyone in the family understands their roles and responsibilities should a bushfire approach.

Decide who is the boss in the event of fire, and decide and document the various activities to be undertaken. These include:

- a relocation/evacuation plan
- protective clothing
- provisions for drinking water
- tasks to be performed outside and inside the home
- what to do with the car
- what to do with petrol/stock
- gathering of important personal items.

NSW RFS has created a range of Fact Sheets and Checklists in conjunction with the NSW Fire Brigades, the ACT Rural Fire Service and the ACT Fire Brigade - These are available in PDF format from our Publications Area

**More about Preparing for Bushfire:**

- How Bushfires Affect Houses
- Are You at Risk?
- Respond to Bushfire
- Protecting Your House and Garden
- Water Supplies and Equipment
- Hazard Reduction
- How the RFS Can Help
- How You Can Help

Figure 3: CSF Website: Sample Page

**CSF** Welcome to the SA Country Fire Service

Home About Us Becoming a Volunteer Training News and Media Fire Restrictions Protecting Yourself Weather Links Search Contact Us

Community Safety Meetings Current Incidents Farm Fire Unit

**Prepare your Bushfire Action Plan now.**

Click here to download the CFS guide.

**Current Fire Bans**

**PROTECTING YOURSELF**

[Home Safety](#)

[Farm Safety](#)

[Bushfire Safety](#)

[Fact Sheets](#)

[Community Fire Service Newsletter 2006/07](#)

Figure 4: The Age - Article regarding bushfires

**THE AGE** PUBLISHED IN MELBOURNE SINCE 1846 FRIDAY, APRIL 20, 2005 Page 60B of 62

**Firefighters ready for extreme weather**

Close to Melbourne, the Burgan Track fire in the Kinglake National Park was burning within seven kilometres of Kinglake Central and eight kilometres of Pheasant Creek yesterday, and also could threaten Kinglake West and Kinglake East today.

The state's other blaze, in the Brisbane Ranges near Anakie, north of Geelong, was largely under control yesterday but authorities were not confident they could hold lines in the south today if the fire flared up. "We are asking all residents in Brisbane Ranges to leave homes early or have a well-prepared plan to stay and protect homes," Ms May said. "We're really advising against a late evacuation."

**KINGLAKE (KINGLAKE NAT. PARK)**

STATUS	Going
HECTARES BURNT	450
FIREFIGHTERS	134

**TOWNS ON HIGH ALERT**

Kinglake National Park (Burgan track); Kinglake Central, Pheasant Creek

Schoolchildren could soon be educated in bushfire safety.

## References

For this report about the project "Surveying bushfire events on websites – experience of people from different cultural backgrounds", the following publications were utilised:

Bennett, P. & Kalman, K. (1999). *Risk communication and public health*. Oxford: Oxford University Press.

Emergency Management Australia [EMA] (1997). *Hazards, disasters and survival: A booklet for students and the community*. Dickson: Department of Defence, EMA.

Fischer, H. W. (1999). Using cyberspace to enhance disaster mitigation, planning and response: Opportunities and limitations, *The Australian Journal of Emergency Management*, 14, 60-64.

Johnson, B.B. & Chess, C. (2006). From the inside out: Environmental agency views about communications with the public. *Risk Analysis*, 26, 1395-2002

Joyce, E. B. (1999). Disaster information on the web: providing an efficient index to current and reliable information. In EMA (Ed.), *Australian Disaster Conference*, Proceedings, Canberra.

Rohrmann, B. (1995). Effective risk communication for fire preparedness: A conceptual framework. *The Australian Journal of Emergency Management*, 10, 43-48.

Rohrmann, B. (1998). Assessing hazard information/communication programs. *Australian Psychologist*, 33, 105-112.

Rohrmann, B. (2000) A socio-psychological model for analysing risk communication processes; *Australasian Journal of Disaster Studies*, 2000-3. <[www journal](#)>.

Rohrmann, B. (2002). Bushfire preparedness of residents: Insights from socio-psychological research. In: Cary, G., Dovers, S., Lindenmayer, D. (Eds.), ANU Fire Forum 2002, Canberra: CSIRO Publishing

Rohrmann, B. (2004). Technological versus socio-psychological risk management. In Emergency Management Australia (EMA) (Ed.), *Safer sustainable communities* (Proceedings of the 2003 Australian Disaster Conference), Canberra: EMA.

Schauble, J. (2004). *The Australian bushfire safety guide*. Pymble, NSW: Harper Collins.

Willis, W. J., Okunade, A. A., & Willis, J. (1997). *Reporting on risks: the practice and ethics of health and safety communication*. Westport: Praeger.

Zaksek, M. & Arvai, J. (2004). Toward improved communication about wildland fire: Mental models

research to identify information needs for natural resource management. *Risk Analysis*, 24, 1503-1514.

Further results of the author's research on the relevance of the WWW for residents' bushfire preparedness can be found in:

Rohrmann, B. (2000). Critical assessment of information on bushfire preparedness for residents. *The Australian Journal of Emergency Management*, 15, 14-20.

Rohrmann, B. (2005). The relevance of the internet for enhancing disaster preparedness of residents. *Proceedings, 11th Conference of the International Emergency Management Society (TIEMS)*, May 2004.

## Acknowledgement

During the data collection and the documentation of the results, Ms Anne Makin contributed significantly to the conduct and completion of this research project.

### About the Author

**Bernd Rohrmann** received his scientific education in Germany and has held various positions as a social scientist and professor at research institutions and universities. He was Director of a social-scientific consultancy team and a visiting lecturer in Austria, Switzerland, Australia and New Zealand. He has been with the University of Melbourne since 1993.

His main research areas include: applied social research, environmental psychology, and research methodology. Special substantive interests: risk perception/ communication/ management; impacts of environmental stressors; hazard appraisal and disaster preparedness; appraisal of virtual environment presentations and decision processes. Methodological interests: response scales, survey methodology, evaluation research, and conceptualisations via structural models. He has conducted numerous empirical investigations with a strong emphasis on interdisciplinary approaches and applicability of findings. This includes cross-cultural studies in collaboration with researchers from Germany, Switzerland, Brazil, Japan and Hong Kong. Also worked as consultant with governmental agencies, courts and industry/companies. He lectures at university and to non-academic audiences. His publications comprise 130 articles, reports, chapters and books.

For descriptions of his research projects, lecturing and other academic activities cf. [www.rohrmannresearch.net](#). Recent publications are posted there. Information about research consultancy work can be found at [www.rohrmannconsultancy.biz](#).

Contact:

Associate Professor B. Rohrmann  
University of Melbourne, Dept. of Psychology, VIC 3010, Australia.  
E-Mail [rohrmann@unimelb.edu.au](mailto:rohrmann@unimelb.edu.au)

R