FOREST AND RURAL FIRE RESEARCH

Fire Technology Transfer Note

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Introducing the Forest and Rural Fire Scientific and Technical Series

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Introduction

It is fair to say that many research reports are pretty "dry". Commonly, they contain a description of methods with lots of unsavoury statistics and mathematics, a summary of results loaded with tables and graphs, a discussion full of jargon, and a brief conclusion which has all of the information you were after and leaves you wondering why you didn't just read the last page and be done with it.

In 1993, we initiated the Fire Technology Transfer Note (FTTN) so that we could more simply summarise and distribute local and overseas research results. However, before results are circulated through an FTTN, we need to ensure that the information is valid and practical. As we mentioned in our last Fire Research Update (January 1996), it is important that our research reports are "peer reviewed". This not only ensures that the work meets scientific standards, but it allows fire managers to have greater confidence when using outputs from the research programme. Research reports also capture much of the current knowledge on a particular topic so that other researchers or managers can use and build on this information.

The New Series

To ensure that important research and technology transfer results are recorded and accessible, we have also initiated the "Forest and Rural Fire Scientific and Technical Series". Papers published in this Series can be science or management-orientated, but they must have been through a peer review process that is similar to, or better than, the New Zealand Forest Research Institute (FRI) review system.

The FRI review system involves having three or more scientists and/or managers who have appropriate knowledge, skills and experience, critically assess the value of the work as presented in the report. The important questions that are asked by a referee are:

- is the contribution new and substantial?
- is the work sound in methodology, experimentation, and presentation of results?
- does the Methods section give sufficient detail (or references to where details can be found) to enable the work to be repeated?
- is the discussion of the results adequate?
- are the conclusions justified and supported by the data presented?
- are there errors of fact, logic, interpretation, or calculation?
- have the correct statistical tests been applied?
- has all relevant work in this field been clearly referenced, and work by other researchers adequately acknowledged?
- could the paper be shortened without losing its value?

An independent editor then ensures that the referees' comments are properly considered by the author, and where appropriate, incorporated into the research report. Not all comments need to be accepted, but, the author must justify why no action was taken.

The Series will be published on an occasional basis as projects and reports reach fruition. It is not only for use by FRI researchers. Hopefully, others will use it to publish reports that meet the refereeing and editorial standards on a range of fire management and research issues.

NEW ZEALAND FOREST RESEARCH INSTITUTE (Limited)

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The role of the Fire Scientific and Technical Series

The first paper published under the banner of the Fire Scientific and Technical Series, entitled "Two Rural/Urban Interface fires in the Wellington suburb of Karori: assessment of associated burning conditions and fire control strategies" (Fogarty 1996), is included with this FTTN. The Karori report, which was written by the author of this Technology Transfer Note, records the observed fire behaviour and draws on other international research material. Written in *italics* below, is the abstract from this report, which is the sort of information from a research report which we would summarise in a FTTN:

The behaviour of two extreme wildfires burning in gorse (Ulex europaeus) fuels in the Wellington suburb of Karori is recorded for the future development and validation of fire behaviour prediction models. Burning on steep slopes and in High forest fire danger conditions, the McEwans Fire (6 February 1994) exhibited extreme fire behaviour with a head fire spread rate of 4440 m/h (± 360 m/h) and a fireline intensity of 60 000 kW/m. The Montgomery Crescent Fire (1 March 1994), which also burnt in High forest fire danger conditions, had a rate of spread of 3400 m/h (± 550 m/h) and the fireline intensity was greater than 25 000 kW/m.

The need to protect life and property during suppression of Rural/Urban Interface fires places firefighters under great stress. At both fires, firefighters responded to these pressures and adopted the high risk strategy of making a stand to halt the spread of the head fire. The McEwans Fire was controlled without incident when firefighters took advantage of favourable wind and slope conditions which had reduced fire intensity sufficiently to allow for the fire to be safely contained. In contrast, a crew of firefighters attempting to protect houses from the Montgomery Crescent Fire were burned-over by an extreme head fire. The safety aspects of making a stand in scrub fuels, and alternative methods of fire suppression are discussed.

At the Montgomery Crescent Fire, members of the public were evacuated before the fire reached their homes. This action is discussed through a comparison with research findings from the 1983 Ash Wednesday fires in Victoria, Australia, where it was found that unoccupied houses are more vulnerable to being destroyed by fire and that many civilian deaths resulted from people being caught outside the safety of their homes when the fire front arrived.

Making a stand and evacuating residents are both legitimate and useful techniques available to officers responsible for fire suppression in RUI areas. However, both have high levels of risk which need to be identified and accounted for in the development and implementation of fire suppression strategies and tactics. An understanding of fire behaviour and factors affecting firefighter and resident safety is imperative.

The Karori wildfire report reviews and questions some culturally accepted fire suppression practices frequently used at Rural/Urban Interface fires used in New Zealand. Many of the comments in the abstract may be contentious to some fire managers. While this may still be the case after reading the more detailed discussion of the issues in the Karori report, it is evident that a more detailed report enables us to summarise the current thinking on these issues and to more fully explore them in the context of New Zealand research and management practices.

Conclusion

The Fire Scientific and Technical Series will provide detailed research results and technology transfer summaries to New Zealand fire managers. The peer review process offers a quality control system that enables fire managers to more confidently use this information. However, these reports may be long and technical, so there is also a need for concise summaries to be more widely distributed using the FTTN.

References Cited

Fogarty, L.G. 1996. Two Rural/Urban Interface fires in the Wellington suburb of Karori: assessment of associated burning conditions and fire control strategies. New Zealand Forest Research Institute in association with the National Rural Fire Authority, Wellington. Forest and Rural Fire Scientific and Technical Series, Report No. 1. 16 p.