

Scion Rural Fire Research Group

Activities for July - September 2011

Current Research

Aerial fire suppression resource productivity & effectiveness

This study is in the early phases of planning. Richard Parker has begun scoping methods to measure the productivity and effectiveness of helicopter suppression at rural fires. This work is largely based around his previous study on rural fire fighter workload and productivity using instrumentation (video camera, GPS etc) to record activities. Key phases of this research will involve:

- literature review of previous studies and data collection methods
- interviewing fire managers and aircraft operators regarding information needs
- identifying available/required technology and collection methods
- data collection from aircraft working on rural fires
- report write up and transfer of research findings
- development of aerial suppression productivity and effectiveness guidelines

Grassland curing assessment

A report summarising the findings from the second satellite imagery pilot trial has been drafted and will be available very soon. Findings from the report indicate that neither product (Map B or C) would currently be recommended for operational use in New Zealand. This was due to the change in preference (from Map B to C) during the 2010/11 fire season.

A third trial has therefore been recommended using modified algorithms (equations) for the maps. Discussions have also been underway with NIWA regarding the potential to produce and distribute the maps operationally in NZ, possibly as part of the upgraded NRFA Fire Weather Monitoring System, FWSYS. Discussions with the Australian Bureau of Meteorology have also been undertaken to provide improved NZ maps for a third trial.

Other News

Fire behaviour tools update

A number of tools are in the process of being updated based on new rate of spread and fuel load models. An email alert will be sent out when new versions of these tools becomes available. The tools affected will be:

1. The Manual for Predicting Fire Behaviour in New Zealand Fuels (field manual)
2. NZ Fire Behaviour Toolkit software package for calculating fire behaviour
3. New Zealand fuels photoguide
4. Prometheus fire growth simulation software.

FRANZ has indicated that they would like to financially support the conversion of the computer-based Toolkit software into an application for mobile devices (smart phones, etc). We thank them for this offer.

We are also currently developing the User Guide to the New Zealand Fire Danger Rating System. This contains a series of worked examples illustrating how the NZFDRS can be used across the 4 Rs. It has been proposed to

produce the User Guide in both hard copy binder and electronic format, in the latter case either as a CD or website with linked PDF documents and required graphs/tables, etc. It is likely that a CD version will be produced initially to get feedback on what is required for a subsequent web version.

Conferences

Members of the Fire team attended the FRFANZ annual conference in Dunedin during August, and presented an update on research activities. Veronica Clifford also presented a session on fire behaviour tools as part of the Forest Industries Technology Clinics held in Rotorua in September. Grant Pearce recently attended the AFAC/Bushfire CRC Conference in Sydney, where he gave a talk on the fire danger communication work and presented three posters on the NZ grass curing, fire climate severity and climate change projects. He also attended a post-conference Fire Weather & Risk Workshop where he again presented on the NZ grass curing and fire climate research. He participated in discussions around the Australian review of their fire danger rating system, and other fire weather and risk research within the Bushfire CRC, Bureau of Meteorology, universities and state fire agencies, much of which related to addressing the Black Saturday Commission of Inquiry recommendations.

NRFA seasonal assessment workshop

The NRFA is planning a second workshop (on Nov. 28) to develop a seasonal forecast of likely fire danger potential across New Zealand for the 2011/12 fire season. This follows on from the hosting of a successful workshop prior to last fire season based around the Bushfire CRC's seasonal assessment process. This resulted in the production of a summary of the fire potential in different regions of the country that was published by the NRFA, and as a Fire Note (No. 72) by the Bushfire CRC. The research team will be attending this year's workshop, and will again play a key role in the development of this year's seasonal fire outlook.

Integrated Assessment of Prescribed Burning

A New Zealand case study has been identified as part of the Bushfire CRC funded project on "Integrated assessment of prescribed burning". This project is being led by Professor David Pannell of the University of Western Australia in conjunction with the NRFA, and is based on applying the INFFER (Investment Framework for Environmental Resources) decision support tool to assist planning and prioritisation of the use of prescribed burning as a management tool.

The NZ case study is to be based around issues affecting the use of fire in the hill and high country, and will most likely be undertaken in the Central Otago region (e.g. around Naseby). A 2-3 day workshop has been proposed in November to initiate the New Zealand case study, and to seek farmers, land managers and researchers perspectives on the issues around using fire in the high country. Due to the overlap with the Scion fire team's own proposed research in this area, we will be participating in the workshop and subsequent case study. It is also hoped that the INFFER project will lead to identification of additional research needs, such as quantifying the extent of burning undertaken in New Zealand and effects of fire on New Zealand ecosystems.

List of recent outputs

Fire tech notes & updates

- Scion. 2011. Fire climate severity. Scion, Rural Fire Research Group, Christchurch. Rural Fire Research Update 8 (July 2011). 4 p.
- Pearce, G. Scion Rural Fire Research group. Research update to the Canterbury/West Coast Regional Rural Fire Committee (CWCRRFC) AGM and meeting, 19 September 2011, Geraldine.
- Pearce, G.; Clifford, V. 2011. Scion Rural Fire Research Group, Research update to NZ Forest Owners' Association Fire Committee, 21 September 2011, Wellington. 2 p.

Scientific papers

- Anderson, S.A.J.; Anderson, W.R.; Hollis, J.J.; Botha, E.J. 2011. A simple method for field-based grassland curing assessment. *International Journal of Wildland Fire* 20(6): 804-811.

Conference posters and papers

- Clifford, V.R.; Pearce, H.G. 2011. Validation of grassland curing satellite assessment methods for New Zealand. Poster paper abstract accepted for presentation at the Australasian Fire Authorities Council (AFAC)/Bushfire Cooperative Research Centre (CRC) Conference, 29 August-1 September 2011, Sydney.
- Langer, E.R.; Hide, S.; Pearce, H.G. 2011. Effectiveness of fire danger warnings to New Zealand communities. Oral paper abstract accepted for presentation (by Grant Pearce) at the Australasian Fire Authorities Council (AFAC)/Bushfire Cooperative Research Centre (CRC) Conference, 29 August-1 September 2011, Sydney.
- Pearce, H.G. 2011. Describing New Zealand's current fire climate severity. Poster paper abstract accepted for presentation at the Australasian Fire Authorities Council (AFAC)/Bushfire Cooperative Research Centre (CRC) Conference, 29 August-1 September 2011, Sydney.
- Pearce, H.G. 2011. Effect of climate change on New Zealand's future fire danger. Poster paper abstract accepted for presentation at the Australasian Fire Authorities Council (AFAC)/Bushfire Cooperative Research Centre (CRC) Conference, 29 August-1 September 2011, Sydney

Reports

- Pearce, H.G.; Kerr, J.; Clark, A.; Mullan, B.; Ackerley, D.; Carey-Smith, T.; Yang, E. 2011. Improved estimates of the effect of climate change on NZ fire danger. Scion, Rural Fire Research Group, Christchurch, in conjunction with NIWA, Wellington. Scion Client Report No. 18087. 84 p.
- Pearce, H.G.; Kerr, J.L.; Clifford, V.R.; Wakelin, H.M. 2011. Fire climate severity across New Zealand. Scion, Rural Fire Research Group, Christchurch. Scion Client Report (NZ Fire Service Commission Contestable Research Fund) No. 18264. 78 p.
- Scion. [Clifford, V.R.] 2011. Prometheus - Canadian Wildland Fire Growth Simulation Model: New Zealand User Manual. Scion, Rural Fire Research Group, Christchurch. Scion Client Report 18438.

Presentations

- Clifford, V. 2011. Fire behaviour tools for managers. Presentation to the BNZ Forest Industries Technology Clinics, 6-7 September 2011, Rotorua.
- Langer, E.R. 2011. Scion fire research: planned strategic direction and rural fire danger warning communication. Presentation to the NZ Forest Owners' Association Fire Committee, 21 September 2011, Wellington.
- Pearce, G. 2011. The life of a fire research scientist. Presentation to the Ashburton Mens Probus Club, 20 September 2011, Ashburton.
- Pearce, G.; Parker, R.; Clifford, V. 2011. Scion Rural Fire Research Group update. Presentation to the Forest and Rural Fire Association of New Zealand (FRFANZ) Annual Conference, 3-5 August 2011, Dunedin.