

International Journal of Wildland Fire

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Contents	Volume 16	Issue 6	2007
Modelling emissions from Canadian wildfires: a case study of the 2002 Quebec fires David Lavoué, Sunling Gong and Brian J. Stocks <i>International Journal of Wildland Fire</i> 16 , 649–663		Emissions from the 2002 Quebec wildfires were modelled with the Canadian Forest Fire Behaviour Prediction (FBP) System and the Canadian weather forecast model. In less than 1 month, ~150 fires contributed 5 and 51% of Canada's annual greenhouse gases and black carbon emissions, respectively.	
Comparing landscape-based decision rules for placement of fuel treatments in the boreal mixedwood of western Canada Marc-André Parisien, David R. Junor and Victor G. Kafka <i>International Journal of Wildland Fire</i> 16 , 664–672		This study presents a rule-based approach to prioritise locations of fuel treatments in the boreal mixedwood forest of western Canada. Burn probability mapping was used to assess the relative effectiveness of three placement rule-sets. Although each rule-set produced a reduction in burn probability, fuel treatment benefits were maximised by using the natural fire breaks already present in the landscape.	
A fuel treatment reduces fire severity and increases suppression efficiency in a mixed conifer forest Jason J. Moghaddas and Larry Craggs <i>International Journal of Wildland Fire</i> 16 , 673–678		Fuel treatments can be used to modify fire behaviour and reduce fire severity. In this paper, we examine the effects one fuel treatment had on fire behaviour and fire suppression effectiveness in a Sierran mixed conifer forest.	
Evaluation of a post-fire tree mortality model for western USA conifers Sharon M. Hood, Charles W. McHugh, Kevin C. Ryan, Elizabeth Reinhardt and Sheri L. Smith <i>International Journal of Wildland Fire</i> 16 , 679–689		Accurate prediction of post-fire tree mortality is critical for developing prescribed fire burn plans and salvage marking guidelines. We evaluated the performance of the mortality model now used in USA fire behaviour and effects models against independent data for 13 western USA conifers. The evaluation explains model accuracy by species and offers recommendations for improvements.	
Predicting sustained smouldering combustion in trembling aspen duff in Elk Island National Park, Canada S. G. Otway, E. W. Bork, K. R. Anderson and M. E. Alexander <i>International Journal of Wildland Fire</i> 16 , 690–701		Duff moisture conditions are presented under which ground or subsurface fire may persist in trembling aspen forests. The Duff Moisture Code and Drought Code components of the Canadian Forest Fire Weather Index System were calculated and probability of sustained smouldering combustion equations derived through experimental test fires conducted within the aspen forest fuel type of Elk Island National Park, Alberta, Canada.	
A computational method for optimising fuel treatment locations Mark A. Finney <i>International Journal of Wildland Fire</i> 16 , 702–711		Modelling and experiments suggest spatial fuel treatment patterns influence the movement of large fires. A computational method is described herein which identifies efficient fuel treatment patterns for a selected fire weather scenario. This is demonstrated for both simple and complex landscapes, a range of fire weathers, and varying treatments. Major fire travel routes (areas needing treatment) could be identified. This procedure is useful for inclusion in fire management because the performance of fuel treatments at both stand- and landscape-levels can be measured.	
Simulation of long-term landscape-level fuel treatment effects on large wildfires Mark A. Finney, Rob C. Seli, Charles W. McHugh, Alan A. Ager, Bernhard Bahro and James K. Agee <i>International Journal of Wildland Fire</i> 16 , 712–727		A simulation system explored how fuel treatments in topologically random and optimal spatial patterns affect the growth and behaviour of large fires when implemented at different rates over the course of five decades. Simulations were performed for three study areas. For different spatial treatment strategies, the rate of fuel treatment (percentage of land area treated per decade) competes against the rates of fuel recovery. Optimal fuel treatments require at least 1 to 2% of the landscape to be treated each year. Randomly arranged units with the same treatment prescriptions require about twice that rate to produce the same fire growth reduction.	

Small mammal communities in a pyrogenic habitat mosaic
Karl W. Larsen, Ian T. Adams and Diane L. Haughland
International Journal of Wildland Fire **16**, 728–740

We examined small mammals (mice, voles, etc.) in four habitats created by a 5-year-old wildfire. The number of species present and their abundance inside the fire's perimeter were higher than that just outside the perimeter. Within the fire's perimeter, there was little variation across the different habitat types.

Post-fire ephemerals and spinifex-fuelled fires:
a decision model for bilby habitat management
in the Tanami Desert, Australia
Richard Southgate and Susan Carthew
International Journal of Wildland Fire **16**, 741–754

Fire management could provide an opportunity to enhance habitat suitability for a threatened bandicoot in the Tanami Desert, central Australia. Seed from a post-fire ephemeral grass species forms a key food source of this marsupial. A decision tree is provided to allow managers to determine when there has been sufficient accumulation of vegetative fuel to carry a fire and estimate the expected production of the ephemeral grass in response to rainfall and time-since-fire.

Factors in United States Forest Service district rangers'
decision to manage a fire for resource benefit
Martha A. Williamson
International Journal of Wildland Fire **16**, 755–762

Wildland Fire Use (WFU), a tool of current US fire management policy, allows lightning ignitions to burn under certain conditions. The decision to use WFU rests with line officers, who ultimately accept responsibility for the fire's risks and benefits. The present study investigated the influences on the decision to use WFU by US Forest Service district rangers.

Zigzag shape of the fire front
Domingos Xavier Viegas
International Journal of Wildland Fire **16**, 763–764

The shape of a fire line can be non regular, like a zigzag, due to local convective effects in flank and back spreading fires.