

# International Journal of Wildland Fire

Scientific Journal of the International Association of Wildland Fire

Contents	Volume 19	Issue 7	2010
<p><i>In Memoriam:</i> Andrea Lavender Koonce, 31 December 1951–24 July 2010 <b>Susan G. Conard</b> <i>International Journal of Wildland Fire</i> <b>19</b>, i</p>			
<p>The economic cost of adverse health effects from wildfire-smoke exposure: a review <b>Ikuho Kochi, Geoffrey H. Donovan, Patricia A. Champ and John B. Loomis</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 803–817</p>	<p>In an effort to better understand the nature of economic costs of adverse health effects associated with exposure to wildfire smoke, we critically review and synthesise the relevant literature in economic studies and epidemiology studies.</p>		
<p>Firebrands and spotting ignition in large-scale fires <b>Eunmo Koo, Patrick J. Pagni, David R. Weise and John P. Woycheese</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 818–843</p>	<p>This paper comprehensively reviews literature from 1871 to 2008 on firebrands and their role in the spread of historical large-scale fires by spotting, ignition of fuel downwind of the fire front by these firebrands. Literature about theoretical and experimental firebrand research is reviewed and recommendations for future research are presented.</p>		
<p>The validity and utility of MODIS data for simple estimation of area burned and aerosols emitted by wildfire events <b>Sarah B. Henderson, Charles Ichoku, Benjamin J. Burkholder, Michael Brauer and Peter L. Jackson</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 844–852</p>	<p>Readily-available remote sensing data are used to quickly and reasonably estimate particulate matter emissions from fires in and around British Columbia, Canada. With further refinement, these methods can provide a globally applicable approach to near-real-time emissions estimation for applications like public health risk assessment and smoke forecasting.</p>		
<p>Using fuzzy C-means and local autocorrelation to cluster satellite-inferred burn severity classes <b>Zachary A. Holden and Jeffrey S. Evans</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 853–860</p>	<p>Local spatial statistics and a clustering algorithm are used to classify satellite-derived burn severity data for three wildfires. Comparison with field data suggests that this approach may be useful for classifying burn severity data where post-fire field data are unavailable.</p>		
<p>Southern African fire regimes as revealed by remote sensing <b>S. Archibald, R. J. Scholes, D. P. Roy, G. Roberts and L. Boschetti</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 861–878</p>	<p>This paper provides baseline information for managers and scientists hoping to understand fire in southern Africa. It also highlights instances where findings from this region both conform to and challenge current global theories on fire.</p>		
<p>A climatologically based long-range fire growth model <b>Kerry Anderson</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 879–894</p>	<p>A long-range fire growth model was developed to predict the potential size or probable extent of a wildfire if it was allowed to grow unimpeded for the course of the fire season. The model combines the probabilities of fire spread and of survival to produce a probable fire extent map.</p>		
<p>Thermodynamic structure of a grass fire plume <b>Craig B. Clements</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 895–902</p>	<p>This paper describes high-frequency thermocouple measurements that were made during an experimental grass fire conducted under overcast and windy conditions. Maximum plume temperatures occurred directly above the fire front leading to plume heating of 26–45 kW m<sup>-2</sup>, which was followed by rapid cooling as the plume advected downwind.</p>		
<p>Future climate affects management strategies for maintaining forest restoration treatments <b>Corinne Diggins, Peter Z. Fulé, Jason P. Kaye and W. Wallace Covington</b> <i>International Journal of Wildland Fire</i> <b>19</b>, 903–913</p>	<p>Simulation modelling shows that climate change affects management regimes of ponderosa pine thinning and burning. Under simulated severe climate, fuel production is slowed owing to growth reduction and higher mortality. Fire use should be reduced, as compared to historical fire frequencies.</p>		

Meteorological conditions and wildfire-related house loss in Australia

**Raphaela Blanche, Chris Lucas, Justin Leonard and Klara Finkle**

*International Journal of Wildland Fire* **19**, 914–926

Wildland fires occur under a wide range of weather conditions; however, homes and communities are most threatened when fires occur during very severe weather conditions. Past Australian wildland fire disasters have been reviewed to qualify the nature of this relationship having implications for various regulatory instruments and community risk perception.

‘SINAMI’: a tool for the economic evaluation of forest fire management programs in Mediterranean ecosystems

**Francisco Rodríguez y Silva and Armando González-Cabán**

*International Journal of Wildland Fire* **19**, 927–936

The fire economics evaluation system described here (SINAMI) is the first attempt by Spain’s National Forest System to help agencies with fire responsibilities to perform an economic analysis of their budget requests for fire management and protection. The model determines the most efficient program and budget level for fire protection for a simulated fire season.

Optimal management of *Pinus pinaster* in Galicia (Spain) under risk of fire

**María Pasalodos-Tato, Timo Pukkala and Alberto Rojo Alboreca**

*International Journal of Wildland Fire* **19**, 937–948

The article integrates fire risk in the optimisation of the management of *Pinus pinaster* stands in Galicia (north-western Spain). Fire was assumed to have an exogenous (probability of fire) and an endogenous (salvage proportion) component. With increasing fire risk, optimal rotation becomes shorter and thinning treatments are to be conducted earlier and more intensive.

The effect of fire on birds of mulga woodland in arid central Australia

**Adam J. Leavesley, Geoffrey J. Cary, Glenn P. Edwards and A. Malcolm Gill**

*International Journal of Wildland Fire* **19**, 949–960

We investigated the effect of fires on the distribution of birds in mulga woodland in arid central Australia. Fire strongly influenced the vegetation in mulga woodland and also the composition of the bird communities. We therefore conclude that despite the strong effect of recent rain, fire also affects the distribution of birds in arid Australia.

Development of calibration algorithms for selected water content reflectometry probes for burned and non-burned organic soils of Alaska

**Laura L. Bourgeau-Chavez, Gordon C. Garwood, Kevin Riordan, Benjamin W. Koziol and James Slawski**

*International Journal of Wildland Fire* **19**, 961–975

Empirical calibration of three commonly used soil-moisture probes to organic soils of burned and unburned Alaska ecosystems were developed. Results included general organic algorithms as well as soil-specific algorithms for each probe tested. Statistical comparisons between soil-specific calibrations will aid researchers in utilising these algorithms for broader use.

Spectral analysis of charcoal on soils: implications for wildland fire severity mapping methods

**Alistair M. S. Smith, Jan U. H. Eitel and Andrew T. Hudak**

*International Journal of Wildland Fire* **19**, 976–983

This Research Note evaluates how the presence of charcoal on different soils affects the performance of different spectral mapping methods. We demonstrate that the widely applied NBR spectral index is highly soil-dependent, whereas the NDVI and OSAVI spectral indices are perhaps more appropriate for large-scale monitoring of wildland fire ecological impacts.

Post-fire regeneration strategies and flammability traits of California chaparral shrubs

**Peter D. Cowan and David D. Ackerly**

*International Journal of Wildland Fire* **19**, 984–989

California chaparral shrubs differ in the proportion of fine and dead canopy fuels. In the four species measured dead fuel proportion correlated with post-fire seeding capacity whereas fine fuel proportion did not. These differences may result from evolutionary, demographic, or physiological processes.



Georgia fires in summer.  
Photo: Georgia Forestry Commission