

# *International Journal of Wildland Fire*

Scientific Journal of the International Association of Wildland Fire

Contents	Volume 17	Issue 5	2008
<p>The effect of ash on runoff and erosion after a severe forest wildfire, Montana, USA  <b>Scott W. Woods and Victoria N. Balfour</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 535–548</p>			<p>A comparison of runoff and erosion rates in plots with and without a ~2-cm ash layer in a severely burned area indicated that, in the first month after the fire, the ash layer increased the total infiltration by ~2 cm and reduced the surface erosion rate by 74%. Thus, ash may delay and reduce the initial hydrogeomorphic response to rainfall in burned areas.</p>
<p>Analysis of the evolution of soil erosion classes using multitemporal Landsat imagery  <b>J. Marquinez, E. Wozniak, S. Fernández and R. Martínez</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 549–558</p>			<p>This work designed a method for studying the evolution of soil erosion by using multitemporal analysis of satellite images in areas under humid climate conditions that experience frequent forest fires. The method uses indicators, recognisable in the images, for the spatial and temporal analysis of the soil erosion status in burnt areas.</p>
<p>Effectiveness of aerial seeding and straw mulch for reducing post-wildfire erosion, north-western Montana, USA  <b>Amy H. Groen and Scott W. Woods</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 559–571</p>			<p>Simulated rainfall was used to determine the effectiveness of grass seeding and straw mulching for reducing erosion following a severe wildfire. In the first year, seeding was ineffective in reducing erosion whereas mulch application caused an 87% reduction in erosion. In the second year, neither treatment had any effect.</p>
<p>Soil temperatures during autumn prescribed burning: implications for the germination of fire responsive species?  <b>T. D. Penman and A. L. Towerton</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 572–578</p>			<p>Soil temperatures in prescribed burns in dry sclerophyll forests were found to generally be low, although higher temperatures were reached at sites with large woody debris. Prescribed fires, carried out according to standard practices, in these forests will not trigger germination in the majority of the soil stored seed banks.</p>
<p>Recurrent wildfires constrain long-term reproduction ability in <i>Pinus halepensis</i> Mill.  <b>Josep Maria Espelta, Iraima Verkaik, Màrcia Eugenio and Francisco Lloret</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 579–585</p>			<p>Increasing fire recurrence is a major problem threatening Mediterranean forest ecosystems. The present study provides evidence that recurrent wildfires may decrease density and height in regenerated stands of the obligate post-fire seeding pine (<i>Pinus halepensis</i>) and delay the reproductive age, the number of reproductive pines and cone crop size per pine.</p>
<p>Effects of fire frequency and mowing on a temperate, derived grassland soil in south-eastern Australia  <b>Suzanne M. Prober, Ian D. Lunt and Kevin R. Thiele</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 586–594</p>			<p>In a replicated, 10-year study, we found few detectable effects of fire frequency or mowing on total soil nutrient stores in an Australian temperate grassland. Changes were evident to soil biological activity and surface condition, but only in the most extreme case (2-yearly burning and drought conditions) was this associated with significant decline in the grassy sward and hence potential ongoing effects.</p>
<p>Physically motivated empirical models for the spread and intensity of grass fires  <b>Steven I. Higgins, William J. Bond, Winston S. W. Trollope and Richard J. Williams</b>  <i>International Journal of Wildland Fire</i> <b>17</b>, 595–601</p>			<p>We develop a new approach for forecasting the spread and intensity of fires in grasslands. The modelling approach side-steps the difficulties of estimating the complex parameters that describe fire behaviour by estimating them indirectly from observations of fire behaviour. The models have the advantage that their parameterisation is transparent and they perform as well as purely statistical models.</p>

---

Predicting spatial patterns of fire on a southern California landscape

**Alexandra D. Syphard, Volker C. Radeloff, Nicholas S. Keuler, Robert S. Taylor, Todd J. Hawbaker, Susan I. Stewart and Murray K. Clayton**

*International Journal of Wildland Fire* **17**, 602–613

We developed statistical models and predictive maps of fire ignitions and fire frequency in southern California. Ignitions occurred close to roads and development, but fire frequency was more closely related to biophysical variables. Overlaying predictive maps of fire ignitions and frequency can identify where fire potential is highest on the landscape.

---

Efficient simulation of wildfire spread on an irregular grid

**Paul Johnston, Joel Kelso and George J. Milne**

*International Journal of Wildland Fire* **17**, 614–627

Using an irregular grid minimises the distortion of fire shapes usually found in cell-based simulators, enabling the use of high-performance discrete event simulation methods. The resulting simulator can be used as an engine for fire simulation applications that require large numbers of simulations with modest computing resources.

---

Laboratory determination of factors influencing successful point ignition in the litter layer of shrubland vegetation

**Matt P. Plucinski and Wendy R. Anderson**

*International Journal of Wildland Fire* **17**, 628–637

Factors affecting ignition thresholds of the litter layer of shrubland vegetation were investigated using reconstructed litter beds in a laboratory. The factors investigated were litter type (primarily species), pilot ignition source, and presence of wind, with ignition success modelled as a function of fuel moisture content. All factors were found to influence litter ignition thresholds.

---

Quantifying parametric uncertainty in the Rothermel model

**Edwin Jimenez, M. Yousuff Hussaini and Scott Goodrick**

*International Journal of Wildland Fire* **17**, 638–649

This work quantifies parametric uncertainty in the Rothermel wildland fire model, which relates environmental variables (fuel type, wind speed, etc.) to the fire environment (spread rate and direction, fireline intensity, etc.). The proposed sampling method provides an efficient method to quantify the impact of environmental uncertainties on the fire-environment parameters.

---

Factors influencing large wildland fire suppression expenditures

**Jingjing Liang, Dave E. Calkin, Krista M. Gebert, Tyron J. Venn and Robin P. Silverstein**

*International Journal of Wildland Fire* **17**, 650–659

The present paper studied non-managerial factors and their effects on excessive wildfire suppression expenditures in the United States. Only fire size and area of private land within burned area were found to have strong effects. The results suggested that efforts to contain federal fire suppression expenditures need to focus on wildfires on private land.

---

Manager-based valuations of alternative fire management regimes on Cape York Peninsula, Australia

**Adam G. Drucker, Stephen T. Garnett, Marty K. Luckert, Gabriel M. Crowley and Niilo Gobius**

*International Journal of Wildland Fire* **17**, 660–673

A decision-support tool for pastoralists to assess costs and benefits of alternative fire management strategies is developed. In the absence of active fire management, large areas of many properties would be lost to wildfire in most years. Early dry season preventive burning reduces wildfire extent and increases gross margins.

---

The relationship between the monsoonal summer rain and dry-season fire activity of northern Australia

**S. Harris, N. Tapper, D. Packham, B. Orlove and N. Nicholls**

*International Journal of Wildland Fire* **17**, 674–684

The present paper investigates the relationship between dry-season fire activity and the monsoonal summer rainfall of northern Australia. This paper reveals that antecedent averages of rainfall and the associated Southern Oscillation Index and sea surface temperatures are strongly associated with the following dry-season burnt area.

---