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Making choices: prioritising the protection of biodiversity in wildfires

John C. Z. Woinarski, Phillipa C. McCormack, Jan McDonald, Sarah Legge, Stephen T. Garnett, Brendan Wintle and Libby Rumpff

International Journal of Wildland Fire 32, 1031–1038

Wildfires can kill people, destroy infrastructure and impose significant impacts on biodiversity – including, in extreme cases, extinction. Decision makers must make fateful choices during emergencies about what to try to protect. Conventionally, biodiversity assets are rated relatively low in such decision-making. We argue that this should not be the case.

Drivers of California's changing wildfires: a state-of-the knowledge synthesis

Glen MacDonald, Tamara Wall, Carolyn A. F. Enquist, Sarah R. LeRoy, John B. Bradford, David D. Breshears, Timothy Brown, Daniel Cayan, Chunyu Dong, Donald A. Falk, Erica Fleishman, Alexander Gershunov, Molly Hunter, Rachel A. Loehman, Phillip J. van Mantgem, Beth Rose Middleton, Hugh D. Safford, Mark W. Schwartz and Valerie Trouet

International Journal of Wildland Fire 32, 1039–1058

To aid in the preparation for increasing wildfire risks, the objective of this manuscript is to synthesise and assess the current state of knowledge and inform the broader community of researchers, managers, and the public about the multifaceted and geographically variable nature of the ongoing wildfire challenges in California.

Loss of soil carbon in a world heritage peatland following a bushfire

Rani Carroll, Ian A. Wright and Jason K. Reynolds

International Journal of Wildland Fire 32, 1059–1070

Peatlands in Australia are vulnerable to climate-driven degradation. One peatland experienced a loss of 3.46 t of carbon in the 3 months following fire and rain events. Fire and erosion potentially increase peatland nutrient exports. Ground studies are required to develop and verify landscape-scale carbon budgets.

Post-wildfire contamination of soils and sediments by polycyclic aromatic hydrocarbons in north-central British Columbia, Canada

K. A. Kieta, P. N. Owens and E. L. Petticrew

International Journal of Wildland Fire 32, 1071–1088

The widespread impacts on terrestrial and aquatic environments after wildfires is an important and understudied area of research. Following a large wildfire in British Columbia, this study found elevated concentrations of polycyclic aromatic hydrocarbons, potentially toxic compounds, in burned soils and sediments in an ecologically important and sensitive river system.

Fire and habitat variables explain reptile community abundance and richness in subtropical open eucalypt forests

Diana A. Partridge (née Virkki), Tom Lewis, Cuong T. Tran and J. Guy Castley

International Journal of Wildland Fire 32, 1089–1108

Reptile communities exposed to unique fire regimes were assessed to determine their responses to time since fire, frequency, fire type and habitat structure. Fire parameters were significant predictors of reptile abundance, with higher frequencies negatively affecting overall abundance. Reptile richness and specific species favoured top disposal burn sites.

Effects of a large wildfire on the community composition of medium and large mammals in a neotropical savannah

Bruna A. Nunes, André Cunha and Emerson M. Vieira

International Journal of Wildland Fire 32, 1109–1118

We assessed the effects of a large unplanned wildfire on medium and large mammals in a neotropical savannah (Cerrado), with pre-fire sampling in burned and unburned areas, recording 25 species in burned areas and 19 in unburned areas, with clear changes in the community up to 3 years after burning.

Shoot flammability patterns among plant species of the wildland–urban interface in the fire-prone Greater Blue Mountains World Heritage Area

Brad R. Murray, Thomas Hawthorne, Timothy J. Curran, Daniel W. Krix, Molly I. Wallace, Kieran Young, Megan L. Murray, Elisabeth Morley, Nicola Huber-Smith and Jonathan K. Webb

International Journal of Wildland Fire 32, 1119–1134

Urban exotic plants were less flammable than wildland and urban native plants at the wildland–urban interface of the Greater Blue Mountains World Heritage Area, eastern Australia. Shoot traits including fuel moisture, bulk density and volume were significant drivers of variation in shoot flammability.

Effect of flame zone depth on the correlation of flame length with fireline intensity

Mark A. Finney and Torben P. Grumstrup

International Journal of Wildland Fire **32**, 1135–1147

Correlations of flame length with fireline intensity have suggested that the depth of the flaming zone could be neglected. New laboratory experiments are reported showing flame zone depth substantially reduces measured flame length. This occurs because entrainment and combustion are greater within deep flame zones compared to the original theory.

Regional estimation of dead fuel moisture content in southwest China based on a practical process-based model

Chunquan Fan, Binbin He, Jianpeng Yin and Rui Chen

International Journal of Wildland Fire **32**, 1148–1161

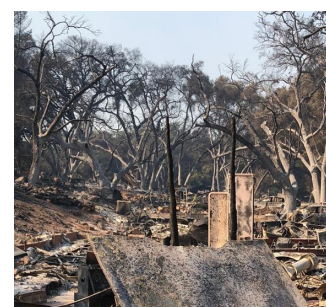
Process-based models for estimating dead fuel moisture content can involve extensive computational time to process long time-series data with multiple iterations. In this study, we provided a more time efficient method to run a previously established process-based model and applied it to *Pinus yunnanensis* forests in southwest China.

A comparison of smoke modelling tools used to mitigate air quality impacts from prescribed burning

Megan M. Johnson and Fernando Garcia-Menendez

International Journal of Wildland Fire **32**, 1162–1173

We compared three smoke modelling tools commonly used to plan prescribed burning projects (the Simple Smoke Screening Tool, VSmoke and HYSPLIT) by modelling smoke dispersion from a year of operational burns. The differences among the tools are significant and inconsistent. Tool improvements and clear guidelines for applying predictions are needed.



Woolsey Fire destruction in WUI zone of Westlake Village California, Nov 2018 (see MacDonald *et al.* pp. 1039–1058). Photo by Glen MacDonald.