



Improving management of UK wildfire
through knowledge exchange



Knowledge for Wildfire, 2nd wildfire@manchester event
13 June, 2 – 5:30 pm

Hanson Room, Humanities Bridgeford Street building,
University of Manchester ([campus map 35](#))

Understanding fire intensity and severity: Implications for managing wildfire and prescribed fire

Keynote: Prof. John Dold (University of Manchester)

Discussants: Andy Elliott (Dorset FRS); George Winn-Darley (Moorland Association)

The concepts of fire severity and fireline intensity are widely used, but how well do we really understand them?

Fireline intensity ought to be the more straightforward concept to pin down because it's based on the energetics of combustion and measured in megawatts per metre (power per length of fire front). But this proves harder than it sounds for anything other than the simplest form of wildfire propagation. In a non-technical way, the keynote talk will begin with the basics of what is meant by fireline intensity. We'll then pose challenging questions and suggest tentative answers about its meaning when fire fronts are not simple lines, as is usually the case.

This is not just an academic debate about definitions; it also has practical implications for management, whether for wildfire prevention, suppression or controlled burning. For example, the way in which a fire is ignited will be a major factor determining the effective intensity achieved. In the keynote talk, examples from very carefully controlled experimental trials in South Africa will show that remarkable "intensities" can be achieved even under mild weather conditions (effectively a low 'fire severity index'). These ongoing trials, ultimately aimed at adjusting the manner of controlled burning to achieve desired vegetation control objectives, will be described. Discussion will be encouraged about their challenges and wider implications.

What of '**severity**'? This concept would appear to be more qualitative and contested than fireline intensity, meaning different things to different people. To some, severity reflects the degree of difficulty in suppression. To others, 'burn severity' relates to the degree of expected, anticipated or actual immediate effects of the fire on vegetation and soil.

The Met Office Fire Severity Index (a number between 1 and 5) relates most directly to a measure of the initial spread rate expected in a standard form of vegetation cover, essentially sub-canopy growth and duff in Canadian forests where the index was first developed. This initial spread rate implies an expected initial fireline intensity, making it clear that intensity should have some relationship to severity, at least in this meaning of the word.

But what is this relationship and **how should we link intensity and severity?** The keynote will use concepts from combustion to suggest what might be expected of such a relationship, although it must be noted that observations may run counter to intuition. For instance, can a low intensity backing fire be more "severe" than an intense head fire? The session aims to foster a lively discussion of such issues.

The event will be dedicated to the memory of Sean Prendergast, whose enormous appetite for tackling complex issues with humour and insight will be sorely missed by the UK wildfire community.

Format

Keynote, followed by invited responses from at least two discussants representing different practitioner perspectives. The discussion will then be thrown open to all. After the seminar, there will be an opportunity for networking over a glass or wine or soft drink (followed by optional socialising in the pub!).

Who should attend?

Anyone with an interest in managing or studying vegetation fire, whether wildfire or prescribed burning. We especially encourage practitioners and policy-makers to attend – fire-fighters, land managers, rangers and nature conservation sector, amongst others.

To attend

Places are limited for this free event, which is sponsored by NERC. To reserve a place, download the booking form from www.kfwf.org.uk. Email completed forms to Debra.whitehead@manchester.ac.uk as soon as possible and not later than **7 June**.

Provisional programme

- 2:00 Registration desk opens. Tea/coffee available.
- 2:30 Keynote; John Dold (Emeritus Professor, University of Manchester).
- 3:15 Responses from invited discussants:
Andy Elliott (Dorset Fire and Rescue Service)
George Winn-Darley (Moorland Association)
- 3:35 Discussion
- 4:00 Networking in foyer of Humanities Bridgeford Street building (next to Hanson Room). Soft drink or wine provided.
- 5:30 Close

Updates will be posted on www.kfwf.org.uk and via Twitter [@kfwf_manchester](https://twitter.com/kfwf_manchester)