FROM HECTARES TO TAILOR-MADE SOLUTIONS FOR PRESCRIBED BURNING

bushfire&natural HAZARDS CRC

Ross Bradstock[1], Matthias Boer[2], Trent Penman[3], Owen Price[1], Brett Cirulis[3], Hamish Clarke[1,2]

[1] Centre for Environmental Risk Management of Bushfires, University of Wollongong, NSW [2] Hawkesbury Institute for the Environment, Western Sydney University, NSW [3] School of Ecosystem and Forest Sciences, University of Melbourne, VIC

THIS PROJECT WILL DELIVER A PRESCRIBED BURNING ATLAS TO GUIDE IMPLEMENTATION OF 'TAILOR-MADE' PRESCRIBED BURNING STRATEGIES TO SUIT THE BIOPHYSICAL, CLIMATIC AND HUMAN CONTEXT OF ALL BIOREGIONS ACROSS SOUTHERN AUSTRALIA. THE ATLAS WILL DEFINE THE QUANTITATIVE TRAJECTORY OF RISK REDUCTION FOR MULTIPLE VALUES IN RESPONSE TO DIFFERING PRESCRIBED BURNING STRATEGIES

Fifteen Bioregions have been selected as the locations for detailed landscape-scale simulation case studies, using the IBRA (Interim Biogeographic Regionalisation for Australia) Version 7 classification.
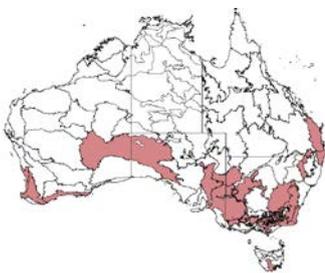

Figure 1. Case study bioregions

▶ South East Queensland, Victoria Midlands, South East Corner, South East Highlands and Tasmanian Southern Ranges Bioregions selected. These form a gradient of mainly forested landscapes along the east coast, ranges and slopes, encompassing wide variations in population and land uses.

▶ Murray Darling Depression, Flinders Lofty Block, Jarrah Forest/Swan Coastal Plain, Esperance Bioregions. These form a mixed gradient of dry vegetation from western Victoria to south western WA, including possible case studies in the vicinity of Adelaide and Perth.

▶ Murray Darling Depression, Nandewar, NSW South Western Slopes. Potentially, several case studies in these Bioregions will represent the spectrum of mixed agriculture and remnant vegetation that typifies these moderately populated inland regions in Victoria and NSW.

▶ Great Victoria Desert, Broken Hill Complex. Case studies situated in SA and NSW will explore effects in these sparsely populated rangelands and conservation reserves.

CASE STUDY SIMULATIONS

Case study simulations are in progress for the first round of peri-urban case study areas (Adelaide Hills, Sydney Basin, East Central Victoria, Hobart and ACT).

Fire simulations will test the effect of various combinations of weather, wildfire history and prescribed burning levels over period of 20 years.

Figure 2. Potential ignition and prescribed burn treatment locations for the Hobart simulation areas

EMPIRICAL ANALYSES

Complementing the simulation work will be a series of empirical analyses of the impacts of prescribed burning on burned area, fire frequency and fire severity across the study area.

▶ Empirical analyses of effects of prescribed burning on area burned across south eastern Australia have been completed and recently published.

▶ We are finalising the experimental design for empirical analyses of fire severity in relation to prescribed burning effects.

▶ While our data covers much of southern Australia, we will initially focus on matching the empirical analyses to the case study simulation areas. This maximise the potential for use in validation of simulation output.

FIRE SEVERITY

Owen Price and colleagues recently investigated the main drivers of crown fire for 23 bushfires from NSW dry forests. Their findings suggest that the influence of weather, fuel levels, and slope on crown fire likelihood are not adequately incorporated into current fire behaviour models and fuel management strategies.
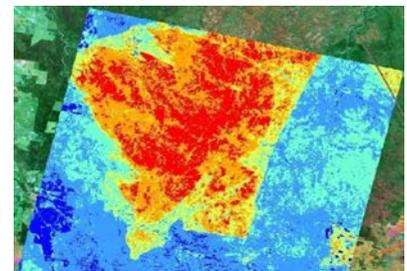

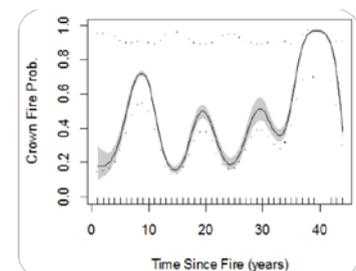**Figure 3. Fire severity map, Pilliga**

Figure 4. Crown fire occurrence as a function of time since fire. Grey area shows 95% confidence interval. Dots show actual values.

Storey M, Price O, Tasker E. The role of weather, past fire and topography in crown fire occurrence in eastern Australia. International Journal of Wildland Fire (accepted)

CONTACT US

To find out more, contact Professor Ross Bradstock at **rossb@uow.edu.au**.