

Fire, Fuel and Grazing in the Australian High Country

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A characteristic feature of mainland Australia's high country is the co-dominance of three distinctive vegetation types; grasslands, shrublands, and snowgum woodlands. The co-occurrence of these markedly different vegetation types has long held the fascination of both scientists and the general public alike. These ecosystems commonly occur on elevated high plains, usually above 1300m elevation, and can be found from Victoria in the south through to New South Wales in the north. This 'snow-belt' country, as it is often called, was extensively grazed in the past by both sheep and cattle, and is currently managed for a diverse range of values, including water and biodiversity conservation, recreation, and cattle grazing.

The spatial arrangement and relative abundance of these three major vegetation types plays a key role in determining landscape structure (=what it looks like), and function (=how it 'works'). Key landscape functions include providing a reliable water supply, maintaining plant production and plant cover, and providing a spatially and temporally diverse mixture of biodiversity habitat. The relative distribution of tree, grass and shrub vegetation is also a key determinant of the landscape fuel load, and hence wildfire hazard.

Recent major bushfires in 2003 and 2006/07 have focussed attention on the management of Australia's montane and alpine ecosystems. For example 'The National Inquiry into the 2003 Bushfires' received over 500 submissions, many addressing aspects of land management policy and implementation in the high country, and in March 2007 the Victorian government established the enquiry 'Impact of Public Land Management Practices on Bushfires in Victoria', with terms of reference addressing the impact of public land management practices on the frequency, scale, and intensity of bushfires in Victoria, including alpine areas. Two of the most controversial aspects of the management of Australia's high country are the role of grazing in reducing fuel loads, and the effectiveness of prescribed burning in reducing fire risk.

Although much research has been conducted into the ecology of Australian alpine ecosystems, particularly with respect to the effects of grazing and fire on hydrology, vegetation cover, and species diversity, studies simultaneously addressing the combined impacts of grazing and burning on fuel accumulation have been lacking. This is surprising, given that grazing, in conjunction with prescribed fire, was previously used to manage large areas of the Australian high country. Within the High Country Fuels & Ecosystem Functions (HFCEF) sub-project of Highfire we are addressing this knowledge gap through targeted long-term investigations into the impacts of both cattle grazing and prescribed burning on vegetation structure, species composition and fuel accumulation in snowgum woodlands and grasslands in New South Wales and Victoria. Our study sites are located within the Snowy Plains, New South Wales, and within the Dargo High Plains, Victoria.

In this talk a brief review of previous grazing and fire research in Australian high plains ecosystems will be given, followed by a description of the HFCEF grazing and fire experiment, and will conclude with some preliminary results collected during the experiments' first season.