



Senate select committee on the recent Australian Bushfires: CSIRO's submission

- CSIRO has highly developed capability in fire behaviour and management, building safety, fire ecology, and fire mapping, which it applies in close collaboration with land management and fire suppression agencies. CSIRO has a Bushfire Task Force to coordinate activity within the organisation. It is a core participant and Board member of the recently announced Bushfire CRC. It is also a representative on Minister McGauren's Bushfire Research Advisory Group
- CSIRO and its partners are working to improve public knowledge for informed debate on all aspects of fire management, recognising that science is but one factor contributing to that debate. A role for science is to provide information support for decisions taken by land managers.
- CSIRO and its partners are also working towards raising public understanding of bushfire impact on urban and peri-urban areas as well as providing understanding of fire behaviour and effective risk management strategies.
- The recent fires in SE Australia provide an opportunity to study the impact of large fires on a range of ecosystems and improve future planning.
- Given additional resources, in collaboration with other agencies CSIRO can capitalise on these opportunities to provide a more detailed analysis of the recent fires. It is providing background information to three other bushfire enquiries.

General comments relating to fire in the Australian landscape

- Fire is an important ecological process in Australia. Fire regimes can encompass varying intensity, frequency, season of fire, spatial extent and patchiness over time.
- Fire is an important land management tool. It is used to contribute to the achievement of various social, economic and environmental goals. Trade-offs between these goals are sometimes necessary.
- Prescribed burning is the planned application of fire to a specific area to meet particular objectives. It is an integral part of fire management along with acceptance, prevention and suppression.
- Fire can be prescribed for: habitat management, asset protection, water quality, maintenance of cultural and heritage value, threats to human life, carbon and greenhouse accounting, woody thickening (weed invasion of grassland + general thickening of the bush), fire fighting (suppression), fuel management,
- Fire management requires an adaptive approach, due to uncertainties associated with both species responses to fire and socio-economic constraints on implementation.

Comments related to the Terms of Reference

(a) the extent and impact of the bushfires on the environment, private and public assets and local communities;

CSIRO has no specific comments on this point.

(b) the causes of and risk factors contributing to the impact and severity of the bushfires, including land management practices and policies in national parks, state forests, other Crown land and private property;

The severity of the recent fires was related to a combination of factors including the generally high fuel loads, the prolonged drought, and the weather conditions experienced during and after the fire ignition events. CSIRO has no data to definitively attribute cause, or link effect, to the various individual factors. CSIRO will be constructing a fire chronology from the available evidence for the ACT Coroner.

CSIRO carried out surveys of the Canberra suburbs affected by the recent fires to look at the effect of house construction and garden components and layout on house survivability. These data have not been fully analysed but it is clear that certain combinations increased the likelihood of house loss.

(c) the adequacy and economic and environmental impact of hazard reduction and other strategies for bushfire prevention, suppression and control;

CSIRO research shows that hazard reduction burning will reduce the intensity, rate of spread, flame heights and depths of subsequent fires and makes fire suppression easier under a range of weather conditions. However, the persistence of these effects depends on the type of vegetation and rate of regrowth of the vegetation.

Frequent hazard reduction burning has an impact on vegetation structure and habitat as well as affecting populations of plant and animal species. The relationship between biodiversity and fuel reduction is complex both in terms of direct impacts and also the indirect interactions with long term fuel management.

(d) appropriate land management policies and practices to mitigate the damage caused by bushfires to the environment, property, community facilities and infrastructure and the potential environmental impact of such policies and practices;

It is possible to develop management prescriptions to address bushfire frequency and severity but these are variable for different vegetation types and have varying levels of compromise between environmental, social and economic outcomes.

(e) any alternative or developmental bushfire mitigation and prevention approaches, and the appropriate direction of research into bushfire mitigation;

A Cooperative Research Centre has been initiated to combine bushfire research from across a range of agencies to address issues defined by fire and land management agencies.

(f) the appropriateness of existing planning and building codes, particularly with respect to urban design and land use planning, in protecting life and property from bushfires;

The Australian standard AS3959 'Building in bushfire prone areas' has been in use for some time now and will soon be considered for inclusion in the Building Code of Australia. It has also recently undergone a major revision and public comment phase, which took into consideration aspects of the Canberra Bushfire Event. CSIRO provides scientific input to this standards committee and will continue to do so with the support of research programs defined in the Bushfire CRC.

If the residential areas of Canberra impacted on by the Bushfires had construction details prescribed by this standard far fewer houses would have been lost. The standard is most effectively implemented when combined with effective community education programs.

(g) the adequacy of current response arrangements for firefighting;

There is a need to evaluate the effectiveness of various suppression techniques and equipment. Some work in this area is planned through the Bushfire CRC. Home-owner response also a critical factor.

(h) the adequacy of deployment of firefighting resources, including an examination of the efficiency and effectiveness of resource sharing between agencies and jurisdictions;

This lies outside CSIRO's expertise

(i) liability, insurance coverage and related matters; and

This lies outside CSIRO's expertise

(j) the roles and contributions of volunteers, including current management practices and future trends, taking into account changing social and economic factors.

This lies outside CSIRO's expertise