

Consequences of bushfire arson: part 2 – environmental considerations

The relationship between fire and biota in Australian ecosystems is complex. Fire plays an integral role in the rejuvenation and hence survival of many species; variably acting to clear land, and promote germination, palatable new growth, more widespread foraging by herbivorous fauna, and potentially more efficient hunting by carnivorous species. Fire acts as a mediator in what are continually evolving ecosystems, being both a destroyer and bringer of new life. Ecosystems evolve to be in balance with the inherent fire regime – the severity, intensity, frequency and timing of fires determines the balance of species present. Introducing a new and significantly different fire regime significantly alters the balance between species, and potentially results in a loss of species (Cremer 2004).

While the issue of optimal fire frequency is the subject of much debate, most ecosystems outside of the northern tropical savannas and deserts have evolved in environments that experience fires once every 4–5 to 50–100 years depending on fire severity and the ecosystem involved (Cremer 2004; Jurskis, Bridges & de Mar 2003). Few ecosystems in these regions are equipped to deal with repeated burning both within and over successive seasons. Although human-caused bushfires tend to be smaller than natural ones, the frequency, random and unplanned nature of deliberate firesetting has the potential to cause significant environmental damage in remnant vegetation that occurs within or near major urban centres. The vast majority of the 25,000–40,000 vegetation fires attended by fire authorities annually occur within a geographically restricted area in and near major metropolitan and regional urban centres – at least 30–50 percent of these result from deliberate firesetting (Bryant & Willis 2006). Firesetting often occurs midway in the reproductive cycle, negatively impacting on recovery of the ecosystem. Continued disruption during subsequent seasons, even in non-fire-sensitive ecosystems diminishes the capacity of species to recover, potentially resulting in a loss of biodiversity and invasion by weeds. Whilst fauna may physically escape the effects of the fire, they are strongly affected by the loss of food-resources and habitats and subsequent loss of faunal diversity may also result.

References and further reading

URLs correct at 13 June 2006

Bryant CJ & Willis M 2006. Human caused: reducing the impact of deliberately lit bushfires. *Life in a fire-prone environment: translating science into practice. Proceedings of the 10th Biennial Australasian Bushfire Conference 2006*. Brisbane, 6–9 June 2006. Brisbane: Griffith University

Cremer KW 2004. Biodiversity protection: effects of fire regime on vegetation in Australia. *Biodiversity* 5: 13–24

Jurskis V, Bridges B & de Mar P 2003. Fire management in Australia: the lessons of 200 years. Papers from the Australia and New Zealand Institute of Forestry Conference 2003. Queenstown, New Zealand, 27 April – 1 May 2003. <http://www.fore.canterbury.ac.nz/nzif/conf2003/papers.htm>

Malcolm Gill AM, Woinarski JCZ & York A 1999. Australia's biodiversity: responses to fire: plants, birds and invertebrates. *Biodiversity technical paper* no. 1. Canberra: Department of the Environment and Heritage <http://www.deh.gov.au/biodiversity/publications/technical/fire/fireandbirds.html>