

Native forests UNDER fire

By Paul de Mar and Phil Cheney

> The interaction between man, forests and fire in Australia has altered radically over the past 200 years, bringing about a decline in some ecosystems <

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> Australia's eucalypt-dominated forests and woodland ecosystems are among the most fire-prone places in the world. The dry, fire-maintained nature of much of Australia's landscape is in stark contrast to the moister, greener landscapes of Europe and tropical Asia from which the majority of our population has migrated. Our native flora and fauna have evolved with fire over millions of years.

In Australia, man, fire and forests have interacted over 30 to 40 millennia. Aboriginal people used fire extensively, particularly in grasslands, grassy woodlands and forests. Fire was used for smoke signals, to clear ground for walking, to expose burrows and more easily track animals, to protect and nurture specific plant communities, for rituals and for warfare. The pattern of burning that resulted was a fine mosaic of small patches of recently burned areas with low fuel loads that limited the spread of severe fires that could threaten safety or food.

In the grassy open forests and woodlands of Arnhem Land and elsewhere in the Top End, burning started as soon as vegetation would burn and continued throughout the dry season so that by the end of



the dry season, when conditions were suitable for widespread intense fire, the land was covered with a mosaic of burnt patches that limited fire spread. In southern Australia, the writings of early navigators and explorers point to frequent burning by Aborigines of grasslands, woodlands and dry grassy forests.

In south-west Western Australia, evidence from fire scars on balgas (grass trees) indicate that, under the Nyungar people's management, the fire frequency in much of the jarrah forests was about three fires a decade. Today the average frequency of burning in these forests is every 15 years, with some areas remaining unburned for more than 40 years.

In addition to Aboriginal burning, lightning has been an ever-present source of forest fires. Lightning fires often start under relatively benign conditions and are usually suppressed quickly. However, they can burn huge areas during summer months if there is continuous fuel present.

The distribution, structure and composition of our forests have been dramatically influenced by 200 years of European settlement. Many forests have been cleared or fragmented to make way for agriculture, industry and cities. The occurrence of fire in the landscape has also changed. In all but a few locations in tropical Australia, traditional Aboriginal use of fire has been removed from our ecosystems. Except in a few rural areas, where some graziers use low-intensity fire for native pasture maintenance, and around population centres (where arson and accidental fire escape has driven a frequent, high-intensity fire regime), man's fire use in the broader landscape has significantly declined.

Nowadays, fire authorities are highly successful in containing the vast majority of fires to just a few hectares. However, the absence of frequent burning leads to heavy and continuous forest fuels, which can make suppression difficult and sometimes impossible even under mild conditions. The modern fire regime is dominated by fewer but larger and, in most cases, more intense fire runs.

Today, the task of managing forests and fires is complex. Even if we knew more accurately how Aboriginal people managed fire, the changes in settlement patterns, land use and assets that require protection from fire necessitate an approach that deals with contemporary landscapes and values. Our society expects that people will not be killed by bushfires, that property damage is minimised and that fire doesn't degrade the environment, extinguish species or cause massive erosion. With these expectations, there are justifiable imperatives to suppress fires, particularly in spring and summer when hot, windy weather occurs. In the heavily populated areas of southern Australia, a 'let burn' approach is not realistic. Our forest and fire management practices need to apply fire under conditions in which it can be controlled.

Biographies

Paul de Mar is the manager of asset protection and technical services for Forests NSW. He coordinates Forests NSW fire management programs and operations.

Phil Cheney is an honorary research fellow with CSIRO. He has conducted research into forest and rural fires since 1964, focusing on bushfire behaviour and firefighter safety.

Except in some dry sclerophyll production forestry areas, the use of prescribed, low-intensity fire is on a small scale. As a result, the areas being devastated by infrequent high-intensity fires are increasing.

The result of fire exclusion in eucalypt forests and woodlands is shrub proliferation and ground litter build-up. Shrubs significantly change the conditions in which overstorey eucalypts are growing. A shrub understorey shades out the forest floor, decreasing soil temperatures, increasing soil moisture and, with heavy layers of organic litter effectively mulching the forest floor, changes in soil chemistry occur through alteration of the nitrogen cycling regime. These changes brought about by fire exclusion can create conditions not suited to some eucalypt species, adversely affecting their health and increasing the vigour of pests and pathogens. When fire does inevitably return, the forest is burnt by a high-intensity, longer-duration fire fuelled by the shrub understorey rather than a lower-intensity, short-duration grassfire. Many woodland trees have not evolved with thick protective bark and as a consequence suffer death or increased damage, resulting in a decline in the health and vigour of the woodland ecosystem generally.

The area of eucalypt decline is now widespread. In NSW, more than one million hectares of formerly open, grassy, coastal eucalypt forests are showing symptoms of decline. In Western Australia, major proportions of tuart forests and wandoo woodlands are affected. In Victoria, advancing decline is evident in most of the lowland mixed hardwood forests in east Gippsland. Eucalypt decline is an emerging problem in Murray River red gum forests, pink gum woodlands in the Mt Lofty ranges of South Australia, and in peppermint forests on Tasmania's east coast. Many remnant bushland reserves in our major cities, including Sydney and Melbourne, are in advanced states of decline after long periods of fire exclusion compounded by weed infestation and urban run-off.

The challenge for forest and fire policy-makers and managers is to recognise the need to reintroduce low-intensity fire into fire-maintained woodland and forest ecosystems, and gain community support to implement the necessary prescribed fire programs. If we are not able to rise to this challenge, the incidence of forest decline, and large-scale, high-intensity fires will continue to increase, leaving behind impoverished forests and scrublands for future generations.

The challenges in gaining support for such programs are great. Urban populations are not used to living with prescribed fire on anything but a small scale and, with their predominantly European or tropical Asian heritage, they find smoke and recently burnt landscapes objectionable and inconvenient. Unfortunately, the ultimate result of trying to exclude fire in our forests may be far worse than they imagined.

