

# Towards Better Integration of Bush Care and Bushfire Control

A paper presented to a Perth Region NRM Community Forum

By Roger Underwood\*

I have been invited to talk to you about the integration of bushcare and bushfire control. Both are subjects dear to my heart, but even dearer to my heart is the need to better integrate these activities so that two important goals can both be met:

- The first is to protect our bushland from injurious or destructive forces;
- The second is to protect human life and community assets from needless injury.

One factor overlaps these two goals: both bushland and human life and assets are threatened by high-intensity bushfires. The impact of a high-intensity fire on flora, fauna, soils and landscape is devastating and long-lasting. And, when a fire runs out of the bush into residential and farming properties, it can also kill people and destroy the social and economic assets that are the fabric of our community.

The consequences of the deadly combination of bushland, people and high-intensity fires are always tragic, disheartening and costly.

However, there is a win-win response to this threat. When it comes to preventing bushfire damage, we are not powerless; a highly effective risk-management response is not only available, but is tested and is known to have many beneficial environmental outcomes.

Before elaborating on this, you will note that I have used the term “high-intensity fire” when I talk about the bushfire threat. This is quite deliberate: whenever I speak about fire I make a point to define the sort of fire I am talking about. Fire is not fire is not fire. It is essential to distinguish between a high-intensity “killer” bushfire and a mild-intensity fire used in a planned fuel reduction burn. The characteristics and impacts of these two different sorts of fire are quite different: one is a friend and the other a foe, one a servant and one a master.

In a forum like this, many people wince, or simply turn-off, when I mention ‘fuel reduction burning’. This is because bushland fire of all sorts is feared by many Australians. Fuel reduction burning is seen as evil, causing more serious ecological damage than high-intensity wildfires. It is essential in our discussion to avoid mixing up the impacts of mild patchy fire where you can step over the flames, and the raging unstoppable crown fires which burn down towns and incinerate thousands of hectares in a few hours.

Bushfire management and bushfire science have been the subjects of investigation and practical experience for nearly 200 years in Australia. Over that time, four key lessons have been learned:

1. ***Bushfires can never be prevented.*** They will be started by lightning strikes (as occurred in the disastrous fires of 1961), by accident (as occurred in the recent Roleystone fire) or by arson, (as occurs with monotonous regularity in Kings Park). One way or another, fires will start. However, we do have a choice as to what sort of fire will occur: a high-intensity killer fire, or a mild trickling burn.
2. ***High-intensity fires in the Australian bushland cannot be controlled by humans.*** The sort of fires that burn through the crowns of the trees and throw spot fires miles ahead, are truly

unstoppable, even by the most modern technology and the best and most numerous of firefighters. The explosion of heat energy is just too great and too rapid..... you might just as well ask a flight of waterbombers to extinguish a nuclear bomb. Once a fire like this gets going, it is a matter of waiting for the weather to change or for the fire to run into a natural break, like a recent fuel reduction burn or the sea. Firefighters can pick at the edges, risking their lives and doing serious damage with bulldozers, but the headfire will do its own thing until conditions or fuels change.

3. ***The longer an area of bushland is left unburned, the more likely the eventual fire will be an intense one***, especially if the fire occurs on a hot windy day in summer. This is because in the absence of fire, Australian bushland accumulates fire fuel.... leaves, twigs, bark, flammable shrubs etc, and this can increase to 20 or 30 tonnes of fuel on every hectare of bush after 15 years or so without fire. This material does not rot away to nothing every winter as happens with northern hemisphere temperate hardwood forests. Rotting processes do occur, but it is counter-balanced by the annual shedding of dry leaves, twigs and bark; after 25 years or so the rate of fuel accumulation declines, but the overall mass of fuel remains, awaiting a spark.
4. ***There is a direct relationship between fuel quantity and dryness on the one hand, and fire intensity on the other***. Science has demonstrated that with every doubling of fuel levels in the bush, fire intensity quadruples, all other factors being equal. This means that even under relatively mild weather conditions, an unstoppable fire can occur. The recent fire at Roleystone was a good example. The Fire Danger that day did not get much above High, let alone Extreme or Catastrophic, yet because the fire was burning in long-unburnt heavy fuels, it was unstoppable.

Unless these lessons are accepted and understood, the basic underpinning principle of bushfire management in Australia cannot be understood. The principle is this: ***bushfires cannot be prevented, but bushfire damage can be minimised***. This is accomplished by an active program which we call “bushfire management”.

Bushfire management incorporates many disciplines, and some of it involves complex science, but the essence has pretty much been well-thought out and tested over the years. It involves legislation, policy and administration, fire detection and communication systems, weather forecasting, community education, fire planning, fire fighting and organisation, and fire preparedness and damage mitigation.

By itself, bushfire management is relatively simple. Where it becomes complex and contentious is where it interacts with other scientific, human and social systems, for example wildlife and catchment management, residential planning, house construction, roads, and water supply and electricity networks. Furthermore, the community is divided as to how bushfires should be managed, some favouring what I call the Fire Brigade approach (“wait until a fire starts and then put it out”) and some favouring the precautionary philosophy (as summed up in the old saying that *an ounce of prevention is better than a pound of cure*).

The Australian experience has demonstrated without question that the Fire Brigade approach will never succeed once we get the combination of severe fire weather and heavy bushland fuels. For this reason fire specialists like me believe that if the right action is taken in the sure expectation of a fire starting, the damage the fire will cause can be minimised.... and furthermore the fire will be safer and easier to control. This is the same philosophy that drives doctors to promote public health and immunisation to prevent disease epidemics, and criminologists to urge investment in crime prevention rather than jails.

In bushland areas therefore I unequivocally advocate a fire management system that incorporates fuel reduction. This does not stop fires from occurring, but it reduces the damage they cause and makes it easier and safer for firefighters when a fire inevitably starts.

Fuel reduction can be done in several ways. One approach is to use machines to slash/mow/mulch the bush. Grazing by sheep, goats or cattle will effectively reduce bushfire fuels; so will raking-up and carting away bushfire fuels or spraying the bush with herbicide leaving bare earth behind, or permanently replacing the understorey with irrigated lawns or paving stones.

All of these measures will reduce the intensity of a fire and make bushfire control easier and safer. In the immediate surrounds of a house within bushland, I support these approaches, as they are a sensible trade-off to being incinerated. The trouble is of course, that none of them are compatible with maintaining the natural bushland in our forests and reserves. Here they are the antithesis of bushland conservation.

Once you accept the fact that bushfire fuels must be managed, you realise that there is only one *natural way* in which this can be done. Some European-trained ecologists argue that fire is not a natural environmental factor, but they are increasingly in the minority. In fact, the Australian bush is not destroyed by fire, but over millions of years has acquired characteristics that enable it to survive, indeed prosper from periodic low-intensity fires burning under mild weather conditions. Not only do such fires burn away the dry leaves and twigs on the forest floor, they assist to recycle nutrients, they provide fresh feed for native herbivores and they germinate seeds. Mild fires leave unburnt patches and the tree canopies are not destroyed, nor the birds within them, as happens in an intense wildfire.

Thus the careful, planned use of fire is the ultimate win-win situation: the bushland is rejuvenated, while the human community is protected.

There are obvious precautions that must be taken. Burns in jarrah forest, for example, should be no more frequent than about every 5-7 years. A burn must be professionally carried out to minimise the risks of escape and meet the requirements of the Bush Fires Act. My preference for small bushland and road reserves around the edge of the metropolitan area is for mosaic burns on cool, sunny days in winter, where the chances of misfortune are minimal. In small reserves within suburbia, burning must be integrated with weeds management.

No doubt you will all have heard, and will hear again this morning, the litany of terrible ecological damage that results from fuel reduction burning from those who fear and not understand fire. I answer these fears with the following points:

- 1 Australian bushland evolved in the presence of fire, as revealed by charcoal deposits in sediments and more recently by ethno-historical research into the use of fire by Aboriginal people; any species that could not survive periodic fire would surely have long ago disappeared;
- 2 Australian plant species have a remarkable array of characteristics that enable them to survive fires or regenerate after them and the Australian fauna is highly persistent in the presence of mild patchy fires.
- 3 Bushland burnt by low intensity fire recovers rapidly and there is almost no loss of aesthetics; bushland burnt by high-intensity fire also recovers but it might take 50 or 100 years or more, and the landscape value of the bush is utterly destroyed;
- 4 There is no evidence of the loss of a single species of plant or animal in Western Australian bushland as a result of mild fuel reduction burning; yes, many native species are threatened, but the culprits are urbanisation, feral predators and dieback, not mild-intensity fire; and
- 5 It is one thing to call for the cessation of fuel reduction burning as some people do, but it is another to put in place an alternative fire management system that is as effective in preventing the damage from high-intensity wildfires. The Fire Brigade approach, based solely on fighting fires after they start, is doomed to failure.

What about the smoke, I hear you cry. The smoke from mild, cool burning has no serious health implications, unless you suffer from asthma, and if you do, you should stay out of the smoke for the short period it is around. I remind people that wood has historically been mankind's principal fuel. Like the plants and animals, we evolved in an environment in which woodsmoke was present from dawn to dark in our cooking and heating fires.

And what about the carbon emissions? Research indicates that low intensity fuel reduction burning is virtually carbon neutral, because the CO<sub>2</sub> released in the burn is taken up immediately by new growth after the burn. On the other hand, it might take 50 years for the take-up of the massive CO<sub>2</sub> released in a high intensity fire (in which the whole forest is consumed, not just the leaf litter)..... this is the very time, many believe, when it is most essential to reduce CO<sub>2</sub> emissions.

Having been an advocate of fuel reduction burning for the last 50 years, I am used to being called a pyromaniac, a scorched-earth merchant-of-death, an environmental vandal, or being told that my opinions are worthless because I am just an old forester whose only interest is growing trees so that they can be cut down for timber.

I won't bore you with my conservation and environmental record<sup>1</sup>, but I do want to leave you with one point: I love the Australian bush, and have worked all my life to conserve and protect it. If I thought that a program of mild, periodic fuel reduction burning was destroying the bush, I would not be promoting it. Moreover, I also love Australians and our Australian society, and do not wish to see them needlessly damaged by preventable wildfires

But there is another point: Australian ecosystems are not just able to survive fire, but they decline in health in the absence of fire. There is no question, for example, that the decline in health of our wandoo and tuart woodlands over the last 20 years has been partly due to the withdrawal of regular mild burning.

In conclusion: responsible bushland management ("bushcare") in the Australian environment must consider the potential impacts of fire, including the negative impacts of high-intensity wildfire. Fires are inevitable, but they do not need to be killer fires. Refusing to prevent killer fires denies the fact that human and environmental values are intertwined. They cannot be managed in isolation. The killer fire condemns both our bushland, and our society to needless injury, damage, trauma and loss.

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