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Getting Beyond the Impasse in Bushfire Management

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This summer, working on the house and garden, sorting through old papers and photos, it has been hard to forget what it must mean to lose all that in a fire. The danger seemed quite real last week when smoke billowed out from bush only three blocks away. But luck and wind direction favoured our house.

The political debate on fires

The debate on fire that erupted after the Canberra fires was a rerun of the debates following the 1994 fires in NSW. Again, "environmentalists" were being blamed for preventing controlled burning of bushland. This time around, Wilson Tuckey, well known scourge of environmentalists, berated National Parks for a failure to burn to reduce fuel loads. He was joined by Kate Carnell, representing the National Association of Forestry Industries and by the NSW Opposition, as well as by other ministers from the Howard government.

Rejecting this analysis were representatives from the State Government and National Parks. The NSW Environment minister claimed drought was the main cause of the fires. Brian Gilligan, state director of National Parks backed up this analysis, saying that weather was the main cause of fuel loads building up.

As in previous years, crusty representatives of "real country folk" were quoted to point the finger more directly at environmentalists. The 7.30 Report featured a retired firefighter who had saved his village from the blaze by persuading locals to back burn and put in proper fire breaks. Another old timer Mr Lance, a life member of the Rural Fire Service for 34 years, was also interviewed and reported by Daniel Lewis in the Herald. Mr Lance revealed that eight months ago, he had informed a state parliamentary inquiry that the Snowy Mountains region was "ripe to be engulfed by an unstoppable inferno". The only solution was widespread hazard reduction burns in National Parks. "I'm a greenie at heart, but a sensible one, not one thats bloody stupid".

Brian Gilligan took on much of the load of this attack. He had to admit that the NPWS had only set control burns in one percent of parks in the previous year. Nevertheless, he was cogent and not in the least bit defensive about their strategies. The comments directed against National Parks were based "more on ideology and vested interest than science". In another statement he said that what was proposed was "utter nonsense". It was difficult to set more controlled burns because conditions had to be favourable for a controlled burn to be successful. He pointed out that 22 percent of fires in National

Parks entered from private property. In other words, it was a myth that private farmers were any better than National Parks in controlling fire. In earlier fires in 1951/52 and 1967/68, bushfires had burned millions of hectares of state forests. So it was equally ridiculous to believe that the timber industry had some magic solution to fire problems. Nor was grazing in National Parks the answer - as suggested by Tuckey. The 1939 fires burned through areas of what is now the Kosciuszko National Park that had been grazed for a 100 years before. The reality according to Gilligan was that bad fires were inevitable about every 30 years - with bad fire weather following a massive drought.

What was interesting about this debate was the extent to which the environmental issues were sidelined by Gilligan. Tuckey and Carnell were happy to name environmentalists as culprits and ordinary country folk were also called on to emphasize this point. However Gilligan did not defend the Government and NPWS policies by saying that they were environmentally appropriate. Instead he argued that massive burning off would not prevent fires and that National Parks were no more likely to be a cause of fires than other areas of bushland put to some commercial use. Strangely the only person who seems to have been quoted as putting the environmental argument against widespread burning was Phil Koperberg of the Rural Fire Service. Talking to a state parliamentary inquiry eight months ago, he had claimed that the proposal for widespread fuel reduction was both an "exercise in futility" and "damaging to biodiversity".

It seems unlikely that environmentalists will readily avoid blame for bushfires. In interviews conducted in the Hunter region in 1995, many local residents began their discussion of environmentalism by talking about the way environmentalists, usually referred to as "greenies", had stopped the burning off and been responsible for the fires of 1994. Of course, along with Gilligan, one can point to the economic interests which may lie behind these attacks on environmentalists. A key issue is the way National Parks "lock up" areas of forest and prevent them from being logged or farmed. Yet this does not entirely explain the readiness with which members of the public accept this account.

On the face of it, the most popular version of this theory makes a strange claim. The environmentalist movement as a whole is painted as an irresponsible and tyrannical minority who, despite their small numbers, are able to prevent a sensible policy of widespread hazard reduction which is supported by most ordinary people - and farmers, firefighters and forestry workers alike. To unlock this debate and move forward it is necessary to add some new elements. First, what is the environmentalist case against widespread hazard reduction burning? Secondly, what is the strength of the argument now being advanced that it does not work? Thirdly, what makes both of these issues almost completely irrelevant to the outcome? Finally, is there any way to make some progress with an alternative policy?

Burning off - for and against

On average, sclerophyll forests dominated by eucalypt species will burn in a cycle varying in length between 3 and 12 years. It takes three years for them to build up enough fuel to burn and by 12 years, there is so much fuel that they are very likely to burn. Surface fuel loads can reach 15 tons/ hectare in 10 years, 22 tons in 20 years and 27 tons after 30 years. It would seem to make sense to burn off in cycles between 3 and 5 years to prevent fuel load from building up. This policy was first suggested by Stretton in 1939 and became the dominant strategy for Australia by the 60s. One of the founders of this strategy, Alan McArthur, maintained in 1968 that "the only way to prevent widespread and damaging conflagrations during the heat of summer is to carry out prescribed burning in the spring, autumn and winter".

Environmentalists problems with this strategy were articulated by the seventies and were certainly an aspect of changes in policy; though as we shall see, far from the most crucial issue. The nature of these objections depends on the kind of forest in question. For heath and dry sclerophyll forest, the main problem with frequent burns is that many plants in these communities do not mature sufficiently to set an adequate amount of seed if fires are more frequent than every ten to fifteen years. For wet sclerophyll forests the problems are slightly different. Species such as mountain ash, which dominate these forests, can be wiped out by low intensity fires but only set seed when there is a hot burn - the kind that occurs only every hundred years or so in these wetter forests. If fires are set at intervals of less than 15 to 20 years, these wet forests can be reduced to low scrub. So these are the keys to environmentalist objections to frequent burning. Environmentalists support some burning of forests - many Australian plants will not regenerate without a fire. The common view that they are completely against fire is misplaced. However it seems that to preserve the range of plants that were here 200 years ago, the most appropriate policy is to burn every now and again, depending on the plant community in question. Yet arguably, this is not enough to reduce fuel load.

However these environmentalist reasons for rejecting widespread regular burning are rarely put. It seems that environmentalists are on the back foot in a situation where people have lost homes and in some cases their lives. What is more likely to be said is that the policy of widespread regular burning is "futile" or cannot work. The main argument is that burning off may reduce forest floor litter but it cannot stop wild fires in the situations where fires are very hard to control. In other words, after a severe drought and in bad bushfire weather. In these conditions a fire jumps from tree crown to tree crown without depending on floor litter. Once it gets going fierce fire winds send embers way ahead of the fire front to start fires regardless of fire breaks or burning off. This analysis is backed up by computer programs that model fire behaviour. Pyne describes the events of 1983 which were a key to changes in policy. After the Morton National Park fire in that year, NPWS was called to account before a coronial inquiry to explain their failure to reduce hazard. The fire had started on private land, raced through the national park and spread into pine plantations. The NPWS submitted its hour by hour computer predictions which had modelled the fire to within 25% of its actual spread and location. Using the program to model the situation with reduced fuels, the "putative outcome was that, granted the extreme weather, the abatement in fire intensity and diminution in the rate of spread was minimal, delaying the conflagration of the pine plantations by seventeen minutes to

perhaps four hours". As Pyne notes, those in favour of widespread controlled burning used a different computer program to arrive at different conclusions.

Why burning off is not a practical strategy

Yet it seems likely that this debate and the environmental issues have had little to do with the gradual demise of the widespread burning strategy. Whether the policy of regular burning could work in theory seems to have been much less relevant than the practical problems. My own introduction to these issues came in connection with the Wangi Ridge Reserve in the Hunter. I was the secretary in 1995 after the extensive bushfires of 1994 in NSW. Our little suburban environmentalist group spent many Sundays pulling out lantana and bitou bush to restore some version of the original plant community in this 15 hectare park. After the bushfires there was much political noise and the district fire officer descended on us with fire and the sword. Scathing in his contempt for environmentalists, he extolled the virtues of proper fire management of timber producing forests. He informed us that whether we liked it or not the whole of our park would be regularly burned and he had the authority to ignore local objections. In fact they burned about 5 hectares that year and were never seen again. Why? The truth is that burning off to the point where it could conceivably make a difference is much too expensive for any government to consider. For our 15 hectare park in Wangi, it took about fifteen fully trained firefighters an afternoon of very hard work to burn off five hectares. Most of this work was to ensure that the fire did not get out of hand. Burning this five hectares was a very visible sign of willingness to do something about fire risk - but this small area was only a minute fraction of the bushland surrounding our suburb, which they never burned.

The reasons why controlled burning is expensive are initially hard to grasp. After all, vandals with a can of petrol can start fires without paying more than a few dollars to light a fire. Why do government instrumentalities find it so expensive? The central reason is that they are legally responsible for damage to other properties that is caused by a fire that they start. This translates directly into labour costs. Employees must be paid to supervise and control a fire to ensure that it does not escape. This central issue is rarely referred to except in euphemisms. When reference is made to the necessity for weather conditions to "be favourable" for burning off, what is meant is that the weather must be such as to allow a fire to spread but also allow a team of firefighters to prevent it spreading out of control to endanger property - and the lives of those trying to control it. It is this limitation which escalates the cost of burning off to levels that are politically impossible, and it applies to any kind of land ownership - that of private farmers and state forests as well as that of national parks. While there is a myth of a golden age where people did not worry about burning off, there is no doubt that at the present time it is common practice for landowners to sue for damages if a fire arrives on their property from another holding. This is an irreversible change in the legal climate affecting fire control.

The fact is that even in the heyday of the policy of widespread burning off, the reality was far from the rhetoric. Between 1972 and 1982, less than 3 percent of state forests were burned annually. Only a fraction of that burned area was actually burned

sufficiently to reduce fuel loads so as to suppress fires. Controlled burning was most effective in small areas around towns where the local volunteer brigades and some full time employees organised the burns and were also present to see that spot fires in advance of a front were extinguished and to protect houses as the fire front arrived and passed. These "hazard reduction teams" were few in number and costs were prohibitive if any wider burning was envisaged. Even the authors of the policy themselves, such as McArthur, only recommended 5 percent of forest to be burned every year. In other words a twenty year rotation - much too long to have any serious impact on fuel loads. Yet they could see themselves that anything more ambitious would be totally impossible to fund.

The awful truth is that from the point of view of the national economy it is much cheaper to replace the houses lost in every fire disaster than to fund the kind of regime of burning off that could make a difference to fire risk. There is a political reality behind this as well. When houses burn, the money to pay for the replacement mostly comes from private funding. It usually comes from insurance companies funded by householders worried about a range of possible disasters. By contrast any system of extensive burning off would have to be funded by taxpayers. While as private individuals, people may be willing to spend large amounts of money on insurance, as voters they will vote against any party that wants to raise taxes. People believe that money paid in taxes goes out of their control whereas any amount of money spent piecemeal by themselves is still "their money".

A practical approach to fire protection for suburban residents

This analysis is little comfort for suburban residents. If widespread controlled burning is never going to happen, is there any other practicable solution? What must be arrived at is something that recognizes the economic constraints on governments and convinces private owners to bear the costs as a welcome home improvement. While the new regulations for development in bush fire prone areas go some way towards useful change, they are premised on the issuing of Development Applications for new buildings and renovations to existing buildings. However, much of the margin of suburban land and bushland is already developed. A solution for this existing suburban development is a high priority.

One part of this solution is to encourage residents to protect their buildings from fire and inform them about how to do this. Councils in fire prone areas should send out annual pamphlets to ratepayers in streets near bushland. Targeting these streets alone could make this a relatively cheap exercise. Blocks of houses could be encouraged to form fire committees to assist each other with these tasks - for example making sure that embers cannot lodge in eaves or under buildings, putting leaf guards on gutters, removing fire hazards such as wood heaps or dry grass.

The other part of the solution is to make an impact on the kinds of plants growing in suburbs close to bushland. This is a long term strategy. It would take up to fifty years to implement in its most effective form. But there is no doubt that bushfires will still

be a problem this far into the future. To understand this solution it is necessary to compare the way different types of plants respond to a fire. Some plants such as eucalypts and paperbarks actually encourage and support a fire. They contain a high proportion of volatile oils in their leaves which burn well, especially after a drought. They have loose bark which easily catches alight. They drop leaves and branches which can provide the starting points for a fire on the ground. It has been argued that these plants have actually adapted to benefit from a fire prone environment. They survive a fire well and also create conditions in which fires are more likely, eliminating competition from less fire hardy plants. Other plants which are worse damaged by fires can also be a problem in encouraging fire - the pine plantations around Canberra were a key to the recent disaster.

Other kinds of plants are referred to as "fire retardant" species. These plants are not likely to catch light in medium intensity bushfires. They can have the effect of slowing a fire down. Planted thickly in belts at a distance from houses they can prevent many fires from reaching the house. They will not easily catch light if struck by burning embers - the kind that rained from the sky in the Canberra fires. Plantings of this kind can reduce the heat of a fire, shielding a house from the full force of the radiant heat coming from a wildfire. Tall trees in shelter belts with fire retardant shrubs planted underneath can slow down fire winds and catch burning embers. What has been suggested to be the ideal pattern of planting on any side of a house facing bushland is a shelter belt of tall fire retardant trees and shrubs, about 60 to 80 metres from the house. This is the first barrier against fire and catches embers and slows wind. What gets past this barrier lands on ground that is equally unfriendly to fire. For example an orchard of fruit and nut trees, a vegetable garden or fire retardant shrubs and moisture retaining ground covers. Some examples of fire retardant species are rainforest plants, deciduous trees, tree legumes, such as cassias, or wattles, fruit and nut trees, shrubs such as jade plant and canna or saltbush, groundcovers such as strawberry, nasturtium, wandering dew, grevilleas. Many of these are exotics but quite a few are Australian native plants. None of them are particularly strange or expensive plants in the context of Australian suburban gardens.

Since much of what makes a species fire retardant is the moisture content of the vegetation, many of these species depend on a supply of water; something which is generally in short supply in Australia. For suburban areas there are two readily available and generally unused sources of water which could supply the needs of fire retardant species. One is rainwater tanks which can be attached to any roof. The other is greywater - water used in washing and cooking which usually goes back into the sewerage. So long as residents use environmentally friendly washing products this water can be used in the garden. It can either be piped to an underground storage tank from which it will seep out to provide moisture for plants down slope, or it can be hosed directly onto plants. For ridges where fire is particularly a problem, swales or bunds - ditches dug along the contour, can retain moisture and help to encourage fire retardant species and to stop a ground fire.

How to implement this strategy

A few suggestions about how to make this a practical long term policy, with most costs borne by residents themselves.

- Inform residents of fire prone areas about these facts through pamphlets. There are already some excellent websites, such as the Queensland Department of Natural Resources.
- Remove legal barriers to the siting of rainwater tanks and the use of greywater in gardens.
- Encourage rainwater tanks by reducing water bills to those who instal them and if necessary increase the price of water to pay for this subsidy.
- Pay a small bounty to those who remove mature fire prone species from their land in suburbs adjacent to bushland. This could compensate a bit for the considerable cost of having mature trees cut down.
- Remove tree preservation regulations for fire prone species while providing residents with low cost tube stock of fire retardant species.
- Allow residents at their own cost to implement this policy in their own backyards and also in public parks up to eighty metres from their house - in cases where houses are next to large areas of fire prone bushland.
- Gradually replant these boundaries with plants that will retard a fire.

If required these could be all native species or even all species locally indigenous - so long as they are fire retardant. Native rainforest species such as Port Jackson and Moreton Bay figs, lilly pillies, pittosporum would be obvious choices and do not need watering once they are established. It may be better to let residents make their own choices - real changes would be more likely if backed by the enthusiasm of residents. Rather than clearing a break and replanting it all at once, the best policy would be five metres at a time; not moving further in until the first lot of replacement plantings was established. Plants could be interspaced between existing eucalypts and fed by drips until they began to be established and provide replacement vegetation cover.

It would not be necessary and in fact would be counter productive to implement this policy in inner urban areas, away from any major fire risk. There would be no point in trying to remove eucalypts from Leichardt or Carleton.

Would this be an environmentalist policy or not? From an environmentalist point of view its worst feature would be eating into the area established as National Parks at least along the boundaries of these parks and suburban areas. These margins of remaining bushland could be replaced with a somewhat unpredictable variety of plantings. Care would have to be taken that none of them were weeds that would infest the parks themselves. Nevertheless, if plantings of exotic species were allowed in these margins, it would not necessarily be to the detriment of all native fauna. As has become increasingly apparent, many native animals survive quite well in our

existing gardens of mixed native and exotic species. Alternatively, encouraging native fire retardants for park margins could be the best strategy. Regulations could stipulate that all new plantings in parks were from a list approved by the National Parks Service for that area. Replanting with fire retardant species would preserve soil better than bulldozing fire breaks and keeping them free of plant matter, as has been proposed by some.

The political outcomes

Politically, such a policy could in fact reduce some of the stigma which at present affects National Parks and environmentalists who are inappropriately blamed for fires. It would be putting responsibility for the solution onto the hands of suburban residents themselves. Given the reluctance of voters to raise taxes, they are really the only ones with the money to do anything about it. From the point of view of environmental philosophy the policy would acknowledge that urban areas are an environment managed by humans. Biodiversity has to be attained through a set of strategies that favours both humans and the natural environment. While native forests and wilderness should be preserved and extended, we also have to work out how to live successfully with nature in urban areas. Bringing every aspect of our wilderness into the suburbs is probably not the best way to achieve this.

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