

SETTING THE RECORD STRAIGHT ON HAZARD REDUCTION

FACTSHEET

Australia's 2019-20 bushfire season is shaping up as being the worst on record.

Already, New South Wales and Queensland have suffered more property damage and forest loss than in any previous fire season, with the worst fire danger period yet to come for Victoria, Tasmania and South Australia.

This guide sets out the facts on hazard reduction and the role of climate change in this catastrophic bushfire season.

Unless we address climate change and urgently reduce our emissions as part of a global effort, the window of opportunity for prescribed burning will continue to shrink. And as bushfire weather worsens, the effectiveness of hazard reduction will diminish – no amount of hazard reduction will protect human lives, animals and properties from catastrophic fires.



KEY FINDINGS

1 THERE HAS BEEN A GREAT DEAL OF MISINFORMATION ABOUT THE CAUSE OF AUSTRALIA'S CATASTROPHIC BUSHFIRES OVER THE SUMMER OF 2019/2020. THIS GUIDE IS AIMED AT GIVING PEOPLE THE FACTS ABOUT HAZARD REDUCTION.

- Hotter temperatures and drier conditions in southern Australia, influenced by climate change, are the root cause of these fires.
- Hazard reduction is an important tool, but it's not enough to protect us from catastrophic bushfires. We need to look to the root cause, worsening climate change.
- This year's bushfires are very clearly weather-driven events, not fuel-driven. The extreme weather has in turn been worsened by climate change.
- Over recent years our understanding of hazard reduction has improved. The total number of hectares burned is far less relevant in reducing risk than intelligently assessing when, where and how much to burn on a localised basis.

2 THE WINDOW OF OPPORTUNITY FOR CONDUCTING SAFE BURNS HAS BECOME MUCH SHORTER DUE TO HOTTER TEMPERATURES, DRIER CONDITIONS IN SOUTHERN AUSTRALIA, AND LESS DAYS OF LOW/MODERATE FIRE DANGER. THIS HAS BEEN DRIVEN BY CLIMATE CHANGE.

- As the bushfire seasons lengthen, and with a reduction in cool season rainfall in southeastern Australia, the window for prescribed burning has shrunk, making it more difficult to conduct controlled burning, and increasing the risks of fires escaping.
- Even though prescribed burning is becoming more difficult to do safely, the rate of burning in New South Wales – where the recent bushfires have been most destructive – has increased, rather than decreased as has been falsely reported.
- In the past decade, New South Wales burned twice as much of its National Parks with prescribed fire compared to the decade before – more than in any previous mapped decade.
- Unless we address climate change and urgently reduce our emissions as part of a global effort, the window of opportunity for prescribed burning will continue to shrink.

3 AUSTRALIA'S 2019-20 BUSHFIRE SEASON IS SHAPING UP AS BEING THE WORST ON RECORD AND SUCH EXTREME WEATHER EVENTS WILL GET WORSE UNLESS WE URGENTLY ADDRESS CLIMATE CHANGE.

- As bushfire weather worsens, the effectiveness of hazard reduction will diminish – no amount of hazard reduction will protect human lives, animals and properties from catastrophic fires.
- Australia must commit to reducing our greenhouse gas emissions to net zero by 2040 or preferably earlier, as part of a global effort to address the root cause of worsening extreme weather – climate change.
- The terrible bushfires of 2019/2020 should serve as a wake-up call to our Federal Government. We must stop extracting and burning coal, oil and gas – the key drivers of climate change.

WHAT HAS BEEN BEHIND THESE HORRIFIC BLAZES?

2019 has been confirmed as the hottest and driest year on record in Australia. Bushfire weather in 2019 has also been the worst on record (as measured by the annual accumulated Forest Fire Danger Index).

The massive fires in New South Wales have burned through private, crown and freehold land. They have burned fiercely through areas that were burnt as recently as one to two years ago, underlining that fires burning under extreme weather conditions will consume any and all fuel, even burning across people's lawns.

The NSW RFS Commissioner, Qld Fire & Emergency Services Commissioner, Chief Officer of the Victorian CFA, former fire and emergency services chiefs from every state and territory and scientists all agree that burning is not a panacea. Fires will burn intensely, even in light fuels, during the extreme conditions that have been experienced this season. This year's bushfires are very clearly weather-driven events, not fuel-driven. The extreme weather has in turn been worsened by climate change.

WHAT IS HAZARD REDUCTION?

Preparations for fires are usually conducted outside of the bushfire season, using a combination of methods known as hazard reduction.

The NSW *Rural Fires Act 1997* defines hazard reduction as "the controlled application of appropriate fire regimes or other means for the reduction or modification of available fuels within a predetermined area to mitigate against the spread of a bushfire."

This is commonly interpreted to mean the introduction of prescribed burning, which is the application of fire under controlled conditions. But the "appropriate fire regime" for a site actually depends upon the response of a specific vegetation type to fires of different timing and intensity, and the ways that this affects the flammability of the site.

Hazard reduction can therefore range from burning operations through to intentionally not burning some areas (fire exclusion), provided that this regime reduces or maintains the vegetation in a state of reduced flammability. It can also involve other methods such as mechanical clearing of fire breaks or thinning of vegetation, which is labour intensive and cannot be practically carried out over wide areas.

The goal of hazard reduction is not to produce areas that will not burn, but areas that will burn at a lower intensity that can be controlled more often by firefighters.

ARE HAZARD REDUCTION AND BACKBURNING THE SAME THING?

No. Hazard reduction burning is different from backburning. Backburning is a method of firefighting. It is used after a bushfire has started and involves burning a firebreak to remove fuel in the path of an approaching fire and create containment lines or tactical advantage for firefighters.

Backburning is often the only option available to firefighters to attempt to control large fires with extensive and/or remote perimeters. Because there is little time to account for temperature, wind changes and fuel loads, the risk of backburning operations becoming uncontrollable can be high, so they are often conducted at night when weather conditions usually moderate.

WHY IS HAZARD REDUCTION IMPORTANT, AND WHAT ARE ITS LIMITATIONS?

Hazard reduction is one way of preparing for bushfires, and is an important aspect of bushfire management, but it doesn't remove the threat of bushfires.

Hazard reduction can have very little effect on the spread of fire in severe, extreme or catastrophic fire danger conditions, particularly in eucalypt forests where spot fires start ahead of the main fire front due to burning leaves, twigs and bark being carried up in convection columns then deposited in unburned bush by strong winds.

In the most recent fires, on the worst days spotting was typically occurring 8-12 km ahead of the main fire fronts. As dangerous bushfire weather increases in frequency and intensity due to climate change, the effectiveness of hazard reduction burning is diminishing, and the current fire season has seen fires burn directly through areas treated for hazard reduction in the past few years.

In some forests, hazard reduction burning has been found to temporarily reduce the risk to assets such as properties if conducted within the close vicinity of such assets, and where firefighters can take advantage of the reduction in fire severity. There is no evidence to support the claim that burning large areas of remote land will reduce the risk of homes or other assets being lost.

Where fire germinates dense shrubs or grasses, or damages tree crowns, the introduction of prescribed fire may actually increase flammability for decades until those shrubs naturally die or the trees regrow. Forests across the southeastern highlands have all been shown to have burnt much less often in their mature states.

Studies of fire histories have found that large areas need to be treated with prescribed fire to reduce bushfires by small amounts. Of the 30 forested bioregions across southeastern Australia, burning has been found to have slightly reduced bushfire area in four, and either had no effect or else been correlated with increased bushfire area in the other 26 regions (Price et al. 2015).

"Hazard reduction is absolutely an important factor, but it is not the panacea. When you're running fires under severe, extreme or worse conditions, hazard reduction has very little effect at all on fire spread"

Shane Fitzsimmons, RFS NSW Commissioner.

HOW IS CLIMATE CHANGE AFFECTING PRESCRIBED BURNING OPERATIONS?

Fire services will only carry out prescribed burning when it is safe to do so, generally when the Forest Fire Danger Rating is Low/Moderate, or sometimes High.

The window for conducting safe burns has become much shorter due to hotter temperatures, drier conditions in southern Australia, and less days of Low/Moderate fire danger. This has been driven by climate change.

As the bushfire seasons lengthen, the window for prescribed burning has shrunk, making it more difficult to conduct controlled burning, and increasing the risks of fires escaping.

HAVE OUR PRESCRIBED BURNING PRACTICES CHANGED IN RECENT YEARS?

Over recent years our understanding of the effect of controlled burning has improved. Modern controlled burning practices consider the total number of hectares burned to be far less relevant in reducing risk than intelligently assessing when, where and how much to burn on a localised basis.

Fire services focus on reducing risks to homes and assets. For example a 10 hectare burn behind a row of houses can provide far more protection than a 1,000 hectare burn in a remote area. This is the decision-making that our fire services go through every year as they carefully plan for the coming fire season. In some years, this will see a larger number of hectares burned, and in others, less will be burned.

Even though prescribed burning is becoming more difficult to do safely, the rate of burning in New South Wales – where the recent bushfires have been most destructive – has increased, rather than decreased as has been falsely reported. For example, in the past decade, New South Wales burned twice as much of its National Parks with prescribed fire compared to the decade before – more than in any previous mapped decade.

Claims that a lack of prescribed burning is behind the extreme bushfires that we have seen this bushfire season are incorrect – a cool season drying trend over recent decades in southern Australia and a general warming trend, underpinned by the worst drought on record, have created the conditions for the worst bushfire seasons ever experienced in New South Wales and Queensland. It is highly misleading and simplistic to try to blame fuel reduction strategies for the unprecedented area burned and property losses in New South Wales and Queensland.

The New South Wales fires have so far destroyed 10 times more homes than the previous worst-ever bushfire season, in 1994, and five times the land area burned in that year. On the worst days when fires covered huge areas and caused major losses, weather and fire danger records were broken, and a previously rare phenomena, pyroconvective fire activity, intensified conditions.

WHAT IS THE ROLE OF INDIGENOUS FIRE MANAGEMENT PRACTICES?

There is evidence that Aboriginal people managed the landscape using fire for tens of thousands of years prior to European settlement. Europeans altered the landscape through eliminating fire where possible, and clearing native vegetation for farming.

There is renewed interest in the means by which Indigenous owners managed the landscape and endeavoured to ensure that their country was kept healthy for various plant and animal species.

In some areas there is no longer any direct knowledge of traditional burning practices; however, there is a resurgence in interest and research in this area with organisations such as the Firesticks Alliance leading discussions. It is not as simple as lighting fires in a certain way. Cultural burning practices seek to establish a harmony between local flora and fauna, for example not burning during certain breeding and flowering cycles, and burning at a lower intensity in order to reduce damage. This requires a deep connection to, and knowledge of, country.

Any discussion of hazard reduction into the future needs to incorporate Indigenous owners and a widening of the use of cultural burning under the stewardship of Traditional Owners.

WHO IS RESPONSIBLE FOR PRESCRIBED BURNING?

Responsibility for hazard reduction differs in each state and territory, but sits primarily with fire services and land management agencies.

Hazard reduction is undertaken by authorities including National Parks and Wildlife, forestry, and urban and rural fire services, as well as authorised private individuals. Hazard reduction plans (risk management plans) are authorised by bushfire management committees in New South Wales, which include local councils and other relevant local authorities.

WHAT FACTORS MUST BE CONSIDERED IN PLANNING FOR PRESCRIBED BURNS?

The factors that must be considered when planning prescribed burns include the vegetation type, time, place, proximity to assets such as homes, fire weather and other meteorological conditions.

Hazard reduction requires resources, expertise and time, and has a range of social and environmental consequences that must also be weighed up.

For example, in recent years, the impact of smoke has been recognised during prescribed burning operations. High smoke levels are harmful to human health, yet the conditions most suited to prescribed fires are often those that are worst for smoke management. Atmospheric inversions (where warmer air occurs above cooler air) can keep flames at a safe size for burns, but also trap smoke over cities and lead to significant health issues.

During 2019 the NSW Rural Fire Service was criticised for “smoking out” Sydney when conducting prescribed burns in the Blue Mountains. On the other hand, the current bushfire season has been responsible for far more smoke. Sometimes it can be a case of “damned if you do and damned if you don’t”. The reality is that this is a complex topic and requires a careful and transparent comparison of the costs and benefits of burning.

A 2016 study found it was likely that 14 deaths had occurred due to smoke from one week of prescribed burning around Sydney (Broome et al. 2016).

HOW CAN WE BETTER PLAN AND PREPARE FOR WORSENING BUSHFIRE CONDITIONS DUE TO CLIMATE CHANGE?

Simplistic arguments about fuel reduction, rejected by fire scientists, fire commissioners from New South Wales, Queensland and Victoria, and former fire commissioners, ignore the many other factors that need to be part of a national dialogue after the fires.

Adaptation to a more dangerous environment needs to include consideration of fuel management, but also building construction standards, planning rules, emergency warnings, public education and resilience measures, community recovery, fire suppression, and community refuges.

Emerging science in the area of fuel management offers hope that more effective methods may be possible as we grow in our understanding of how fire regimes affect the long-term flammability of forests.

We also need to commit to reducing our greenhouse gas emissions to net zero by 2040 or preferably earlier, as part of a global effort to address the root cause of worsening extreme weather – climate change.

REFERENCES

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