

The Secretary
Senate Select Committee on Agriculture and Related Industries
PO Box 6100
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Canberra ACT 2600
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THE ROLE OF HAZARD REDUCTION BURNING IN REDUCING THE INCIDENCE OF CATESTROPHIC WILDFIRES

I have been motivated to write this submission by the apparent lack of appreciation afforded to the role of hazard reduction burning in the control of catastrophic fires on the East coast of Australia.

Historically most catastrophic wildfires (eg Ash Wednesday) have been followed by a reactivated program of HR for a few years after the event, followed by a decline in areas treated due to a raft of obstacles and objections placed in the way. In other words there is a lack of political will to carry out an adequate program of HR in the absence of recent damaging wildfires.

My name is John Reynolds.

I graduated from ANU in 1967 with a science degree in forestry and worked for the NSW forest service in coastal eucalypt forest until retirement in 2003. During my 35 years as a professional forester I have had extensive exposure both to fighting wildfire and hazard reduction (HR).

My submission is relatively brief in deference to the reader however the complexities of the subject are many and should not be overlooked in the formation of policies.

History of Hazard Reduction on East Coast (control burning, fuel management, prescribed burning)

The Australian forests have been continually subjected to fire for thousands of years both by indigenous ignition (food management) and natural causes. (lighting).

The resulting Eucalypt vegetation has evolved a complex set of mechanisms to survive and regenerate in this environment. One of these mechanisms is the presence of oil in the fine plant material facilitating the passage of fire which has become essential in the maintenance of these eucalypt forests. Eucalypt dominated forests are commonly referred to as a fire climax because of their need to be periodically burnt in order to regenerate.

.There is documented evidence that, at the time of early white settlement, much of the Australian forests was typified by an open understory. This was a result of the frequent burning referred to above .

In other words the deliberate burning of our native forests is nothing new.

During the late 19th and early 20th century the occurrence of indigenous burning virtually disappeared and burning off for agricultural purposes took over. Farmers tended to burn the forested lands in order to provide a “green pick” for their livestock. More inaccessible or unwanted forested lands were then only burnt by wildfire in an ad hoc fashion.

Productive forest lands controlled by the State Forest Services were routinely burnt under prescribed “cool” conditions in order to protect them from being damaged by hot wildfires.

In the 1970s and early 80s this practice of prescribed burning was extended to the inaccessible forest areas using incendiary devices dropped from the air by fixed wing aircraft and helicopter. During that period burning was generally strategically located and the actual area covered by burning under prescribed conditions maximized.

From the late 80s a multitude of objections to HR have arisen, largely fueled by urban “farmers” and environmentalists as well as general public concerns over pollution issues.

The Current Situation

In the last three decades a number of factors have significantly increased the risk to life and property from wildfire.

- The rapid subdivision of rural properties and the resulting proliferation of buildings for residential use, often constructed within the forest.
- A strong resistance by many new rural landowners and settlers to the practice of prescribed burning. This resistance, along with environmental and health issues held in the urban areas has resulted in a lack of support for HR from policy makers. This has resulted in a significant reduction in actual area burnt in recent times.
- A long period of drought conditions over much of the Eastern part of Australia
- The depreciation of many access roads and firetrails in the more remote forests due to a cessation of commercial logging.

What are the Benefits of HR

The vast majority of wildfires that occur in forested areas are controllable by conventional means and while parts of the burnt area exhibit severe scorching and soil carbon depletion the most of the areas others are burnt to a lesser degree. The ratio of severe/mild depends on:-

The severity of the weather conditions

The type/flammability of the vegetation

Topography
Fuel levels
Fuel configuration/arrangement
Fuel moisture

In other words the impact of the fire on the environment will vary from catastrophic to mild depending on these factors. It should be noted that the only factor that we can have any significant effect on is fuel level and arrangement.

HR has a twofold effect on our ability to control wildfire-

- The total tonnage and the most flammable part of the fuel is reduced
- Regular burning will rearrange fuel by eliminating the elevated and highly volatile fuel present in unburnt forests and replacing it with the less volatile fuel that lies flat on the forest floor (making fire control efforts much easier and safer)

The fact is that even though total tonnage of fuel may return to preburn levels within five years regular HR will ensure that most of this tonnage is lying on the ground rather than elevated in the understory. This fact has an enormous impact on our ability to control wildfires

In summary forest areas that have been subjected to regular HR will greatly facilitate the control of forest wildfires that occur under conditions that are not catastrophic as well as reducing the risk to firefighters and reducing the impact of wildfire on the environment as a whole.

In many cases forest areas that been subjected to HR actually extinguished wildfires under mild conditions without the need for significant human intervention.

Catastrophic Fires

General

It may surprise many people that the weather conditions that would support a wildfire with catastrophic consequences will occur in most years somewhere on the eastern coast of Australia.

The reason that these condition go unnoticed is that the last ingredient for a catastrophic fire is absent.

The last ingredient for a wildfire that ends up having a catastrophic effect on the environment is ignition.

In my experience the vast majority of forest wildfires resulted from fires that were already in existence and not from ignition on the day. These fires were usually started either by lightning strikes or from late pre season burning ie these fires started earlier under milder conditions.

If you examine the history of wildfires that have resulted in significant loss of life and property from the fires in the Bega valley in the 1950s to the recent fires in Victoria, you will find a common theme of pre-existing fires. These fires were often burning in remote bushland to the west of the affected area. They were often burning for months prior to the occurrence of the factors that caused it to become catastrophic and had there been a will and an ability to extinguish these fires earlier, under mild conditions, the catastrophe that followed may have been avoided.

Effect of HR on Catastrophic Wildfire

The major advantage of HR has been misunderstood by policy makers. This is demonstrated by statements such as “under the extreme weather condition on the day the passage of the fire was unaffected by areas that had been previously burnt”

The role of HR is not to stop a wildfire under catastrophic conditions but to control both the passage and environmental effect of wildfires that occur under the vast majority of conditions that are not catastrophic.

HR in a normal forest situation usually burns between 15% and 35% of the total area. The areas burnt are the dryer more open forest types occurring on the ridges, northerly and western aspects. While elevated and the top layers of litter are burnt the soil carbon is unaffected. Higher ratios than this can be achieved either by accepting a greater degree of damage to the forest environment (and risk of escape) or conducting the burns in stages.

The areas actually burnt are those that would more likely carry a wildfire under normal conditions

As explained above this has enormous benefit for any subsequent fire control effort carried out in any but the most severe conditions particularly if the HR has been carried out in a strategic pattern.

In relation to the “catastrophic fires” the important effect of HR is either in reducing the ability of lightning strikes to start and maintain fires in inaccessible areas and/or significantly improving the possibility of control all wildfires under milder conditions.


In summary, the only way to stop a wildfire under catastrophic conditions is to be free of ignition points at the time! The best way of achieving this is to carry out strategic HR in Autumn and Winter under predetermined conditions.

Strategic HR involves an understanding of the fire behavior as well as the asset you are trying to protect and it's environment. This enables you to plan the location and prescriptions for the HR and construction of infrastructure to the best advantage

I believe that a real need exists for training in the planning and technical knowledge to carry out HR and proper political will to have it done when the relevant conditions prevail.

I am forwarding these observations in the hope that they may contribute in some way to the current debate arising out of the Victorian fires.

Yours truly,


John Reynolds