Industrialised Logging: Cause of Bushfire Danger

Bushfire danger is increasing as a consequence of climate change predicted by scientists.[1] Heavy logging and burning of forests increases rather than decreases flammability. Forests permitted to exist in their natural state (with dense shading canopies and intact boundaries) lose less moisture from drying wind and direct sun. An unlogged forest can remain cooler and damper - for longer. It has been demonstrated that it can slow, and even halt a fire. [2]

Native forests left to recover, close canopies, create shade, cool all below



The effect of logging and/or burning natural areas as a fire preventative measure has long been debated. Scientific study of the relationship between industrialized logging and fire has now taken place and it is imperative that the findings are acted upon.[3] Supported by scientific studies of comparable forest situations in other continents, this research provides conclusive evidence that industrialised logging of moist native forests alters natural fire regimes.

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[1] "Climate change, weather and drought are altering the nature, ferocity and duration of bushfires," Gary Morgan, Bushfire Cooperative Research Centre, http://www.theaustralian.com.au/in-depth/bushfires/extreme-bushfires-to-hit-more-often/story-fngw0i02-1226554168018 "The Forest Fire Danger Index (FFDI), which is used to gauge bushfire threat, has increased significantly at 16 of 38 weather stations across Australia between 1973 and 2010, with none of the stations recording a significant decrease, (Clarke et al., 2012). The increase has been most prominent in southeastern Australia. Fire seasons have also become longer (Clarke et al., 2012). http://climatecommission.gov.au/wp-content/uploads/CC_Jan_2013_Heatwave4.pdf http://www.smh.com.au/environment/climate-change/bushfire-ferocity-linked-to-climate-change-20090209-8235.html

[2] Dr Chris Taylor observed the Churchill Fire in Victoria in 2009 effectively limited by a national park. It burnt along the northern periphery of Tarra Bulga National Park, not into it, and a fire spot inside the park did not develop into a major fire.

[3] *Effects of logging on fire regimes in moist forests*
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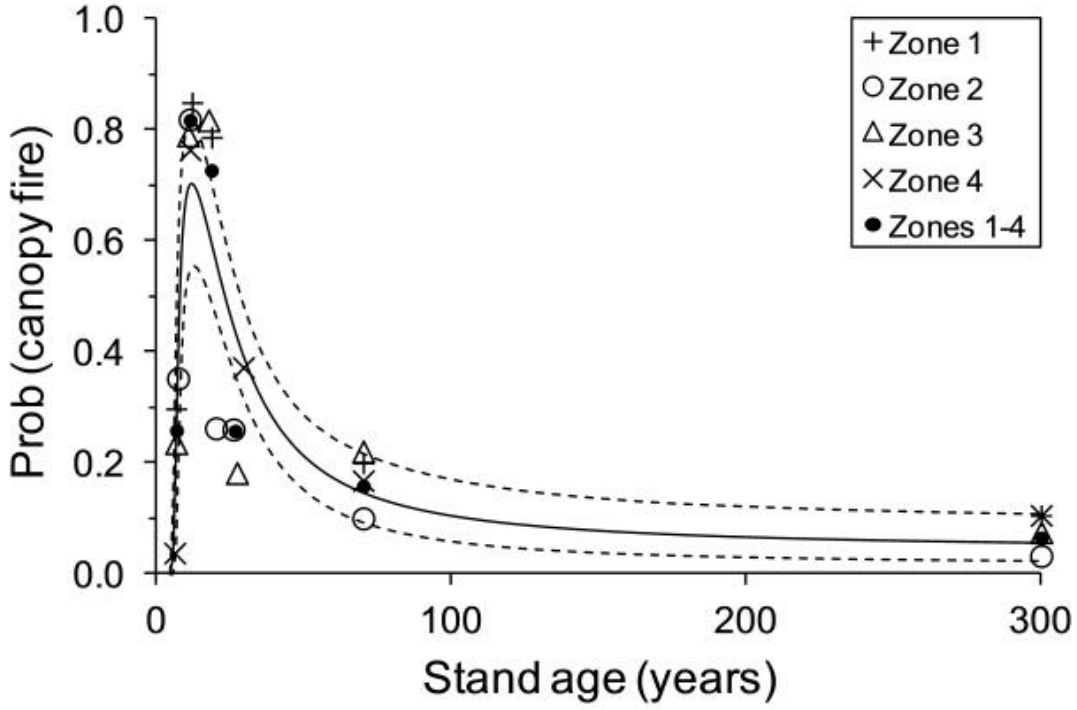
It does so by increasing susceptibility to ignition[4], fire severity[5], changing fuel load and condition[6] and increasing fire frequency. These factors compound and escalate so that fire burns hotter and faster through stands of regrowth forests that have been heavily logged than in unlogged moist forests or in ones that have been allowed to recover to maturity.

Here is the typical disaster scenario of the heavily logged forest. For the first five or so years the logged area is (naturally), statistically unlikely to suffer severe fires. After seven years the hazard begins to increase. Most of those initial regrowth seedlings have succumbed to competition from their more vigorous neighbours and their dead, skinny, dry stems add a fine fuel to the ground. The mature canopy has been lost in the logging operation and the forest and the dead regrowth fuel has dried out in the sun. 15 years after the heavy logging event this regrowth forest reaches the peak of its flammability, illustrated by the following diagram of the likelihood of a crown (canopy) fire based on forest stand age.



[4] Extracted from *Effects of logging on fire regimes in moist forests* 'Microclimate effects (including fuel drying) associated with forest harvesting can be expected to be greatest where the unmodified forest is moist. Work in tropical rainforests suggests that when microclimatic conditions are altered by selective logging, the number of dry days needed to make a forest combustible is reduced (Kauffman & Uhl 1991; Holdsworth & Uhl 1997; Malhi *et al.* 2009). In one study, uncut native forest would generally not burn after >30 rainless days but selectively logged forest would burn after just 6–8 days without precipitation (Uhl & Kauffman 1990).'

[5] Extracted from *Effects of logging on fire regimes in moist forests*: 'Logging in some moist forests in south eastern Australia has shifted the vegetation composition toward one more characteristic of drier forests that tend to be more fire prone (Mueck & Peacock 1992). Research in western North America indicates that logging related alterations in stand structure can increase both the risk of occurrence and severity of subsequent wildfires through changes in fuel types and conditions (Thompson *et al.* 2007).'

[6] Extracted from *Effects of logging on fire regimes in moist forests* : 'Whelan (1995) noted that clearfelling of moist forests in southern Australia led to the development of dense stands of regrowth saplings that created more available fuel than if the forest was not clearfelled.'

If a moist forest is never logged, or is allowed to regrow to maturity (forty to several hundreds of years), the fire hazard is vastly reduced. Here is what happens.

The recovering process involves a return of original understorey species such as rainforest plants and tree-ferns which shade the ground, keeping it cool and moist. Then mosses grow and cover any fallen woody debris. These mosses can hold ten times their own weight in water. The dense understorey and ground cover reduces air movement and water loss through evaporation, contributing to general dampness. These moist conditions at ground level are unfavourable to fire and by the time the trees are approaching forty years old, and 50 metres tall, the risk of crown-fire is once again reduced.

So, if moist native forest is heavily logged the loss of a mature protective canopy exposes it to drying out by wind and sun. The moisture holding understorey is lost. Species able to withstand frequent fire become dominant. The forests become a tinderbox ready to burn.

To reiterate: The study of impacts of logging in moist Australian forests conducted over a number of years has now yielded these conclusive results:

'Logging can alter key attributes of forests by changing microclimates, stand structure and species composition, fuel characteristics, the prevalence of ignition points, and patterns of landscape cover. These changes may make some kinds of forests more prone to increased probability of ignition and increased fire severity. Such forests include tropical rainforests where fire was previously extremely rare or absent and other moist forests where natural fire regimes tend toward low frequency, stand replacing events.[7]

Note that: 'Climate change is likely to drive substantial changes in fire regimes (Cary 2002; Westerling *et al.* 2006; Flannigan *et al.* 2008; Pittock 2009). If industrial logging changes fire proneness, then interactions between logging and climate change could lead to cumulative negative impacts, including those on biodiversity.'

[7] *Effects of logging on fire regimes in moist forests*
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Fires spread rapidly through regrowth of logged forests

Currently our native forests are being treated as 'factories'

Claims that logging, 'thinning' and burning forests will lessen fire risk are dangerously misleading. To adopt the recommendation that logging native forests will lessen fire risk would enhance the fire risk to many Australians and their homes.

'Industrialized' forests are proven to burn on a scale and with a ferocity not previously seen. It is time to halt this practice. Allow native forests to regrow to maturity to lessen fire risk.