A Problem-Solving Pathway to Resolve the Controversy Over Fuel Load, Hazard Reduction, Risk Analysis and Bushfires: *A Royal Commission or a Scientific Round-Table?*

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TAGS: *Bushfires; Australia; climate change; hazard reduction; fuel load; window of opportunity; ecology; resilience; critical habitat; scientific round-table; royal commission; conflict resolution*

The total area of land burned during the current bushfire season now exceeds 10.7 million hectares (26.4 million acres). All Australian States - NSW, Victoria, Queensland, South Australia, Western Australia and Tasmania - have been impacted. As at 11 January 2020, ***27 people have been killed***; thousands of homes have been destroyed. It has been one of the worst fire seasons on record.

In the past, two other catastrophic bushfires were considered to be the worst natural disasters ever recorded in Australia's history:

- Wildfires in the ***Black Saturday Bushfires in Victoria*** in 2009 scorched more than 0.45 million hectares. A total of 173 people died in the fires; 2029 houses were lost.
- The ***Ash Wednesday Bushfires in South Australia and Victoria*** in 1983 burnt 0.31 million hectares of land. A total of 75 people died in the fires. In Victoria, 1620 houses and more than 1500 other buildings were destroyed; 32,400 livestock were lost. In South Australia, 383 homes and 200 other buildings were destroyed.

The enormity of the current bushfire crisis
is clearly illustrated in the area of land impacted
compared to previous national disasters:
The land scorched during the 2019-2020 fire season
is over 20 to 30 times greater
than the Black Saturday and Ash Wednesday bushfires.

Public and political comment triggered by the current bushfire crisis has identified a number of key interests that need to be satisfied. They form a framework for risk management of bushfires in Australia:

- *The need to understand the issues that contribute to hazard reduction, fuel load and climate change;*
- *The need for a national plan or policy for hazard reduction;*
- *The need for a Royal Commission or Inquiry into the current crisis; &*
- *The need for a national plan for resilience within communities as a goal.*

Preparedness: *Drought Management* and *Bushfire Hazard Reduction*

Decision-making between droughts (and bushfires) is just as critical as the quite different decisions that must be made should a significant prolonged drought (or catastrophic bushfires) ultimately arise.

Decision-making between droughts (and bushfires) is crucial to avoid or minimize the environmental, social and economic impacts of a crisis created by a catastrophic drought (or fire season). It is a cornerstone for resilience.

Management decisions by landholders ***between droughts or bushfires*** share a common goal: ***Preparedness!***

- *The focus for the pastoral industry is the need to create liquid assets that can be readily converted into cash to meet debts or additional demands during drought.*
- *For bushfires, the focus of Government should resonate with effective hazard reduction plans for our most fire-prone plant communities.*

Decision-making between bushfires requires an understanding of the ecological processes and dynamics of fuel load build-up, especially for our fire prone dry sclerophyll/open eucalypt woodlands.

Scientific data on *leaf litter production and decomposition rates and ground-storey regrowth and recovery following bushfires will* enable reliable and relevant modelling to be an effective part of risk assessment and management.

Issues That Contribute to Fuel Load And Hazard Reduction: *Dry Sclerophyll Forests/Open Eucalypt Woodlands*

There are two sources of the fuel load: Leaf litter from trees and ground-storey undergrowth (*shrubs, grasses, broad-leaved plants*); as well as shrub regrowth following past bushfires.

The seeds of the ground storey plants, but particularly the shrubs in dry sclerophyll/open eucalypt woodlands, have hard impermeable seed coats so that germination is inhibited. *Acacia spp*. are but one example.

When a firestorm rages through these woodlands, it "cracks" the seed coat. When rain eventually falls, mass germination of these species occurs. If no hazard reduction to control the shrub regrowth is taken for 5-10+ years, the fuel load build-up will contribute to increasing the risk of the bushfire cycle repeating.

The other source of fuel on the woodland floor is the leaf (and bark) litter of the woodland tree species. The rate of fuel load build-up depends on the comparative rates of leaf litter production and decomposition.

As dry sclerophyll woodlands occur on acid soils, fungi will mainly be responsible for decomposition. Decomposition of *Eucalyptus* leaf litter is a slow process *e.g. possibly up to 2 years depending on surface soil/litter moisture conditions over time.*

The Wider Application for Resilience in the Australian Environment

By far the most common approach
to understanding the meaning of resilience
is to focus on its human dimension: -

The ability of regional communities to adapt and to recover from a bushfire crisis through ***preparedness*** e.g. fire hazard management strategies to avoid or minimize the potential environmental - *ecological, economic and social* - impacts during a bushfire season.

But the present bushfire crisis,
burning over 10.7 million hectares,
has highlighted another dimension
that must be incorporated in any national plan or policy:
Natural resources
and the ecological dimension of resilience.

The international media has made the world very much aware of the loss of Australian native wildlife during the present bushfire crisis. Distressing images of kangaroos and koalas have had very wide circulation.

This should point to the need for any future national plan or policy for bushfires to recognize and to also apply resilience in term of its accepted scientific usage – *response to, and recovery from, disturbance*.

Resilience is an accepted ecological concept central to understanding whether the impacts of a disturbance (*e.g. a catastrophic bushfire)* on a plant community (e.g. *Eucalypt woodland*) are either reversible or irreversible after the bushfires cease.

For our fire prone dry sclerophyll/open eucalypt woodlands, the ***response*** to the bushfire season has been the large-scale destruction of mature trees - as well as the loss of native fauna and their habitat.

In terms of ***recovery*** of these woodlands, almost all *Eucalypt spp*. can regenerate from a below-ground lignotuber ("*sucker*"). Depending on the extent of fire damage to the crown, regeneration of branches can occur from axillary buds beneath the bark ("*apical meristems*").

An environmental audit, convened by the Commonwealth and the States, is a priority need to identify the extent ***ecologically critical habitat*** – *a legal obligation under nature conservation legislation* - has been destroyed in the 10.7 million hectares scorched by fires.

All ***listed threatened species*** of fauna that have had their critical habitat adversely impacted need to be identified and the data published in the public interest. ***Recovery plans*** for adversely impacted fauna need to be implemented.

Climate Change, Fuel Build-up and Bushfires

Fuel build-up depends on the comparative rates of annual leaf litter production and decomposition; and the extent of ground-storey shrub regeneration, especially if there has been a history of a past firestorm.

Increasing evidence suggests
climate change
is driving an increase in the intensity and frequency of
hot days, heatwaves and drought in Australia.

These features of climate change add to the complexity of understanding of fuel build-up.

They slow down decomposition of litter on the woodland floor because of lack of moisture at the soil surface/litter interface. Slower decomposition rates facilitates litter accumulation - a relevant consideration for the understanding of issues that contribute to fuel build-up.

Soil water stress during drought induces leaf senescence ("*browning*") of plants; ultimately leaf litter fall. Any increase in the intensity and frequency of hot days that turns vegetation to tinder, will add to the bushfire hazard.

Defining the actual contribution that can be attributed to climate change as a cause of bushfires in Australia's most fire-prone ecological communities of flora and fauna is problematic.

It requires medium- to long-term data on the impacts of the intensity and frequency of hot days, heatwaves and drought on the seasonal dynamics of litter production and decomposition – as well as on fuel build-up by the ground storey flora ("*undergrowth*").

It should not be in dispute
there has been an increase in extreme fire weather
and a lengthening of the fire season across large parts of Australia:
So our focus should now be on defining the contribution
that can be attributed to climate change for the risk of bushfires
in Australia's most fire-prone ecological communities.

Review Priorities:

i. ***Data on the comparative rates of leaf litter production and decomposition for our most fire-prone biomes should be seen as two of the cornerstones to set critical fuel load levels.***

ii. ***Given the evidence climate change causes hotter drier days, the prudent step to now take, in the context of a changing climate environment, is to review existing critical fuel loads as well as projected frequencies for hazard reduction burns based on the "best available science" for the window of opportunity.***

iii. ***A past model used in Queensland for 70 years did not designate any time frames for hazard reduction burns - but relied on year-round land management to reduce the incidence of bushfires[1]. The frequency pattern of hazard reduction burns of this model should be compared with the existing model in Queensland.***

Where to Now: *A Royal Commission to Review the Bushfires?*

The "norm" in Australia is for Government to initiate a public inquiry – either a *Royal Commission* or a *Commission of Inquiry* - whenever a significant public interest environmental controversy arises.

A Royal Commission was the review pathway following the *"Black Saturday Bushfires"* in Victoria. More recently, a Royal Commission reviewed the Murray-Darling Basin Plan. The Queensland floods were reviewed by a Commission of Inquiry.

The Federal Government has signalled that it is considering the prospect of a Royal Commission into the bushfires to consider issues such as hazard reduction to climate change as well response issues e.g. national coordination matters, through to resilience and planning for the future.

A Royal Commission and a Commission of inquiry are independent public inquiries that act as a fact-finding body. Their findings of fact are the basis for recommendations made to Government.

The findings are not binding on any other body and have no authoritative legal value.

[1] Mike Flanigan (2020) "*Old system worked*", 'Courier-Mail' Letters, 11 January 2020 at p. 50.

The most likely area of challenge will arise in respect of the decisions made by Government following a Royal Commission or Commission of Inquiry as the final decision is a political one

Ultimately, the dilemma for Government will be whether or not to implement some or all of the Royal Commission's recommendations.

It would be rare for Government to implement all of the recommendations "*lock, stock and barrel*" as was the case of Queensland's then Premier, Mike Ahern, following the "police corruption inquiry" of Tony Fitzgerald QC.

A past, option used by Governments
is to "cherry pick" selected recommendations.

An Alternative Review Process to a Royal Commission: *The Scientific Round-Table*

There is no dispute that both Commissions do have an effective role for reviewing emergency processes and coordination, actions and measures for recovery and governance following a catastrophic fire season.

However, are they the most effective forum for reviewing fuel build up and hazard reduction, between bushfires, for our forests and woodlands – given critical decision-making is based on scientific issues.

In order for an environmental problem – like bushfire hazards - to be effectively resolved, the potential sources of conflict that may have triggered off the controversy need to be identified.

Conflicts over information will invariably be the primary source of conflict when the environment is in issue: *A lack of information, misinformation, scientific uncertainty, different interpretations of the same information or different opinions as to what information is relevant.*

Resolving scientific information conflicts
should be seen as the ***exclusive domain of science.***

The scientific round-table is a structured process I developed and have used to resolve divergent opinion on scientific issues in environmental conflicts.

Accepted principles and concepts from conflict management and resolution as well as the alternative dispute process of *Independent Expert Appraisal* are its framework.

The purpose of the scientific round table
is for the experts
to reach agreement, by consensus,
on each disputed factual issue.

The representatives at a "bushfire" roundtable would be a panel of professionals, having expertise in hazard reduction, risk analysis and bushfires. The experts would be nominated by Government - Federal, State and Territory.

The round-table would be convened by the Commonwealth and chaired by a dispute resolver/expert in the subject matter of the round-table.

Scientific Round-Table Outcomes

- *Conclusions on disputed issues where agreement is consistent with all relevant and reliable scientific data and/or scientific opinion;*
- *Where agreement cannot be reached by the experts on a disputed issue the **non-binding** opinion of the dispute resolver – the scientific/ADR expert who chairs the round-table - would be provided;*
- *Areas of scientific uncertainty for a specific issue, including where there is a lack of information, must be identified — especially where it would lead to conclusions being seen as speculation; and*
- *A number of alternative pathways may be suggested where the available scientific information associated with a specific issue in dispute is either uncertain, incomplete or unavailable.*

Conclusion: *Conflict Resolution*

The ***scientific round-table*** outcomes would be applied by the States and Commonwealth to prepare a national bushfire plan or policy on hazard

reduction through the process of ***conflict resolution,*** a collaborative process of problem-solving through negotiated outcomes.

Factual issues would not be in dispute as negotiations are built on the outcomes of the scientific round-table.

About Dr Ted Christie:
Scientific Evidence and Commissions of Inquiry

The review pathway I advocate is based on my expertise and roles in the many facets of public interest environmental conflicts over time – from *ecological research into natural resource management as a Senior Scientist based in western Queensland with QDPI*; to academe as an *Associate Professor in Applied Ecology, Faculty of Environmental Sciences, Griffith University;* then professional legal practice as a *Barrister and Mediator*.

Also, I have had key roles in two public interest environmental Commissions of Inquiry – Principal Adviser to the Commission Chair in the *Queensland Fraser Island Commission of Inquiry* and as Chair of its independent External Scientific Expert Review Panel; and as Commissioner on the *Commonwealth Shoalwater Bay Commission of Inquiry*.

The Fraser Island Inquiry did not have any public hearings for the Inquiry participants to have an opportunity to examine the scientific experts who had prepared reports submitted to the Inquiry. This situation did not apply at the Shoalwater Bay Inquiry as public hearings were held in which all expert reports were subject to examination-in-chief and cross-examination.

Based on my practical experience in this regard, neither Inquiry process was entirely satisfactory for resolving information conflicts over scientific issues.

That is one reason why I wrote the first published cross-disciplinary (*Science/ Law/Conflict Resolution*) book on environmental dispute resolution. This book provides more insight into the scientific round-table.

An extract from the Foreword of my book, ***"Finding Solutions for Environmental Conflicts: Power and Negotiation"*** written by **Federal Court Justice Peter Gray** (as he then was) captures the goals I had in writing the book.