South East Timber Association Submission to the Portfolio Committee No. 4 – Industry Inquiry into the Sustainability of the NSW Forests Products Industry Overview

South East Timber Association (SETA) members support government policies that are committed to ensuring public forests are available for a range of commercial and recreational activities and expect land management policies and practices will maintain environmental values in the long term.

SETA expects the government to commit to ensuring forest and related policies strike an appropriate balance between social, environmental and economic outcomes, while minimising adverse impacts of policy changes on regional communities.

The wide scope of the inquiry into the long term sustainability and future of the timber and forest products industry, the SETA evidence will focus largely on Part 1(b) of the terms of reference, including fire, regulatory structures, habitat protection and local, state and federal policies affecting these issues.

Timber and all other forest products produced from natural forests and plantations, are currently the most sustainable materials we can use for building, communication papers and a host of current and emerging uses, if the overall forest estate is managed sustainably.

SETA has the view that we cannot have a sustainable timber and forest products industry, unless the forests and plantations that supply the industry are managed sustainably over the long term. Given the interconnective relationship of forests across the landscape, sustainable forest management must be viewed across both public and private land, including the conservation reserve system.

Sustainable forest industries must have a sustainable land base. Since the "Comprehensive, Adequate and Representative (CAR) Reserve System was established as part of the Regional Forest Agreement (RFA) process, there has been an ongoing erosion of the State Forest land base available for timber production. Reservation levels of NSW tall forests, under the RFAs exceeded international benchmarks.

A Terra Nullius Conservation Regulatory Framework

The terra nullius approach to environmental management of harvesting operations and adjacent "environmentally sensitive areas" in NSW, is emphasised by the language of preservation, rather than conservation. Terms include "permanent protection," "permanent retention," "long undisturbed patches" and "wilderness."

In June 1972, an early terra nullius opinion was voiced in the NSW Bush Fire Bulletin by two botanists from the Royal Botanic Gardens and National Herbarium in Sydney.

With regard to the ecological effects of high intensity summer bushfires compared to the ecological effects of low intensity fires in other seasons, the botanists expressed the opinion that: *"These* (regular planned low intensity fires) *will be damaging to flora and fauna (using any definition of "damage").*

Natural fires generally (if not always) occur during hot, dry, windy weather in summer, or at least the hotter months. It is this regime to which our plants (and animals) are presumably adapted. To state or suggest that winter hazard reduction is a substitute for, or equivalent to, summer wildfire is quite ludicrous. Most plants and animals have growth rhythms which

reflect seasonal conditions and to superimpose a completely alien fire regime may well be more devastating than the occasional "10 year" crown fire.

These botanists seem to have denied Aboriginal burning over the past 50,000 years (plus or minus) was not confined just to the summer months and has shaped the evolution of the Australian biota. They gave no evidence of understanding that more frequent fires of low intensity (less than 500 kilowatts/metre) covering a percentage of the planned burn area, have much more subtle effects on biodiversity than high intensity bushfires emitting 5,000 to 80,000 kilowatts per metre of fire line and covering the whole of tens of thousands of hectares.

Fifty years later, a number of fire and ecology experts continue to have what might best be described as a poor understanding of fire intensity under varying fuel loads and weather conditions and the consequential impacts on biodiversity.

Much of the key NSW regulatory framework is written from a terra nullius view of the NSW natural environment. The current natural environment regulatory framework purports to protect scrubbed up forests, in declining health, that are an artifact of more than 200 years of European neglect. The authors of this framework exhibit a failure to understand the effect Aboriginal fire management has had on ecological development in NSW.

The Wilderness Act 1987 underpins the principle of forest being "preserved in its natural state" and supports the terra nullius view, rather than active management practiced by Aboriginal people.

The NSW environmental law must be rewritten to facilitate an active and adaptive approach to conservation management.

Is 80 Percent of Available Public Land Enough to Deliver Sustainable Conservation Management, Supplemented by Non-reserve Public and Private Land

The NSW parks and reserves system current occupies 80 percent of the public land base potentially available for reservation. State Forest, including areas reserved from harvesting make up the remaining 20 percent. Ongoing activist campaigns to eliminate all native forest harvesting in NSW and the failure of the reserve system to fully deliver protection of biodiversity, has resulted in successive NSW governments continuing to erode the land base available for timber production.

On page 2 of the NSW NP&WS September 2021 Zero Extinctions Report, it states: "*There is evidence that the overall decline in biodiversity in NSW is occurring even in the national park estate.*"

Despite up to a century of timber production, biodiverse State Forests continue to be transferred to national parks, to shore up conservation objectives, including koala protection. When will government and conservation bureaucrats ask, if multiple use state forests are delivering conservation outcomes to the same or higher level than national parks, why is there a need to change land tenure?

In July 2016, the NSW assessment of the conservation status of the Southern Brown Bandicoot (SBB) population report (Ben Hope) was published. The introduction on the Environment NSW website notes: "*southern brown bandicoot (eastern) has likely undergone*

a severe reduction in numbers of at least 50 percent over the past 10 years, and the causes have not ceased and are not well understood..."

The report noted that in the period from 1999 to 2008, the SBB populations in the Ben Boyd National Park had declined by 44 percent and Nadgee Nature Reserve population by 47 percent.

Due to increasing populations on state forests in the Eden area, in 2014-16, FCNSW handed over both Long-nosed Potoroos and Southern Brown Bandicoots to staff from Environment Australia, Taronga Zoo and the ANU. These animals were used to repopulate the Booderee National Park near Jervis Bay, where these species have been locally extinct for more than 100 years.

Fire in Forested Landscapes.

To protect and improve the forests, all forests must have active and adaptive management, that recognises the Australian biota has evolved under active Aboriginal management for tens of thousands of years. Prior to European arrival, much of the Australian environment was not "long undisturbed." Fire was a primary agent of disturbance and much of the Australian vegetation and many plant, bird mammal and reptile species are dependent on regular disturbance by low intensity fire, rather than irregular, catastrophic disturbance by mega fires.

Aboriginal landscape scale use of fire must be reinstated, if the ground and understorey fuel levels are to be managed. NSW is currently on track to subject more and more public and private native forest to a catastrophic mega fire cycle, which regardless of changing CO2 levels, would not occur if Aboriginal people had continued to manage the forests.

The NSW mega fire record over the past 18 years has confirmed that the supposed "protection" of biodiversity, by simply transferring public land from state forest to national park, has been a false and misleading political position and a deeply flawed conservation policy position.

The RFS and the Bushfire Co-ordinating Committee.

The NSW bush Fire Co-ordinating Committee (BFCC) has responsibility for planning in relation to bush fire prevention and coordinated bush firefighting. It also advises the Commissioner on bush fire prevention, mitigation and coordinated bush fire suppression.

Fuel reduction burning is a key component of any bush fire mitigation program. From 2015-19, the NP&WS target for fuel reduction was set at 1.9 percent of the gross area and for FCNSW, one percent. Private property targets were typically around 10,000 hectares each year. No targets were reported for the past two years.

These figures provide totally inadequate mitigate high intensity bushfires effects at a landscape level. These figures do bring into question as to whether the BFCC has a membership with the necessary skills to fulfil its statutory obligations.

Based on figures from the Rural Fire Service (RFS) annual reports, the average area of annual FRB over the past 17 years, is almost 70 percent lower than the average for the first four years of the 21st century. More than 50 years of research and field experience have confirmed that about eight percent of the forested landscape needs to be fuel reduced annually, to provide a reasonable level of bush fire mitigation.

The current arguments put forward by fire research academics that fuel reduction burning should be concentrated adjacent to human assets give no thought to mitigating the bushfire risk on the state's biodiversity assets. Consequently, it is these assets, protected by legislation, but in reality, undefended from mega fires that pay the ultimate price for our failure to undertake adequate levels of bush fire mitigation.

Ecological Benefits of Frequent Low intensity Burning.

Farmers have long understood the role of soil chemistry in determining the success or failure of farming operations. Soil pH (acidity) and overall fertility are key issues that must be addressed, to grow healthy crops and pastures. Farmers know that increasing levels of available aluminium, manganese, copper and zinc, with increasing soil acidity, means unhealthy or dead crops.

In the case of natural ecosystems, much less research has been done to understand the impact of changing soil chemistry on the underlying health of Australia's native forests. Many public land managers and university academics seem to presume that the soils in a "natural" ecosystem are a constant. It is noted that dieback has markedly increased since the recorded level of low intensity burning in NSW dropped by an average 70 percent in the years since 2004.

Research published by, Turner et al 2008 Research published by, Turner et al 2008[1] found: *"The combined data indicate that changes occur in forest soils when there is a long period of exclusion of fire. It is suggested that these changes generally lead to secondary changes, such as in pH and availability of other elements such as aluminium."*

High Intensity Bushfire Impact on Water Quality and Catchment Water Yield.

Following the 2003 wildfires, CSIRO scientists undertook research to determine the potential impact of the bush fires that burnt 700,000 hectares of forest in North East Victoria. The study did not include the water yield impact of bush fires, which burnt over a million hectares of the main range in NSW and the ACT at the same time as the Victorian fires.

Dr Richard Benyon stated *"The worst case scenario is by the year 2020, there will be a reduction in water yield from that area of about 80,000ML (80,000,000,000 litres) each year. We didn't take into account the affect of change, if there is any change in climate . . . then reductions could be increased."*

The regeneration from these fires would take up all of the water projected to be returned to the Murray River, as a result of Victorian water saving initiatives over the 20 years from 2003. Despite this advice, there has been no management of this regrowth, or the regeneration resulting from the 2007 high intensity bush fires that affected additional areas of the Murray River catchment. Water quality in high intensity fire affected catchments is degraded for years, when all ground cover from ridge lines to riversides is removed. Thinning of regrowth whether it comes from high intensity bushfires or harvesting, is essential for improving ecological, fire mitigation and catchment water yield outcomes.

NSW must take a lead in altering the course of the current mega fire Titanic, if we are to avoid another wave of faunal extinctions. Any future climate variability is another reason to act, not a reason to do nothing or continue to implement the same failed ecological and forest management policies.

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Eucalyptus imlayensis (Imlay Mallee) Fully Protected Since 1972 – 50 Years Drifting Towards Extinction

On page 2 of the NSW NP&WS September 2021 Zero Extinctions Report, it states: "*There is evidence that the overall decline in biodiversity in NSW is occurring even in the national park estate.*"

While ever the NSW conservation reserve system is underperforming this will place undue pressure on state forests and private property to make up for the conservation reserve failings. This potentially places more pressure to transfer production forest to the conservation reserve system, which further reduces available hardwood timber volumes.

Why do environment ministers and environmental activist organisations fail to focus much attention on the performance of the conservation land tenure, which currently contains 80 percent of the NSW public land base potentially available for conservation reservation?

In contrast to the tens of millions of dollars allocated to koalas each year, a south east NSW example of a species that needs more research and management funding, is the Imlay Mallee. There have been no rivers of cash announcements for this critically endangered species.

Prior to the 2019-20 Border fire, there were reported to be 80 mature Imlay Mallee, with no naturally regenerated juveniles, in less than 4 square kilometers of Mt Imlay National Park. The entire area occupied by this species was burnt by a high intensity bushfire on 4 January 2020.

Prior to the fire, the mature trees were in generally poor health and setting little or no seed. In 2011, 23 seedlings were planted, following a 10 percent decline in the population over the prior 10 years.

The Imlay Mallee was listed in NSW as Critically Endangered on 11 December 2009. The status of the Imlay Mallee is currently being reassessed by the NSW TSSC, with assessment due for completion by 30 April 2022.

The *Consultation on Species Listing Eligibility and Conservation Actions* Report advises:

- *The reproductive ecology of Imlay mallee is not well understood and requires further investigation;*
- *Some plants have produced viable seeds that have been used to establish a few ex situ individuals;*
- *Natural establishment from seed appears to be a very rare event, as no seedling or juveniles have ever been observed on Mount Imlay since the species came to the attention of science in 1977;*
- *The single population of Imlay mallee had not been burned for many years prior to the 2019–20 bushfires. Surveys following those fires have observed approximately 90 percent of individuals resprouting from lignotubers, with the other approximately 10 percent having been killed by the intense fire. No seedlings have been observed since the fires;*
- *Between 2000 and the 2019–20 bushfires the population declined by approximately 10 percent with another 10 percent perishing in the fires, bringing the number of mature*

individuals down to about 48 (G Wright 2021. pers comm 19 November). This represents a total population reduction over the past 44 years (1977 to 2021) of over 31 percent,

- *Surveys conducted on 6 November 2020 (after the bushfires) counted 48 mature individuals. All of these were resprouting from the base after being severely burnt.*
- *Where competition from native vegetation is suspected, including from other Eucalyptus species, of impeding seedling recruitment by Imlay mallee, continue thinning this vegetation while ensuring that any unintended environmental impacts from this action are minimised;*
- *Investigate potential causes of historic and current lack of recruitment in the species, and potential management actions to encourage seed production and seedling establishment;*
- *The species had been propagated and translocated to nearby sites on Mount Imlay (Balawan), however, all 37 surviving plants were killed in the 2019-20 fires.*

Planting of 23 Imlay Mallee Seedlings 21 September 2011

The Consultation Report makes no mention of basic eucalypt silviculture. If the Imlay Mallee were to produce seed, with a ground litter layer and mulch, similar to that in the photo above, the seed would not contact mineral soil and would not germinate.

As with most ecological fire discussion by ecologists, there is also no consideration given in the report to management decision not to use very low intensity, patch burning among the mature Imlay Mallee (in prior decades) to create a seed bed, in the event any viable seed was produced by the mature trees. Regular low intensity burning would have reduced the intensity of the 2019-20 bushfire and reduced the impact of that fire on the park biodiversity and other values.

Some diversion of koala funds to this and other critically endangered species should deliver improved conservation outcomes, compared to those delivered by bureaucrats and environment ministers throwing money at populist activist icon species campaigns.

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Doomed Flora and Fauna - Why Current Bushfire Mitigation Levels Must be Increased

Are ideologically driven academics, aided by conservation land managers, who obligingly accept their research recommendations pushing Australian flora & fauna to the next mass extinction event?

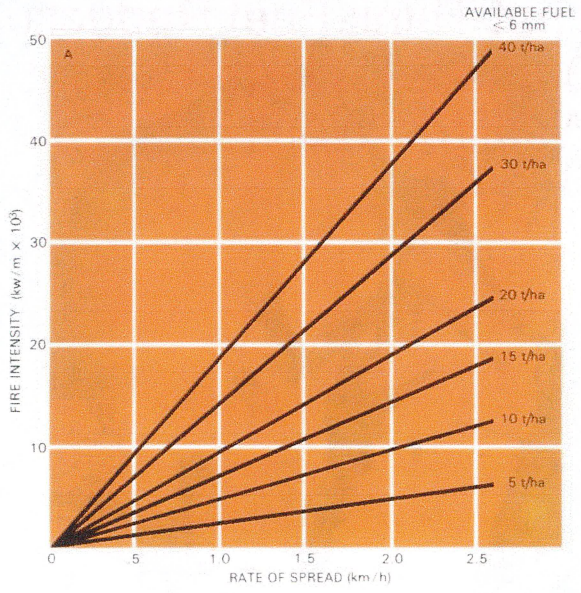
Over the past 20 years, fire and ecological research and conservation land management has been increasingly underpinned by a wilderness (Wild Country) or terra nullius view of the Australian biota.

In June 1972, an early terra nullius opinion was voiced in the NSW Bush Fire Bulletin by two botanists from the Royal Botanic Gardens and National Herbarium in Sydney.

With regard to the ecological effects of high intensity summer bushfires compared to the ecological effects of low intensity fires in other seasons, the botanists expressed the opinion that: *"These* (regular planned low intensity fires) *will be damaging to flora and fauna (using any definition of "damage").*

Natural fires generally (if not always) occur during hot, dry, windy weather in summer, or at least the hotter months. It is this regime to which our plants (and animals) are presumably adapted. To state or suggest that winter hazard reduction is a substitute for, or equivalent to, summer wildfire is quite ludicrous. Most plants and animals have growth rhythms which reflect seasonal conditions and to superimpose a completely alien fire regime may well be more devastating than the occasional "10 year" crown fire.

These botanists seem to have denied Aboriginal burning over the past 50,000 years (plus or minus) was not confined just to the summer months and has shaped the evolution of the Australian biota. They gave no evidence of understanding that more frequent fires of low intensity (less than 500 kilowatts/metre) have much more subtle effects on biodiversity than high intensity bushfires emitting 5,000 to 80,000 kilowatts per metre of fire line.



Fine Fuel Load/Ha (less than 6mm) vs Fire Intensity (kw/m x10^3) Luke & McArthur

They also failed to understand "natural" summer bushfires" post European arrival have generally burnt in much heavier fuels than was the case under Aboriginal management. From the above graph, it is apparent that fire intensity in fine fuels (less than 6mm in diameter) of 20 or more tonnes per hectare (t/ha) is much higher than is the case with fires under the same weather conditions burning in fuels of 5 to 10 t/ha.

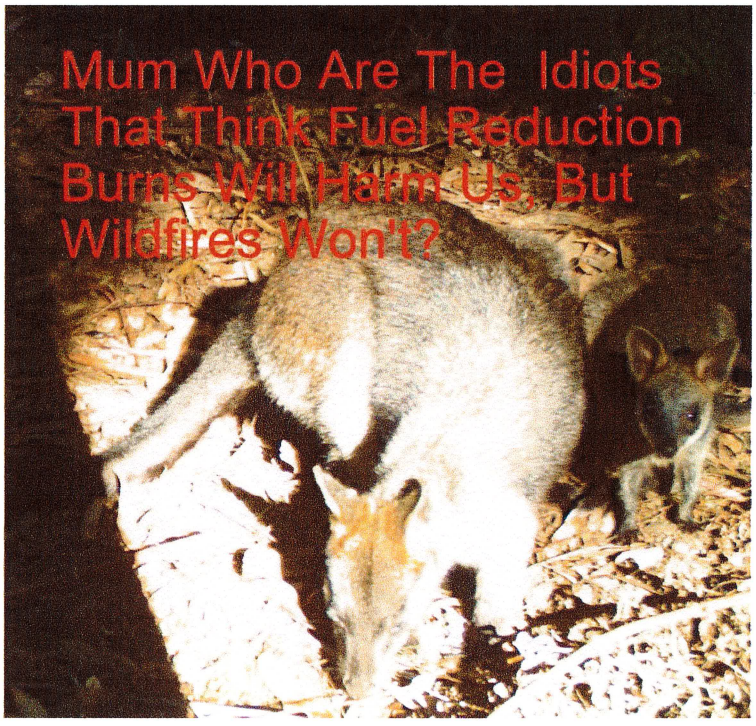
Fifty years later, a number of fire and ecology experts continue to have what might best be described as a poor understanding of fire intensity under varying fuel loads and weather conditions and the consequential impacts on biodiversity. Two quotes from the Western Australian Leeuwin Group, Professor of Botany, interviewed by the ABC in June 2021 are typical of many media reports in recent years.

"In 1967, they (WA) started a process of intensive burning." This was actually an extensive program of low intensity burning, not high intensity burning.

"Our letter to the premier is saying, as scientists, the protective value of just a target, burning wilderness, burning remote from infrastructure and human lives and property does not make sense."

The fire mitigation approach proposed by the Leeuwin group has been developed and steadily implemented in eastern Australia over the past 20 years. The "Colgate ring of confidence" (just mitigate near human assets) approach to bushfire mitigation contributed to the scale of the 2019-20 bushfire disaster and the catastrophic impact on biodiversity.

A landscape scale of bushfire mitigation must be implemented again, if the scale and impact of high intensity bushfires on biodiversity and human lives and assets, including timber production from native forests and plantations, is to be reduced in future drought years.



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Bushfire Mitigation Lessons From the Past Almost Forgotten.

With a wet summer saving NSW from another disastrous bushfire season, it is time for NSW and other Australian bushfire and public land management agencies to reflect on what they can do to mitigate future bushfire risks in Australia.

Most of the recommendations from the various 2019-20 bushfire inquiries and the royal commission focussed on processes to minimise human casualties, more procedures to run bloated emergency response empires and undertaking more research to justify minimal mitigation work and protect the reputations of those who know not what they should do.

Some reflection on past learnings may be a good place to start, if we are to have more effective bushfire control in future decades. The bushfires of 1951-52, and 1953-54 in NSW highlighted the risk that uncontrolled bushfires burning in remote, inaccessible country during late spring and summer posed to towns, farms and cities on days of very high to extreme fire danger.

Following the serious fires in the Blue Mountains and other parts of the Coast and Tablelands during the 1957-58 fire season, the Chief Secretary, the Hon. Christopher Kelly, M.L.A., convened a special conference of the State's firefighting services and Local Government Authorities to examine in detail proposals for combating fire outbreaks in unoccupied crown lands contiguous to towns and settlements.

Broadly, the schemes were designed to include:

1. The prevention of uncontrolled fires;
2. The encouragement of controlled hazard reduction at safe times of the year;
3. The development of a system of fire trails and firebreaks in unoccupied lands.
4. The setting up of means of fire detection and communication; and
5. To facilitate attacks on fires in rough or inaccessible country at the earliest practicable stage.

Nine LOCALLY RUN Bushfire Prevention Schemes were established, with a budget for 1958-59 of 100,000 pounds ($200,000). In the first 5 years of operation 5,310 km of fire trails were constructed for less than $1 million. By 1970, the schemes had increased the length of fire trails to 8,046 km. In recent decades, with changes in public land tenure, parts of this network are no longer maintained, have been totally closed or access is heavily restricted.

Why does government spend $255 million on aircraft hire in a bad bushfire season, yet spend $8 to $10 million a year mitigation works? A fraction is actually spent on the ground. More needs to be sent on the restoration of ground access to remote areas and undertaking adequate, about 8 percent of the gross forest area, on fuel reduction/ecological burning.

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A National Research Integrity Commission

An article in The Sydney Morning Herald on 23 November reported that a top medical research scientist had been referred to the Queensland Crime and Corruption Commission over alleged research misconduct. Some of the key matters covered in the report, that have relevance to other fields of research include:

1. The institute declined to detail the specific allegations made as the matter is now before the commission, but *The Age* understands they centre on data manipulation.
2. A second independent review, to be headed by Bruce Lander, South Australia's former Independent Commissioner Against Corruption, had also been commissioned into what the institute called a "broad range of issues" arising from the initial investigation, the institute said.
3. Professor Smyth is one of Australia's foremost scientists and has received millions of dollars in government and commercial funding. The investigation is likely to have wide-ranging fallout across the research sector.
4. He is a fellow of the Australian Academy of Science, which lists him as the "the most highly cited immunologist in Australia"
5. Professor Smyth is listed as a reviewing editor at *Science*, one of the world's top scientific journals, and an honorary professor at the University of Queensland.
6. In a statement, QIMR director and chief executive Fabienne Mackay said: "QIMR Berghofer is introducing a new robust research integrity framework under which all staff will be expected to operate, in consultation with leading research integrity experts.
7. "QIMR deserves kudos for handling this rigorously and properly," he said. "Generally, things like this are swept under the rug in Australia because here, research integrity is self-regulated, which means conflicts of interest inevitably arise as people investigate their own colleagues.
8. "Twenty-three European countries, the US, Canada, Japan and China have national offices to handle research integrity. Australia is being left behind."

When will the Australian Research Council (ARC) take a hard look at the quality of fire and ecological research being funded out of the total 2021-22 research budget of over $864 million? The ARC Engagement and Impact Assessment report 2018-19 rated the University of Tasmania (UTas) Environmental Research program as HIGH across engagement, impact and approach. One of the highly rated "challenges affecting society" listed was improving bushfire management. The UTas had to retract a fire research paper in September 2020.

To ensure fire, biodiversity and other research funding is not squandered, the ARC must recommend to the government that a National Research Integrity Commission (NRIC) be established, to oversee research accountability and integrity standards.

If improved accountability and integrity is to underpin future research in Australia, the NRIC must have staff who are not part of the growing clique of academics and behind closed doors peer reviewers, who ignore the Scientific Method and use flawed research findings to drive political and other covert agendas.

https://dataportal.arc.gov.au/EI/Web/impact/ImpactStudies#/20/1/bushfire/

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A Bipartisan Commitment to More Bushfire Mitigation is Needed, if NSW & Australia is to Avoid the Next Wave of Flora and Faunal Extinctions Caused by Repeated High Intensity Bushfires.

On 15 November 2021, the *Infrastructure Investment and Jobs Act* was signed into law by President Biden. This was a Bipartisan Act and may be a model Australian jurisdictions need to follow, if we are to avoid the next wave of flora and faunal extinctions.

The new Act included a major investment of $4.5 billion for federal wildland fire (bushfire) management efforts over the next five years.

Within the federal government, the Interior and Agriculture departments both administer bushfire programs. The U.S. Department of Agriculture (USDA) Forest Service will receive an additional $3 billion through the Act.

The Interior Department will receive approximately $1.5 billion for bushfire management over the next five years. Both departments will coordinate closely to maximize the benefits of the additional investments.

The Interior Department will reduce bushfire risk, improve ecosystem health and remove fuel for bushfires on additional areas, using an additional $878 million.

Strategic plans are currently being developed to guide the implementation of this historic program. The significant investments in forest and rangeland restoration, hazardous fuel management, bushfire preparation, and post-wildfire recovery will be implemented as quickly and efficiently as possible.

One of the key initiatives, aside from increased fuel reduction burning, will be thinning of regrowth. The regrowth has resulted from the scrubbing up of forests due to less mild burning and the dense regrowth resulting from high intensity bushfires. Thinning is a key tool in restoring Australian forested landscapes. At the "every tree is precious" regulatory framework precludes ecological thinning in most national parks.

American forest managers and politicians seem to have a better understanding than most Australian politicians, public land managers and policy bureaucrats that a wilderness driven, lockup and hope for the best, approach to bushfire mitigation has been an abject failure, from biodiversity/forest health and human life and property perspectives.

NSW and Australian environmental regulatory frameworks are rooted in a wilderness (no need to manage) and terra nullius view, which denies the role of Aboriginal fire management in the development of the Australian biota over the past 50,000 years.

This framework must be rewritten to incorporate an active and adaptive approach to fire and biodiversity management. The precautionary principle must change from an excuse to do nothing, to a guide to progressively implement active and adaptive management across Australian natural landscapes.

Why is a bipartisan approach to sustainable forest management needed?

The current environmental policy decision making process is dominated by a populist eco-political agenda driven by multiple, co-ordinated, eco-activist campaigns and consequently, the voting intentions of ill-informed members of the public. Government environmental decisions must be based on practical scientific research, not wilderness driven theoretical models, that ignore the Scientific Method.

The Scientific Method is a process which scientists use to try to investigate, verify, or construct an accurate and reliable version of any natural phenomena. The process should be done by creating an objective framework for the purpose of scientific inquiry and analysing the results scientifically, to come to a conclusion, which either supports or contradicts the observation made at the beginning.

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Environmental policy in Australia, is driven more by multimillion dollar activist charity campaigns and activist bureaucrats running eco-political agendas, than by ecologically sustainable management principles.

Those that choose to rewrite the history of Aboriginal burning prior to European arrival are a bigger threat to the future of Australia's native forests and biodiversity than the harvesting of a portion of those forests ever was or will be in future.

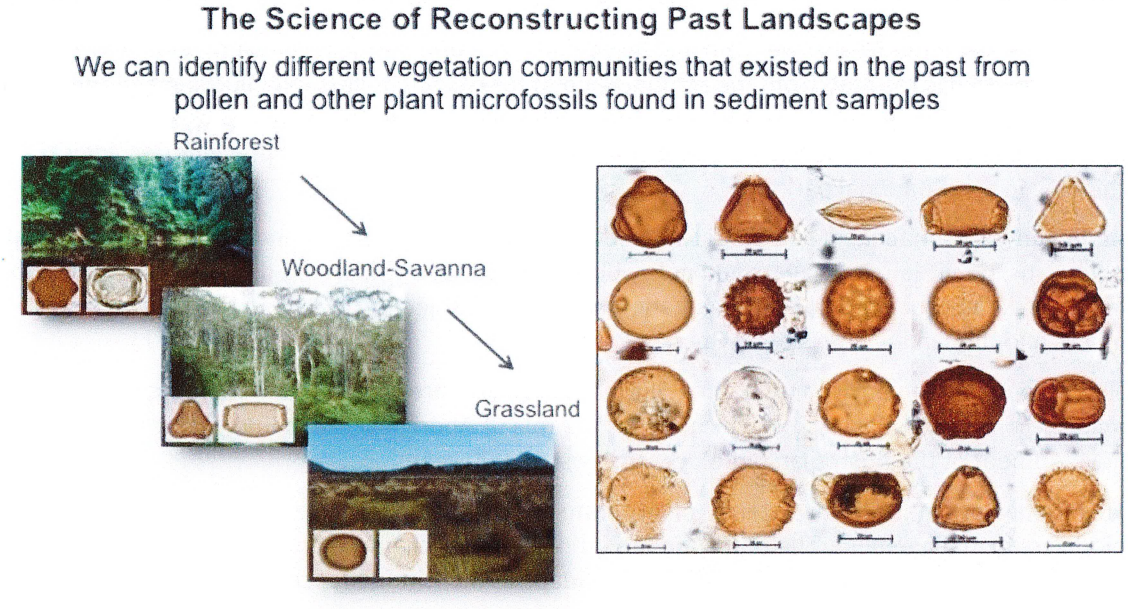
Unfortunately, activist academics and charities, with like-minded media promote the wilderness agenda and a declining number of true scientists, who provide research outputs that counter the minimalist burning agenda, are drowned out.

For example, ANU Paleoecologist, Professor Simon Haberle has analysed the sediments of the Bega Swamp, near Bemboka in southern NSW. Among other things, Professor Haberle found:

The sediment, sampled at a very fine resolution, paints a picture of the landscape in freeze frames of every 20 years, stretching back over 15,000 years.

"The results show that the number of samples including charcoal has increased since European settlement, confirming other studies that big fires have occurred more frequently than during the time of Aboriginal land tenure in the Australian high country," Professor Haberle said.

"It also shows that in the past mega fires only occurred very rarely, once every 4000 years, and that the current situation of big and intense fires is unusual in the long-term history of the region."



Picture: Australian National University

You see big changes in fire management, because you can look at the charcoal and see what burning regime took place," he said.

"It was a regular regime, Aboriginal people knew how to keep fuel loads lower."

"The difference now is the regular burning doesn't occur anymore, so we don't know what will happen in the future.

"Things that happened in the past can be beneficial, and regular small scale burning in the forest may be a reason for less big fires."

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21st Century Firefighting - a Growing List of Lost Opportunities

At 7.35 pm on 8 February 1983, a 15 kilometer bushfire front crossed the Victorian border into the Bombala Shire, under the influence of a south west change, with estimated wind speeds of 100 kilometers per hour. The fire had been burning south of the Victorian border in forested public land, with heavy fuel loads since 31 January 1983.

As the fast-moving change approached the border, preparation of a fire break along the Victorian border ceased. Most fire crews and heavy equipment withdrew to predetermined assembly points. Tankers and slip-on units were then redirected to supporting local land owners and bushfire brigade members in asset protection.

As weather conditions moderated in the early hours of Wednesday 9 February, the first strategic backburn was undertaken on the most advanced part of the fire front, in heavy fuels, over 18 kilometers north of the Victorian border. The burn was held and over the following days control efforts focused on backburning and blacking out the whole fire perimeter, which was achieved by 10 February. When the change associated with the Ash Wednesday fires arrived on the night of 16 February 1983, there were no breakouts.

Photos of the initial back burn are below. The professional emergency fire control, headed by former Eden Regional Forester with the NSW Forestry Commission, Ross Dobbyns and his teams of forestry and bushfire brigade volunteers, stands in stark contrast to events that unfolded on the Victorian border in early January 2020.

Backburning to stop the Head Fire in Heavy Fuel Loads Early am 9 February 1983

The next photo shows the pyro-cumulus cloud above the fire, with an estimated height of 10,000 metres.

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Pyro-cumulous Smoke Cloud on the Victorian Border 8.30pm 8 February 1983

The initial run of the Border fire crossed into NSW south of Eden on the afternoon of 31 December 2019, burning less than 500 hectares in NSW. The strategic fire break, established along the border, following the 1983 bushfire had been brushed up and initial requests to approve backburning along this break, to contain the northern fire front were made on 1 January 2020.

Permission to burn was denied on multiple occasions and a blanket ban on backburning on the Border fire, regardless of favourable weather conditions, remained in place throughout January. Significant rain fall in the second week of February brought the fire to an end with a total burn area of 191,579 hectares. The question we will never get an answer to is how much less forest and associated biodiversity would have been incinerated if there had been more active decision making by the incident controllers engaged on this fire?

This lack of operationally focussed decision making was not an isolated incident. The Postman's Trail fire, also in southern NSW and the Myall Creek Bora Ridge fire being just one north coast example where refusal to back burn, with up to 4 days of favourable weather conditions, resulted in much greater damage to biodiversity and human assets than there should have been.

There has been no public indication that fire and public land management authorities have learnt from flawed decision making resulting in increased burn areas. "The fire is too far from the containment line" and "we don't want anymore fire in the landscape" are not valid reasons for refusing to approve backburning operations, when favourable weather conditions are prevailing.

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TO BURN OR NOT TO BURN?

The following photo essay may provide a different perspective on the questions as to whether we burn and if we do burn, how often. Perhaps the relevant question is not whether we burn but how do we burn.

Photo 1: Part of a fuel reduction burn (FRB) undertaken in April 2016. Fire had been excluded from this area of native forest for about 20 years, before fire was reintroduced in May 2010. A second low intensity burn was undertaken in May 2013 and the third in April 2016. During the three burns, part of the area had burnt three times, some had burnt twice, some once and a gully and surrounds in the middle of the block had not burnt at all.

On 4 January 2020, the Border Fire, which travelled a distance of about 38 kilometres from the Victorian Border to the outskirts of Eden passed through this fuel reduced area.

Photo 2: Taken on 7 January 2020 shows the aftermath of the fire. The whole area had been burnt by a ground fire. Crown scorch was limited to the understorey plants. Fire had burnt up the trunks of rough barked species but the canopy of the mature trees was not scorched.

Photo 3: Taken on 7 January 2020 shows the previously unburnt gully, where the understorey was scorched and coarse woody debris burnt, while the eucalypt canopy remained green.

Photo 3: Taken on 7 January 2020 shows an area thinned in 2010 and subject to the same burning regime as that shown in the earlier photos.

Photo 5: Taken on 20 April 2021 shows a Red Bloodwood (Corymbia gummifera) in flower, 15 months after the Border fire. Other bloodwoods within the FRB area were also flowering.

Photo 6: Taken on 20 April 2021 shows an area of forest immediately adjacent to the HRB area, that had not been fuel reduced for over 20 years. It is unlikely any surviving trees in this area will flower in the next decade. This impact is typical of more than one million

hectares of forest with crown "fully affected" by high intensity fire in NSW in 2019-20. https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Fire/fire-and-the-environment-2019-20-summary-200108.pdf

If low intensity burning can reduce wildfire intensity and reduce the impact of bushfires on eucalypt flowering, are there other ecological benefits from managed burning?

Photo 7: Taken on 30 July 2013, this photo shows an area subject to a low intensity fuel reduction burn in late April 2013. Three months after the burn, it was noted that there was extensive digging disturbance. A pre burn inspection had not revealed any disturbance in the litter layer between 5 and 8 centimeters deep with a fine fuel (less than 6mm diameter) loading of 25 tonnes per hectare. A motion camera was placed to monitor activity.

Photo 8: Taken on 30 July 2013 shows a Long-nosed Bandicoot foraging for insects and fungi. Why has the low intensity burn stimulated significant bandicoot feeding activity, that was not present prior to the burn?

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Royal Commissions and Inquiries Consistently Recommend Fuel Reduction Burns in Native Forests be Increased. Why Do Government's Fail to Act?

After the in1939 Victorian bushfires, the Royal Commission, chaired by Judge Stretton, reported:

Controlled Burning.—This consists of strip and patch. burning. The amount of this burning which was done was ridiculously inadequate.

In relation to the role of local councils he stated - *Preventive work, generally by burning especially, is cheap and quickly carried out by a small staff.*

Burning.—It has already been recommended that the Forests Commission must recognize the necessity of protective burning in its areas.

John Mulligan recalls the fire intensity in East Gippsland was significantly less than elsewhere in Victoria. The main reason was that the bush east of Orbost was still largely controlled by the Lands Department, who weren't concerned about burning being done by bush lease graziers. The map of the 1939 fires shows the burnt area in East Gippsland was much less than areas where the Forestry Commission generally stopped controlled burning, as it was thought it would affect timber quality.

https://southeasttimberassociation.com/wp-content/uploads/2019/02/Fire-in-East-Gippsland-by-John-Mulligan.pdf

A consistent theme in the House of Representatives report on the 2002-03 bushfires *A Nation Charred,* was evidence from many parts of Australia that the declining level of fuel reduction burning was a major contributor to the devastation of almost four million hectares of forest across southern Australia. The report also highlighted that fuel reduction burning was made more expensive and difficult due to changed legislative and regulatory requirements, relating to environmental requirements.

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The Victorian *2009 Bushfires Royal Commission Report* noted: *"Prescribed burning is one of the main tools for fire management on public land. It cannot prevent bushfire, but it decreases fuel loads and so reduces the spread and intensity of bushfires. By reducing the spread and intensity of bushfires, it also helps protect flora and fauna. Ironically, maintaining pristine forests untouched by fuel reduction can predispose those forests to greater destruction in the event of a bushfire.*

Recommendation 56 of a total of 67 recommendations was *"The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of 5 per cent minimum of public land."*

Other recommendations that should receive particular attention are those that governments have previously shown reluctance to implement, such as increased fuel-reduction targets.

No surprise that the Victorian government has continued to show a reluctance to increase the area of forest subject to fuel reduction and after an initial increase, annual area treated has fallen away. At 30 June 2018, DELWP and its partners had completed 64,978 hectares of planned burning and further 9,750 hectares of mechanical treatment.

With 7.1 million hectares of public native forest in Victoria, this means barely one percent of the forested area is being treated. This is one fifth of the minimum recommended area. It is of little comfort to forest biodiversity and rural communities that a new generation computer model has calculated a bushfire residual risk for 2017-18 of 65 per cent, which is below the target of 70 percent. This academic theory, instead of fuel reduction ensures horrific fires will continue.

The area subject to fuel reduction has declined from 234,614 hectares in 2014-15 to 74,728 hectares in 2017-18, a reduction of 68 percent. So as has been the case for decades, hard lessons are quickly forgotten in the interests of inner city political expedience.

Unfortunately, the situation in NSW is no better, as fuel reduction between 2002-03 and 2017-18 on public land has declined by 74 percent. Over the past 30 years, it seems all fire agencies have moved from a risk reduction, to a disaster response approach to forest fire management. The head of the NSW RFS has stated: Prescribed burning "is no panacea when it comes to fire safety. It's no good chasing hectares, with broadscale burn-offs in remote areas."

Tens of millions of dollars are committed to large air tankers and millions more are poured into fire 'research.' This research is increasingly disconnected from the real world, as activist academics seek research findings that support a no burn wilderness agenda as farmers, rural communities and biodiversity pay a massive price.

WHAT WILL IT TAKE FOR GOVERNMENTS AND PUBLIC LAND MANAGERS TO COMMIT TO WILDFIRE RISK REDUCTION TO TOWNS LIKE TATHRA, BY USE OF BROADSCALE FUEL REDUCTION BURNING?

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