Fire research that has left a deep and lasting lesson and teaching legacy across Australia over the last 60 plus years

John O'Donnell

6 November 2025

Contents

1 Introduction

The author has reviewed key lesson capture of effective fire research across Australia over the last 60 plus years and has identified a number of high standard example lesson and teaching case studies. This review was focussed on fire research that has left a deep and lasting lesson and teaching legacy across Australia over the last 60 plus years

The completed Australian fire research highlights important fire research work undertaken across Australia over the last 60 plus years, over a broad range of areas. This fire research has been critical in the development of Australian fire management.

The author of this review considers that many of the listed research across Australia has been world class in relation to prescribed burning, aerial prescribed burning development, fire behaviour and fuels, fire effects, Aboriginal and human burning, unnatural fire regimes, severe fire events, eucalypt decline, bushfire suppression and lesson capture.

Developing the science of aerial prescribed burning in the late 1960's and 1970's onwards was and has been an outstanding research and management achievement.

A small number of researchers are outlined who the author considers stand out in Australian history in relation to important and effective mitigation programs and improved bushfire research in relation to mitigation, suppression, fire behaviour and other fire research areas. There are many other names and researchers that are included in Annexure 1 listed reports, but bibliographical details could not be found at this time.

Noting the successes of Australian fire research, the author considers that fire research and management in Australia is currently, in a number of cases, not effectively targeting many of the key research areas and his matter is often very easy to assess in many of the research outputs, associated media releases, fire conferences foci and research webinars.

2 Major lessons from fire research across Australia, especially in relation to effective mitigation lesson capture and long term mitigation application

Major lessons from fire research across Australia, especially in relation to effective bushfire behaviour, suppression and mitigation experience and lesson capture and long term application are outlined in Sections 2.1 to 4.6 below.

2.1 A personal assessment of important Australian fire research

Across Australia's fire history in relation to fire mitigation, bushfire behaviour and implementing fire mitigation and suppression, there have been a considerable number of key fire research reports prepared on a broad range of fire subjects over the last 60 plus years. This is a broad assessment completed undertaken assessing key Australian fire research, mitigation, bushfire behaviour and implementing fire mitigation and suppression, especially over the last 60 plus years. It is important to note that this assessment is based on the review of research and takes into account fire behaviour, suppression and mitigation research and the authors own experience and opinion.

These reports are outlined in Annexure 1 of this review, with links in some cases:

The Annexure 1 list of completed research reports highlights considerable important fire research work undertaken across Australia, over a broad range of areas, including:

- Prescribed burning across a range of vegetation types and age classes;
- Development of aerial and ground prescribed burning;
- Aboriginal burning and human fire;
- Fire interval issues;
- Unnatural fire regimes;
- Vegetation changes since European settlement;
- Eucalypt decline associated with the absence of mild fire;
- Forest management, including adaptive management;
- Biodiversity, ecosystem and ecology;

- The relationship between fuel quantity and fire rate of spread of fuel types and weather conditions;
- Fuel, fire weather and fire behaviour in Australian forest ecosystems;
- Fire behaviour and intensities;
- Fire history;
- Regrowth and pine plantation fire research;
- Grassfires: Fuel, Weather and Fire Behaviour;
- Lessons and capture from bushfire and megafire events;
- Nature of severe fire events and disasters;
- Bushfire suppression, attack and risks;
- Carbon release and management;
- Risk management;
- Fire safety; and
- Fire effects and impacts.

This fire research has been critical in the development of Australian fire management. 143 research reports are highlighted.

The author of this review considers that many of the listed research across Australia has been world class in relation to prescribed burning, aerial prescribed burning development, fire behaviour and fuels, fire effects, Aboriginal and human burning, unnatural fire regimes, severe fire events, eucalypt decline, bushfire suppression and lesson capture.

It is important to note that the author would not have captured all key fire research reports, this is a massive task, but has undertaken a broad assessment of completed a listing of key fire research.

It is essential to understand that there is also considerable information and research outside of journals, major government and agency reports and by research organisations that is spread across web sites, newspapers, Facebook sites and other locations. This research has not been captured in this review. A further review planned in the future will dig deeper into this issue.

2.2 Some very valuable fire research contributions

Some of the bibliographical details are provided below:

- McArthur AG https://peopleaustralia.anu.edu.au/biography/mcarthur-alan-grant-10889 Other detail is outlined under https://adb.anu.edu.au/biography/mcarthur-alan-grant-10889. Further detail is provided under https://www.eoas.info/biogs/P001407b.htm;
- Luke RH https://peopleaustralia.anu.edu.au/uploads/obituaries/18350/luke-harry.pdf.. Further detail is provided under in https://www.eoas.info/biogs/P001509b.htm;
- Packham DR https://www.eoas.info/biogs/P003835b.htm;
- Peet GB https://www.eoas.info/biogs/P003851b.htm;
- Rodger GJ https://peopleaustralia.anu.edu.au/biography/rodger-geoffrey-james-15613 Appointed royal commissioner for the Western Australian government in 1961, Rodger used his expertise in fire research to produce a report on the bushfires of 1960 and 1961 with recommendations for future practice in bushfire control; https://peopleaustralia.anu.edu.au/biography/rodger-geoffrey-james-15613/text26816

There are many other names and researchers that are included in Annexure 1, but bibliographical details could not be found at this time.

2.3 Some case studies of important research programs and projects

Three case studies of important research programs and projects are outlined below:

Fire research and programs in the SW of Western Australia (WA)

Research programs in the SW of WA are outlined in Department of Conservation and Land Management (1994) report. Chapter six of this useful report teases out research. CALM and its predecessors have a long history of commitment to fire behaviour and fire ecology. Research includes forest fire behaviour research; karri regrowth fire behaviour research; softwood plantations

fire behaviour research, forest fire effects research, current fire research by CALM and future priority research.

Further information is detailed and easily found in the above link provided under references.

The reference list in this document also highlights the extensive fire research underway in WA and across Australia at the time of the report.

Carter and Sneeuwjagt (2011) note that WA developed a program of research over 30 years. More details are provided in the link.

https://library.dbca.wa.gov.au/static/Journals/080052/080052-26.046.pdf WA Air

The author of this review considers that much of the research work in WA has been world class.

Project Aquarius investigating the effectiveness of aerial application of water and retardants on bushfire suppression

Department of Conservation and Land Management (1994) provide key details in relation to the background of Project Acquarius:

While the work of Peet, Sneeuwjagt, McCaw and Burrows enabled the behaviour of low and moderate intensity jarrah and karri forest fires to be predicted within acceptable limits, the behaviour of large, high intensity forest fires remained poorly understood. There is also an inadequate understanding of the relationship between fuel quantity and fire rate of spread for all fuel types and weather conditions.

Partly in response to these issues the CSIRO initiated Project Aquarius in 1983. This was a major study to investigate the effectiveness of aerial application of water and retardants on bushfire suppression. The first phase of Project Aquarius involved validation of existing fire behaviour models, particularly under conditions conducive to high fire intensities. The Western Australian Forests Department collaborated with CSIRO on this phase of the project. A series of large scale (about 100 hectares) experimental line ignition and mass spot ignition fires were studied under dry summer conditions in jarrah forest near Nannup, Western Australia. The experimental fires were monitored using an airborne line scanner. Distortion of the imagery and alternative research priorities has held up data collation and analysis. However, a technique has recently been developed which allows the imagery to be corrected.

Kerton (1984) provides film recording the progress of this bushfire research study:

This film records the progress of a bushfire research study to test the effectiveness of large aircraft in controlling bushfires by bombing them with water and fire retardants.

This film records the progress of a bushfire research study which was carried out during 1983 and 1984. The study was designed in the first instance to test the effectiveness of large aircraft in controlling bushfires by bombing them with water and fire retardants, but also to research the nature of wildfire, its effects on the bush and the firefighters, and the most effective forms of fire control.

Although the study could not be fully completed, it yielded a much better understanding of bushfire behaviour under Australian conditions and also a realization of the need to improve current fire rating indices.

Project Vesta conducted from 1996 to 2007

AFAC (2015) outlines key information in relation to this long term research project:

Arguably, Australia's most comprehensive scientific study of forest fire behaviour has been Project Vesta which ran from 1996 to 2007. It was a collaborative research project undertaken by the CSIRO in partnership with the then WA Department of Environment and Conservation, with support from most of Australia's other land management and emergency services agencies (Gould et al. 2007; Gould et al. 2011; McCaw et al. 2012; Cheney et al. 2012).

Project Vesta's findings were derived from data generated by lighting and monitoring over 100 experimental fires in eucalypt forests in south western WA during the summers of 1998, 1999 and 2001. These fires were lit in 4-hectare plots under dry summer conditions of moderate to high forest fire danger at two sites with differing understorey fuels ranging in age from 2 to 22 years.

Project Vesta's key findings were that:

- *Hazard reduction by prescribed burning will reduce the rate of spread, flame height and intensity of a (subsequent) bushfire and its potential for spotting, by changing the structure of the fuel bed and reducing the total fuel load;*
- *The persistence of this effect will be determined by the rate of change in fuel characteristics over time, but a measurable benefit may last for up to 20 years in some forest types;*
- *Stimulation of understorey shrub regeneration after burning will not increase the rate of spread of a fire until such time as a significant near-surface fuel layer accumulates; and*
- *Younger fuels produce fewer firebrands (i.e. flying pieces of burning bark) because fire intensities are lower and less bark is consumed than in older fuel types. This reduces instances of spotting (Gould et al. 2007; Gould et al. 2011; McCaw et al. 2012; Cheney et al. 2012).*

As outlined in CSIRO PyroPage (2015):
The Dry Eucalypt Forest Fire Model (DEFFM), developed from Project Vesta, predicts the rate of spread of wildfires based on estimates of wind speed, fine dead fuel moisture content and a visual assessment of surface and near-surface fuel characteristics. Fuel characteristics are described using a numeric fuel hazard score (from 0 to 4) or fuel hazard rating (Low to Extreme) and the height of the near-surface fuel layer. Example default fuel values for a modest productivity eucalypt forest with a shrubby understorey are given for when site-specific data are not available.

Further information on 'Project Vesta. Fire in dry eucalypt forest: fuel structure, fuel dynamics and fire behaviour' is outlined in Gould et al. (2007).

In summary, the author considers these three case study research programs and projects provided Australia with useful research and lessons to best manage the forests.

2.4 Developing the science of aerial prescribed burning in the late 1960's and 1970's

This review is a very broad assessment of developing the science of aerial prescribed burning in the late 1960's and after across Australia.

The lighting of prescribed burns from aircraft was an Australian initiative, and was implemented in forests across Australia in the mid to late 1960s and heralded a 25-year period when Australian bushfire scientists and managers were the foremost in the world (Underwood 2015). The first aerial prescribed burn took place in the Pingerup State Forest, southeast of Shannon River, in November 1965 and within a few months, aerial burning had commenced in eastern Australia. The first took place over Easter 1967 in the Brindabella Mountains on the NSW/ACT border.

Underwood (2015) noted:

Within a year of the first trial burn at Shannon River in 1965, the Forests Department had an annual aerial burning program of nearly 100,000 hectares. By the early 1970s this was up to 300,000 ha a year. Almost the entire forest estate was on a 6-8 year burning rotation. This persisted until the mid-1990s and was the main reason WA enjoyed freedom from serious bushfires for almost a generation. As a District Forester at the time, bushfire management was my Number One priority, and the aerial burning program took precedence over every other aspect of the annual works program.

As noted by Underwood (2015), the technology and the systems developed in the decade 1965-75 were later adopted in countries around the world, the work was an astounding accomplishment.

Baxter et al. (1966) prepared a detailed and valuable document 'Control burning from aircraft.'

The report they prepared was detailed and highlighted incendiary development, incendiary ejection, costs and deficiencies of incendiaries as used, future development, the injector system and deficiencies, the development of the full scale aerial burning trials they conducted over large areas, advantages and disadvantages of aircraft at the time and a series of recommendations.

The authors provided important details in relation to sound prescribed burning programs:

It is inevitable that as long as large forest fuel accumulations and hot dry weather occur together in Australia there will be disastrous and uncontrollable bushfires. Many foresters believe that because the weather cannot be controlled, the buildup of forest fuels must be prevented if damaging fires are to be avoided: the cheapest way to limit this fuel build-up is by burning the forest when the weather is mild.

Controlled or prescription burning is of little use unless it is carried out over very large areas. It is over-optimistic to hope that strips of burnt forest 5-20 chains wide will ever do very much to slow down or stop a severe wild fire -· although they may help to control milder fires. In bad conditions spotting distances of 2-5 miles are common and instances of fires throwing burning embers distances of up to 20 miles are known. Thus, it would appear that, where bad fire conditions exist, large scale prescribed burning is the only adequate answer to the forest fire problem. To give some protection from large and damaging fires roughly 12-25% of total forest areas must be burnt each year, and it is essential that this burning be of such an intensity as to cause minimum damage to trees or to degrade the forest in any way.

A mild fire will not travel fast, and any fire that does travel faster than about 3 feet per minute is generally much too hot for the purposes of control burning: thus to obtain a complete burn throughout a given area in a relatively short period, many small fires must be lit. To meet this requirerr1ent the grid system of lighting has been adopted wherever large scale, high quality controlled burning is practised. :,

Grid ignition systems imply that the burning be done within well-defined boundaries, that fairly complete burnout is aimed for and that there is accessibility to the area to enable ignition sources to be placed accurately within the forest.

Unfortunately there are large areas in the southern forest regions of Australia where thick scrub, mixtures of forest types and sparse roading has prevented the implementation of a controlled burning programme, and where grid lighting is impossible, or at best, costly, difficult and dangerous. It has long been considered by West Australian foresters that the lighting of the forest with small incendiaries dropped from low-flying light aircraft might overcome some or all of these difficulties.

After some laboratory experimentation an incendiary that appeared suitable and safe for use from aircraft was designed, together with an attendant ejection apparatus. The details of both the incendiary and apparatus are given below.

Baxter et al. (1966) further noted that full scale burning trials were undertaken in 1965 in WA. A Cessna 337 twin-engined push-pull aircraft was modified to carry the equipment and operations were based on Manjimup, using airstrips at Busselton (85 miles north-west) and Shannon (SO miles south).

Full-Scale Burning Trials
Three large areas totalling about 53,000 acres were burned in six flying days. In each case the racecourse pattern shown in Fig. 3 was flown (up and downwind) until the majority of the area had been covered, and finally any odd corners or areas which had been missed were filled in by visual judgment. Two balloons -see A and B in Fig. 3 - were used for guidance

and:

In the West Australian experiments three different areas were subjected to aerial burning, and the results were somewhat variable, depending upon fuel age, weather and the nature of the areas concerned. To summarize, 53,000 acres were seeded, and 25,000 acres were burnt, i.e. this was the blackened area within the 5 3, 000 acres. With better conditions the 53,000 acres would have been effectively burnt out.

and:

Control Burning Results

The incendiary apparatus worked extremely well and there appeared to be a better than 8 0 % take of spot fires. The accuracy ,of the grid pattern was superior to that generally obtained by ground crews on area controlled burning (see Plate 2) and any failure to obtain clean burns was due to fuel quantity and type variation, which prevented some spot fires from burning over the required area.

As noted by Department of Conservation and Land Management (1994):

Fuel reduction burning using aircraft was developed in Western Australia in 1965 (Packham and Peet 1967) to improve the safety and efficiency of the operation and to enable full advantage of weather conditions ideal for prescribed burning to be taken.

AFAC (2015) highlighted the advantages of aerial prescribed burning:

Initially, prescribed burning was conducted by ground crews averaging around 40 hectares burnt per person day. This was simply inadequate for large burning programs, given the limited available opportunities that were subject to the vagaries of weather and the vegetation's fuel moisture content. This problem was resolved in part by the development of aerial incendiaries (dropped from aircraft) from the mid-1960s. This enabled large remote areas to be lit quickly and inexpensively when conditions were suitable (Luke and Macarthur 1978, pp.144 – 145).

Luke and McArthur (1978) outlined key information in relation to aerial ignition development in Australia on pages 144 to 146:

- Australia pioneered the use of light aircraft using aerial ignition in the mid 1960's;
- Aerial operations can cover a much larger area than ground operations and be safer; and
- One of the successes has been a reduction the proportion of lightning strikes that develop into bushfires.

Luke and McArthur (1978) further outlined other key information in relation to aerial ignition on pages 199 to 200:

- *The use of aircraft to drop incendary devises in prescribed burning programs was developed by CSIRO in conjunction with the WA Forests Department in 1965. The system is now in common use throughout Australia. The device depends on a chemical reaction between potassium permanganate and ethylene-glycol which culminates in flaming about 30 seconds after the substances are mixed; and*
- An electrically operated machine is used to drop the capsule on a selected grid pattern or pattern at selected time/ distance intervals.

People Australia Michael Neville (Mike) Rowell (1927–2010)
https://peopleaustralia.anu.edu.au/biography/rowell-michael-neville-mike-18486/text30143

The solution was simple and ingenious. David Packham of CSIRO produced a small plastic phial that would be filled with a few grams of potassium permanganate, or Condy's Crystals. At the right moment, the phial would be injected with a few cc's of liquid ethylene glycol, and then immediately ejected from the aircraft through a venturi. Several seconds would elapse while the capsule tumbled to the ground, by which time the chemical reaction between the two reagents would start, resulting in a brief, hot fire… enough to ignite the dry leaves on which the capsule had fallen.

David Packham also designed a bombing machine, into which the capsules could be fed, injected with glycol and then ejected. The machine had a timing device so that the bombardier could manipulate the distance apart of the spot fires, given that the speed of the aircraft was known and held steady. The bombing machine was built by John Poynton, a talented Western Australian engineer.

Volunteer Fire Fighters Association (accessed web 2025) outlines information from the book Fire from the Sky prepared by Roger Underwood provides a valuable account of the development and early implementation of aerial burning in Western Australia:

Fire from the Sky provides a valuable account of the development and early implementation of aerial burning in Western Australia.

Fighting fire with fire (burning forest fuels under mild weather conditions) has long been recognised as the only effective means of combatting fierce and damaging bushfires.

In his book, Roger explains (in simple terms) the rationale for prescribed burning, and the history of its adoption in Western Australia.

In Western Australia in the early 1960s, a revolutionary technology was developed: lighting fuel reduction burns using aircraft. Its adoption by forest managers ensured there was an entire generation of Western Australians protected from the ravages of severe wildfires.

Later this technology was adopted by foresters and bushfire authorities throughout Australia and in many overseas countries.

This is the story of how aerial burning was developed and of the people who did it.

Roger Underwood is a former District and Regional Forester in Western Australia and the author of several books on forestry and bushfire history.

Morgan et al. (2020) review research and technological advances in aerial prescribed burning before 1980, summarised as dot points below:

- *There was a rapid uptake of prescribed burning thereafter (McArthur 1966; Hodgson 1967), including through the development of innovative and efficient burning techniques, such as the use of aircraft for extensive ignition operations. The ACT and New South Wales conducted large-scale trials with fixed-winged aircraft and CSIRO incendiary machines in 1967 (Packham & Peet 1967) to prescribe-burn mountainous areas.*
- *In New South Wales in the autumns of 1967 and 1968, researchers from CSIRO and the Forest Research Institute3 used fixed-wing aircraft to carry out low-intensity fuel reduction prescribed burning in dry forests on vacant crown land (later to become Deua National Park) in rugged mountainous country on the New South Wales south coast (P. Cheney, pers. comm., May 2019). Extensive wildfires occurred on these lands in spring 1968 after a dry winter, from Bemboka in the south to Singleton in the north. The aerial prescribed burns conducted in the preceding years were credited with preventing these wildfires from burning in Moruya and Bega (D. Christopher, pers. comm., December 2019).* SETA (2021) provides further detail in relation to this.
- *Victoria subsequently developed a helicopter system using delayed-action incendiary devices (DAIDs),4 which was considered to offer a high degree of flexibility and accuracy for aerial ignitions, particularly when flying contour ignition lines (Rolland 1996; Underwood 2015).*
- *Seeking to continue aerial ignition in native forests in a safer manner, two officers in the Victoria Forests Commission, Barry Marsden and Bryan Rees, developed a system using 'ping pong ball' machines, which released polystyrene capsules containing potassium permanganate crystals injected with ethylene glycol, based on a Canadian system. The success of this led to improved prescribed burning techniques and broadscale fuel-reduction prescribed burning for wildfire mitigation in forests in south-eastern Queensland, New South Wales, Tasmania and Victoria in the late 1970s and 1980s.*

2.5 Developing the science of aerial prescribed burning, detection and suppression in more recent times

Carter and Sneeuwjagt (2011) provides detail in relation to fighting fire from the air in relation to aerial detection, aerial suppression, aerial ignition and aircrew resourcing. WA is still going very well in relation to the use of aerial ignition from a very good historical base.

Loane and Gould (1986) provide details of aerial suppression of bushfires, cost-benefit study for Victoria.

Hodgson and Cheney (1969) outline the use of aerial ignition for backburning.

O'Donnell (2021) highlights the use of small planes, helicopters and drones in prescribed burning in order to achieve safe and healthy landscapes and reduce high current fuel loads. I suggest that it would be beneficial for government, government agencies, local government, communities, rural land owners, contractors and applicable private sector to work through all potential opportunity areas to increase safe aerial prescribed burning across forested areas of NSW. The safety of NSW

communities, infrastructure, forests, water quality, waterways, fauna, flora, fish, air quality and heritage sites depends on this.

Important points in regards to the use of aero burning aircraft, helicopters and drones for prescribed burning include prescribed burning can be undertaken on a grid pattern where flame junction points are reached at nominated end of day when conditions are cool; Specific topographic features, such as long unburnt ridges and high points that could cause long distance spotting, can be selectively targeted in either fuel reduction or bushfire control operations; Increases the area that can be hazard reduced using mild burning; Optimises hazard reduced area in the cooler periods or where required; Reduces human safety risks; Sets up the process for establishing safe and healthy landscapes and Allows use of this technology to backburn large areas between a bushfire front and containment lines.

Helicopter-based ignition is widely implemented in northern Australian prescribed burning operations (Dyer et al. 2001).

2.6 Current concerns with aspects of fire research

Noting the successes of Australian fire research, the author considers that fire research and management in Australia is currently, in a number of cases, not effectively targeting many of the above key research areas and this matter is often very easy to assess in many of the research outputs, associated media releases, fire conferences foci and research webinars.

A focus of research now is to often downplay the value of prescribed burning bushfire mitigation and is often focussed on climate issues at the expense of fuel and mitigation issues. Planned burning fire intervals are usually at very long periods and sometimes up to 50 to 60 years, if burning is completed at all. The author considers this area this is being inadequately addressed in fire research, putting communities, fire fighters and ecosystems at risk. As a consequence, fuel loads and strata are at very high levels across vast areas of landscapes and these areas receiving inadequate research attention. There is often a current failure of research to adequately consider multi lightning strikes in heavy fuels on blow up days, failures in relation community and fire fighter safety and consideration of the historical record of Aboriginal fire management, to justify a minimal fuel reduction burning policy.

Other areas of research that the author considers need more effective research is improved bushfire preparedness across Australia; establishment of resilient safe, healthy landscapes and effective bushfire lesson capture, noting that there is some effective research in these areas.

Now research often misses tackling the hard, practical failures that repeatedly let down communities, firefighters and ecosystems in major bushfires. Fire management and systems often continue to fail, whether it's fuel loads left unmanaged, emergency services tangled in bureaucracy, communities impacted by bushfires without warning or fire fighters put at risk.

3 Conclusions

The completed research listed within Annexure 1 highlight the important fire research work undertaken across Australia over the last 60 plus years, over a broad range of areas, including:

- Prescribed burning across a range of vegetation types and age classes;
- Development of aerial and ground prescribed burning;
- Aboriginal burning and human fire;
- Fire interval issues;
- Unnatural fire regimes;
- Vegetation changes since European settlement;
- Eucalypt decline associated with the absence of mild fire;
- Forest management, including adaptive management;
- Biodiversity, ecosystem and ecology;
- The relationship between fuel quantity and fire rate of spread of fuel types and weather conditions;
- Fuel, fire weather and fire behaviour in Australian forest ecosystems;
- Fire behaviour and intensities;
- Fire history;

- Regrowth and pine plantation fire research;
- Grassfires: Fuel, Weather and Fire Behaviour;
- Lessons and capture from bushfire and megafire events;
- Nature of severe fire events and disasters;
- Bushfire suppression, attack and risks;
- Carbon release and management;
- Risk management;
- Fire safety; and
- Fire effects and impacts.

This fire research has been critical in the development of Australian fire management. 143 research reports are highlighted. The author of this review considers that many of the listed research across Australia has been world class in relation to prescribed burning, aerial prescribed burning development, fire behaviour and fuels, fire effects, Aboriginal and human burning, unnatural fire regimes, severe fire events, eucalypt decline, bushfire suppression and lesson capture.

Section 2.2 lists a small number of researchers who the author considers stand out in Australian history in relation to important and effective mitigation programs and improved bushfire research in relation to mitigation, suppression, fire behaviour and other fire research areas. There are many other names and researchers that are included in Annexure 1 listed reports, but bibliographical details could not be found at this time.

Three case studies of important research programs and projects are outlined in Section 2.3.

As outlined in Sections 2.4 and 2.5, developing the science of aerial prescribed burning in the late 1960's and 1970's onwards was and has been an outstanding research and management achievement.

As outlined in Section 2.6, the author considers that fire management in Australia is currently in many cases is not effectively targeting many of the above key research areas. This matter is often very easy to assess in many of the more recent research outputs, research webinars and fire conferences foci.

Acknowledgements

Comments by Phil Cheney, Robert Onfray and Neil Burrows as part of the preparation of this review were greatly appreciated by the author.

References

AFAC (2015) Overview of prescribed burning in Australasia. Report for the National Burning Project – Subproject 1. Australasian Fire and Emergency Service Authorities Council Limited. March 20 Author Mark Poynter Editor Wayne Kington, AFAC.

Baxter JR, Packham DR, Peet GB (1966) 'Control burning from aircraft.' (CSIRO Chemistry Research Laboratory: Melbourne) June https://library.dbca.wa.gov.au/FullTextFiles/000918.pdf

Carter M and Sneeuwjagt R (2011) Lessons Learned since the Dwellingup fires Vol 26 Number 4 Winter 2011 https://library.dbca.wa.gov.au/static/Journals/080052/080052-26.046.pdf

CSIRO PyroPage (2015) The Dry Eucalypt Forest Fire Model November.

Department of Conservation and Land Management (1994) Fire Management On Calm Lands In The South-West Of Western Australia A submission to the Ministerial Review Panel Inquiring into CALM's Prescribed Burning Policy and Practices and Wildfire Threat Analysis Submiss ion to the Ministerial Review Panel enquiring into CALM's prescribed burning policy and practices and wildfire threat analysis February https://library.dbca.wa.gov.au/FullTextFiles/015497.pdf

Dyer R, Jacklyn P, Partridge I, Russell-Smith J, Williams RJ (Eds) (2001) 'Savanna burning: understanding and using fire in northern Australia.' (Tropical SavannasCooperative Research Centre:Darwin,NT,Australia)

Gould J, McCaw L, Cheney NP, Ellis PF, Knight IK, Sullivan AL (2007) 'Project Vesta. Fire in dry eucalypt forest: fuel structure, fuel dynamics and fire behaviour.' (CSIRO, Canberra ACT and Department of Environment and Conservation Western Australia, Perth, WA).

Kerton R (1984) June Project Aquarius (1984) CSIROpedia June 1st, 1984 https://csiropedia.csiro.au/project-aquarius-1984/

Loane IT and Gould JS (1986) Aerial suppression of bushfires : cost-benefit study for Victoria. Canberra, A.C.T.: National Bushfire Research Unit, CSIRO Division of Forest Research 1986. legacy:2927.

Luke RH and McArthur AG (1978) 'Bushfires in Australia.' CSIRO Division of Forest Research (Australian Government Publishing Services: Canberra)

Morgan GW, Tolhurst KG, Poynter MW, Cooper N, McGuffog, Ryan TR, Wouters MA, Stephens N, Black P, Sheehan D, Leeson P, Whight S and Davey SM (2020): Prescribed burning in south-eastern Australia: history and future directions, Australian Forestry, DOI: 10.1080/00049158.2020.1739883 https://doi.org/10.1080/00049158.2020.1739883

O'Donnell (2021) Greater use of small planes, helicopters and drones in prescribed burning in order to achieve safe and healthy landscapes Australian Rural and Regional News 16 August https://arr.news/2021/08/16/greater-use-of-small-planes-helicopters-and-drones-in-prescribed-burning-in-order-to-achieve-safe-and-healthy-landscapes/

People Australia Michael Neville (Mike) Rowell (1927–2010) https://peopleaustralia.anu.edu.au/biography/rowell-michael-neville-mike-18486/text30143

SETA (2021) Forest Fire Management-Hard Won Lessons Almost Forgotten https://southeasttimberassociation.com/wp-content/uploads/2025/01/Forest-Fire-Management-Hard-Won-Lessons-Almost-Forgotten-Oct2021.pdf

Underwood R (2015) Early Days of Aerial Burning Report Summer 2015 The volunteer fire fighter pages 52 to 54 https://volunteerfirefighters.org.au/wp-content/uploads/2016/07/vffa-2015-v7-2-summer.pdf

Underwood R (undated, accessed 2025) Fire from the Sky by Roger Underwood VFFA website https://volunteerfirefighters.org.au/fire-from-the-sky-by-roger-underwood#:~:text=Roger%20Underwood's%20new%20book%20titled,on%20forestry%20and%20bushfire%20history. (York Gum Publishing: Perth, WA, Australia)

Annexure 1 Important Australian fire research

prescribed burning, aerial prescribed burning development, fire behaviour and fuels, fire effects, Aboriginal and human burning, unnatural fire regimes, severe fire events, eucalypt decline, bushfire suppression and lesson capture.

In relation to Australia's fire history in regards to prescribed burning, aerial prescribed burning development, fire behaviour and fuels, fire effects, Aboriginal and human burning, unnatural fire regimes, severe fire events, eucalypt decline, bushfire suppression and lesson capture, there have been a considerable number of key fire research reports prepared on a broad range of fire subjects over the last 60 plus years.

Many of these are outlined below, with links provided in some cases:

1. Rodger GJ (1961) Report of the Royal Commission appointed to enquire into and report upon the bush fires of December, 1960 and January, February and March, 1961 in Western Australia https://www.parliament.wa.gov.au/intranet/libpages.nsf/WebFiles/Royal+Commission+bush+fires+of+December+1960/$FILE/Royal+Commission+bush+fires+of+December+1960.pdf

2. Underwood R (1961) The Great Teaching Event Memories of the 1961 bushfires Landscope Department of Environment and Conservation https://mrdhs.com.au/documents/Karridale%20Bushfire%201961.pdf
3. McArthur AG (1962) Control burning in eucalypt forests. Canberra (Australia): Forestry and Timber Bureau, Commonwealth of Australia. Leaflet No. 80.
4. Peet GB (1965). A fire danger rating and controlled burning guide for the northern jarrah (E.marginata Sm) forest of Western Australia. Bull (74), Forests Dept. West. Aust.
5. McArthur AG (1966) Prescribed Burning in Australian Fire Control; Australian Forestry, Volume 30 Issue 1 1966.
6. Baxter JR, Packham DR and Peet GB (1966) 'Control burning from aircraft.' (CSIRO Chemistry Research Laboratory: Melbourne) https://library.dbca.wa.gov.au/FullTextFiles/000918.pdf
7. Packham DR and Peet GB (1967). Development in controlled burning from aircraft. CSIRO Chem. Res. Lab., Melbourne.
8. Hodgson A (1968) Control burning in eucalypt forests in Australia. J. Forestry 66: 601-605.
9. McArthur AG (1968)-The Tasmanian bushfires of 7th February 1967 and associated fire behaviour characteristics. Conference Papers, Second Australian National Conference on Fire, Sydney, 6-8 August, 1968: 25-48.
10. McArthur AG (l968)-Rural fire protection. In 'Growing Trees on Australian Farms'. Ed. A. G. Brown and N. Hall, Comm. Gov. Printer: Canberra.
11. Peet GB and Williamson AJ (1968). An assessment of damage for the Dwellingup fire in Western Australia. Papers to IFA Conference, Perth, 1968.
12. Peet GB (1969) The Boorara fire 7th to 12th March 1969. Internal Report Forests Dept West. Aust.
13. Hodgson A and Cheney NP (1969)-Aerial ignition for backburning. Aust. For. 33: 268-274.
14. Cheney NP (1976) Bushfire Disasters in Australia, 1945-1975. Aust. For., 1976, 39 (4), 245-268. Division of Forest Research, CSIRO, Canberra, ACT.
15. Duggin JA (1976) Bushfire History of The South Coast Study Area CSIRO Division of Land Use Research Canberra Technical Memorandum 76/13 JULY 1976.
16. Luke RH and McArthur AG (1978) 'Bushfires in Australia.' CSIRO Division of Forest Research (Australian Government Publishing Services: Canberra).
17. Underwood RJ (1978). Natural fire periodicity in the karri forest. Res. Pap. 41. Forests Department, WA.
18. Sneeuwjagt R and Peet GB (1979) Tables for Western Australia. Forests Dept. West. Aust. https://library.dbca.wa.gov.au/FullTextFiles/001479.pdf
19. Billings P (1981). The Effectiveness of Fuel Reduction Burning. Five Case Histories. Fire Research Branch Report Div. Forest Protection, Forests Commission, Victoria.
20. Cheney NP (1981) Fire Behaviour. In "Fire and the Australian Biota." Editors A.M. Gill, R.H. Groves & I.R. Noble. Australian Academy of Science. Canberra pp151-176.
21. Gleadow RM and Ashton DH (1981) Invasion by Pittosporum undulatum of the forests of central Victoria. I Invasion patterns and plant morphology. Australian Journal of Botany **29**: 705-720.
22. Humphreys FR and Craig FG (1981) Effects of fire on soil chemical, structural and hydrological properties. In "Fire and the Australian Biota" Editors A.M. Gill, R.H. Groves and I.R. Noble. Australian Academy of Science. Canberra. pp 177 – 200.
23. Gill AM, Groves RH and Noble LR (1981) Fire and the Australian Biota. Aust. Academy of Sci. Canberra.
24. Shea SR, Peet GB and Cheney NP (1981) The Role of Fire in Forest Management. In "Fire and the Australian Biota" Editors A.M. Gill, R.H. Groves & I.R. Noble. Australian Academy of Science. Canberra. pp 443-470.
25. Underwood RJ and Christensen PES (1981). Forest Fire Management in Western Australia. Special Focus (1). Forests Dept. West. Aust.
26. Mount AB (1983). The case for fuel management in dry forests. Paper to Research Working Group No 6 on Fire Research, Hobart 1983.
27. Raison RJ, Woods PV and Khanna PK (1983). Fuel dynamics in recurrently burnt eucalypt forest. Paper to 10th Triennial Conference of Instit. Foresters Australia, Melbourne, 1983.

28. Rawson R (1983) Effects of fuel reduction burning on wildfire behaviour. In: Fighting Fire with Fire. Symposium on fuel reduction burning in forests, 17-18 September 1983. Monash Uni., Melbourne. https://library.dbca.wa.gov.au/static/Journals/080273/080273-02.009.pdf
29. Abbott, I., Van Heurck, P. and Wong, L. (1984). Responses to long term fire exclusion: physical, chemical and faunal features of litter and soil in a Western Australian forest. Australian Forestry **47** (4): 237-242.
30. Attiwill PM (1984). Effects of fire on forest ecosystems. Research for Forest Management, CSIRO.
31. Burrows ND (1984). Predicting blow-up fires in the jarrah forest. Forests Dept West. Aust. Tech Paper 12.
32. Kerton R (1984) June Project Aquarius (1984) CSIROpedia June 1st, 1984 https://csiropedia.csiro.au/project-aquarius-1984/
33. Loane LT and Gould JS (1985) Aerial suppression of bushfires - costs benefit study for Victoria. CSIRO Division of Forest Research, Canberra. 213pp.
34. Rawson RP, Billing P and Rees B (1985). Effectiveness of fuel-reduction burning. Department of Conservation and Environment, Fire Management Branch, Research Report No. 25. 49 pp.
35. Underwood R, Sneeuwjagt R and Styles G (1985) Bushfire Front The Wait Paper (2025 web) The Contribution of Prescribed Burning to Forest Fire Control in Western Australia: Case Studies In: Symposium on "Fire Ecology and Management in Western Australian Ecosystems" J.R Ford, Ed, May 1985, Western Australian Institute of Technology. (Note: this article has been retyped to improve readability from the original two-column format, and also to remove a duplicated figure in the original). https://bushfirefront.org.au/prescribed-burning/the-value-of-prescribed-burning/
36. Gill AM (1986) Research for the fire management of Western Australian State forests and conservation reserves. Dept. CALM (WA) Tech. Rep. 12.
37. CSIRO (1987). The effectiveness of hazard reduction burning in reducing fire intensity and assisting fire control. National Bushfire Research Unit, CSIRO Division of Forest Research, Canberra. 3pp.
38. Birk EM and Bridges RG (1989) Recurrent fires and fuel accumulation in even-aged blackbutt (Eucalyptus pilularis) forests. Forest Ecology and Management 29: 59-79
39. McCaw L and Burrows ND (1989) Fire management. In: Dell, B., Havel, J.J. and Majalczuk, N. (eds.). The Jarrah Forest. Klewer Academic Publishers, Dordrecht. pp. 317-334.
40. Christensen PES and Abbott I (1989) Impact of fire in the eucalypt forest ecosystem of southern Western Australia: A Critical Review. Aust. For. Vol. 52(2): 103-121.
41. Ellis RC and Pennington PI (1992) Factors affecting the growth of Eucalyptus delegatensis seedlings in inhibitory forest and grassland soils. Plant and Soil **145**: 93-105.
42. Tolhurst KG and Flinn DW (1992) Ecological impacts of fuel reduction burning in dry sclerophyll forest: first progress report. Melbourne (Australia): Department of Conservation and Environment, Victoria. Forest Research Report No. 349.
43. Tolhurst KG, Kellas JD and Wilson AAG (1992) Low intensity fire behaviour and fuel dynamics in dry sclerophyll forest, Wombat State Forest.
44. Attiwill PM (1994). Ecological disturbance and the conservative management of eucalypt forests in Australia. For. Ecol. Manage. 63: 301-346. https://www.sciencedirect.com/science/article/abs/pii/0378112794901155
45. Department of Conservation and Land Management (1994) Fire Management on Calm Lands In The South-West Of Western Australia A submission to the Ministerial Review Panel Inquiring into CALM's Prescribed Burning Policy and Practices and Wildfire Threat Analysis Submiss ion to the Ministerial Review Panel enquiring into CALM's prescribed burning policy and practices and wildfire threat analysis February https://library.dbca.wa.gov.au/FullTextFiles/015497.pdf
46. Granger L, Kasel S and Adams MA (1994) Tree decline in southeastern Australia: Nitrate reductase activity and indications of unbalanced nutrition in Eucalyptus ovata (Labill.) and E. camphora (R.T. Baker) communities at Yellingbo, Victoria. Oecologia **98**: 221-228.
47. Hurditch WE and Hurditch WJ (1994). The Politics of Bushfires: Can We Learn From Past Mistakes? In The Burning Continent. Forest Ecosystems and Fire Management in Australia. Institute of Public Affairs. Melbourne. pp 37-50.

48. Burrows ND, Ward B and Robinson AD (1995) Jarrah forest fire history from stem analysis and anthropological evidence. Australian Forestry 58 (1), 7−16. doi: 10.1080/00049158.1995.10674636.
49. Florence RG (1996) Ecology and Silviculture of Eucalypt Forests. CSIRO Australia. Gleadow, R.M. and Ashton, D.H. (1981). Invasion by Pittosporum undulatum of the forests of central Victoria. I. Invasion patterns and plant morphology. Australian Journal of Botany **29**: 705-720.
50. McCaw W, Neal JE and Smith RH (1996) Effects of fuel reduction burning on fire behaviour and suppression difficulty of an intense wildfire in jarrah (Eucalyptus marginata) forest – a case study. CALMScience 2 (2): 141-148
51. Lunt ID (1998) Allocasuarina (Casuarinaceae) invasion of an unburnt coastal woodland at Ocean Grove, Victoria: structural changes 1971-1976. Australian Journal of Botany 46: 649-656.
52. McCarthy GJ and Tolhurst KG (1998) Effectiveness of firefighting first attack operations by the Department of Natural Resources and Environment from 1991/92–1994/95. Fire Management Research Report No. 45. Department of Natural Resources and Environment. (Melbourne, Vic., Australia).
53. Tolhurst KG and Cheney ND (1999) Synopsis of the knowledge used in prescribed burning in Victoria. Department of Natural Resources and Environment (Melbourne VIC) https://www.vgls.vic.gov.au/client/en_AU/search/asset/1014937/0
54. Department of Conservation and Land Management (2000) Fire Management on Calm Lands in The South-West of Western Australia Department of Conservation and Land Management Fire Branch October 2000 https://library.dbca.wa.gov.au/FullTextFiles/020299.pdf
55. Jurskis V (2000) Vegetation changes since European settlement in Australia: an attempt to clear up some burning issues. Aust. For. 63: 166-173.
56. Guinto DF, Zu ZH, House APN and Saffigna PG (2001) Soil chemical properties and forest floor nutrients under repeated prescribed-burning in eucalypt forests of southeast Queensland, Australia. New Zealand Journal of Forestry Science **31** (2): 170- 187.
57. Jurskis V (2001) Fire management for conservation: reconciling theory and practice. In Bushfire 2001. Proceedings of Australasian Bushfire Conference. New Zealand Forest Research Institute Ltd. Rotorua. pp 190-194.
58. McCarthy GJ and Tolhurst KG (2001) Effectiveness of broadscale fuel reduction burning in assisting with wildfire control in parks and forests in Victoria. Fire Management Research Report No. 51. Department of Natural Resources and Environment. (Melbourne, Vic., Australia).
59. Tolhurst KG and Friend G (2001) An objective basis for ecological fire management in Victoria. In: Australian Bushfire Conference; 2001 Jul; Christchurch, New Zealand. Rotorua (NZ): New Zealand Forests Research Institute. p. 220–228.
60. Ward DJ, Lamont BB and Burrows CL (2001) Grasstrees reveal contrasting fire regimes in eucalypt forest before and after European settlement of southwestern Australia. Forest Ecology and Management 150: 323 – 329..
61. Jurskis V (2002) Restoring the prepastoral condition. Austral Ecology **27**: 689-690.
62. Jurskis V and Turner J (2002) Eucalypt dieback in eastern Australia: a simple model. Australian Forestry **65** (2): 81-92.
63. Abbott I. (2003) Aboriginal fire regimes in south-west Western Australia: evidence from historical documents. In I. Abbott and N. Burrows eds. Fire in ecosystems of southwest Western Australia: Impacts and management. Backhuys Publishers. Leiden. Pp 119-146.
64. Abbott I and Burrows N (Eds) (2003) 'Fire in ecosystems in south-west Western Australia: impacts and management.' (Backhuys Publishers: Leiden, The Netherlands)
65. Burrows N and Abbott I (2003) Fire in south-west Western Australia: synthesis of current knowledge, management implications and new research directions January 2003. In book: Fire in South-West Australian Ecosystems: Impacts and Management (pp.437-452) Publisher: Backhuys Publishers, The Netherlands. Editors: Abbott, I and Burrows, N.D.
66. Jurskis V, Bridges B and de Mar P(2003) Fire management in Australia: the lessons of 200 years. In Joint Australia and New Zealand Institute of Forestry Conference Proceedings, 27 April–1 May 2003, Queenstown, New Zealand. Eds. E. G. Mason, C. J. Perley. Ministry of Agriculture and Forestry, Wellington, New Zealand, pp. 353-68.
67. Tolhurst KG and McCarthy GJ (2003) Effect of prescribed burning on wildfire intensity – a case study from the 2003 fires in Victoria. Department of Sustainability & Environment

(unpublished) (Melbourne VIC) https://www.naturalhazards.com.au/crc-collection/downloads/1._effect_of_prescribed_burning_on_wildfire_severity_2003_fires_in_victoria.pdf
68. Sullivan A (2004) Nature of Severe Fire Events Client Report for Fire Management Unit Department of Urban Services ACT Government CSIRO Forestry and Forest Products July 2004.
69. Jurskis V (2005) Decline of eucalypt forests as a consequence of unnatural fire regimes. Australian Forestry 68 (4) pp. 257 – 262
70. Dexter BD and Hodgson A (2005) The facts behind the fire. A scientific and technical review of the circumstances surrounding the 2003 Victorian bushfire crisis. Forest Fire Victoria Inc. 161 pp. https://forestfirevictoria.org.au/wp-content/uploads/2020/07/The_Facts_Behind_The_Fire.pdf
71. McCaw L, Hamilton T and Rumley C (2005) Application of Fire History Records to Contemporary Management Issues in South-West Australian Forests. In Proceedings of the 6th National Conference of the Australian Forest History Society (pp 555-564). Rotterdam: Millpress.
72. Burrows ND, Burbidge AA., Fuller PJ. and Behn G (2006) Evidence of altered fire regimes in the Western Desert region of Australia. Conservation Science Western Australia 5, 272-284.
73. Jurskis V, de Mar P and Aitchison B (2006) Fire management in the Alpine Region Bushfire Conference Brisbane 6-9 June 2006.
74. Cheney P (2007), Honorary Research Fellow CSIRO, Megafires in Perspective, PowerPoint presentation. Bushfire CRC, Are Big Fires inevitable? - A National Bushfire Forum, 2007.
75. Gould J, McCaw L, Cheney NP, Ellis PF, Knight IK, Sullivan AL (2007) 'Project Vesta. Fire in dry eucalypt forest: fuel structure, fuel dynamics and fire behaviour.' (CSIRO, Canberra ACT and Department of Environment and Conservation Western Australia, Perth, WA).
76. Smith R (2007) Key Issues Identified from Operational Reviews of Major Fires in Victoria 2006/7 (94 p). Melbourne: Victoria Department of Sustainability and Environment. Tourism Research Australia (2019). Tourism Forecasts (18 p). Canberra: Australian Trade and Investment Commission.
77. Cheney NP and Sullivan A (2008) Grassfires: Fuel, Weather and Fire Behaviour DO - 10.1071/9780643096493 Book
78. Sneeuwjagt R (2008) Prescribed burning: How effective is it in the control of large bushfires? In: 'Fire, environment and society: from research to practice' Bushfire CRC; The Australasian Fire and Emergency Service Authorities Council pp. 419-435
79. Turner J., Lambert M., Jurskis V., Bi H (2008) Long term accumulation of nitrogen in soils of dry mixed eucalypt forest in the absence of fire. Forest Ecology and Management 256, 1133-42.
80. Boer MM, Sadler RJ, Wittkuhn RS, McCaw L, Grierson PF (2009) Long term impacts of prescribed burning on regional extent and incidence of wildfires – evidence from 50 years of active fire management in SW Australian forests. Forest Ecology and Management 259, pp. 132 – 142.
81. Russell-Smith J, Whitehead P and Cooke P (2009) Culture Ecology and Economy of Fire Management in Northern Australian Savannas : Rekindling the Wurrk Tradition (417 p). Canberra: CSIRO Publication. https://doi.org/10.1071/9780643098299
82. Cheney NP (2010) Fire behaviour during the Pickering Brook wildfire – January 2005 (Perth Hills Fires 71–80). Conservation Science Western Australia 7, 451–468 https://doi.org/10.1080/00049158.2011.10676350
83. Haynes K, Handmer J , McAneney J, Tibbits A and Coates L (2010) Australian bushfire fatalities 1900–2008: exploring trends in relation to the 'Prepare, stay and defend or leave early' policy environmental science & policy 13 (2010) 185–194.
84. Stephenson S (2010) A literature review on the economic, social and environmental impacts of severe bushfires in south-eastern Australia Fire and adaptive management, Department of Sustainability and Environment, report no. 87 Catherine Stephenson Research Officer, Centre for Risk and Community Safety RMIT University and Bushfire Cooperative Research Centre, July. https://www.ffm.vic.gov.au/__data/assets/pdf_file/0009/21114/Report-87-A-Lit.Rvw-On-The-Economic,-Social-and-Envtal-Impacts-of-Severe-Bushfires-In-SE-Aust..pdf

85. Adams M and Attiwill P (2011) Burning issues. Sustainability and management of Australia's southern forests. Collingwood: CSIRO Publishing.
86. Carter M and Sneeuwjagt R (2011) Lessons Learned since the Dwellingup fires Vol 26 Number 4 Winter 2011 https://library.dbca.wa.gov.au/static/Journals/080052/080052-26.046.pdf
87. Cruz MG, De Mar P and Adshead D (2011) Radiata pine plantation fuel and fire behaviour guide. Technical Report.·June 2011. DOI: 10.13140/RG.2.2.26685.05608 Affiliation: CSIRO / GHD.
88. Gammage, W. (2011) 'The biggest estate on earth: how aborigines made Australia.' (Allen and Unwin)
89. Horton (2011) Eucalypt decline in the absence of fire: relationship to the ectomycorrhizal fungal community. Bushfire CRC Fire Note No. 78 (Melbourne VIC)
90. Hollis JJ, Anderson WR, McCaw WL, Cruz MG, Burrows ND and Ward B (2011) The effect of fireline intensity on woody fuel consumption in southern Australian eucalypt forest fires Pages 81-96 | Received 12 Oct 2010, Published online: 15 Apr 2013 Australian Forestry Volume 74, 2011 - Issue 2 https://doi.org/10.1080/00049158.2011.10676350
91. Jurskis V (2011) Human fire maintains a balance of nature. In Proceedings of Bushfire CRC & AFAC 2011 Conference Science Day, 1 September 2011, Sydney, Australia. Ed. R. P. Thornton Bushfire Cooperative Research Centre, Melbourne, Australia. pp. 129-38.
92. Bartlett AG (2012). Fire management strategies for Pinus radiata plantations near urban areas. Australian Forestry, 75(1), 43-53. https://doi.org/10.1080/00049158.2012.10676384 https://researchportalplus.anu.edu.au/en/publications/fire-management-strategies-for-pinus-radiata-plantations-near-urb
93. Cheney NP, Gould JS, McCaw WL, Anderson WR (2012). Predicting fire behaviour in dry eucalypt forest in southern Australia. Forest Ecology and Management 280, pp. 120 – 131
94. McCaw WL, Gould JS, Cheney NP, Ellis PE, Anderson WR (2012) Changes in fire behaviour in dry eucalypt forests as fuel increases with age. Forest Ecology and Management 271 pp. 170 – 181
95. Sullivan AL, McCaw WL, Cruz MG, Matthews S, Ellis PF (2012) Fuel, fire weather and fire behaviour in Australian ecosystems. In 'flammable Australia: fire regimes, biodiversity and ecosystems in a changing world.' (Eds Bradstock RA, Gill AM, Williams RJ) pp. 51-78 (CSIRO Publishing: Melbourne).
96. Tolhurst KG (2012) Fire severity and ecosystem resilience – lessons from the Wombat Fire Effects Study (1984–2003). Proceedings of the Royal Society of Victoria. 124:30–37. doi:10.1071/rs12030.
97. Attiwill P and Adams MA (2013) Mega-fires, inquiries and politics in the eucalypt forests of Victoria, south-eastern Australia. Forest Ecology and Management 294, 45–53. doi:10.1016/J.FORECO.2012.09.015
98. Burrows N and McCaw L (2013) Prescribed Burning in Southwestern Australian Forests.Frontiers in Ecological Environment, 11, e25-e34. https://doi.org/10.1890/120356
99. Burrows ND, Ward B and Robinson AD (2013) Jarrah forest fire history from stem analysis and anthropological evidence Australian Forestry Volume 58, 1995 - Issue 1 Pages 7-16 | Received 10 Feb 1995, Published online: 15 Apr 2013 Cite this article https://doi.org/10.1080/00049158.1995.10674636
100. Hollis JJ, Anderson WR, McCaw WL, Cruz MG, Burrows ND, Ward B (2013) "The effect of fire line intensity on woody fuel consumption in southern Australian eucalypt forest fires", 81-96 Published online: Australian Forestry 15 Apr 2013.
101. Jurskis V and Underwood, R (2013) Human fires and wildfires on Sydney sandstones: History informs fire management. Fire Ecology 9 (3), 8-24.
102. Leitch CJ, Flinn DW and van de Graaff RHM (2013) Erosion and nutrient loss resulting from Ash Wednesday (February 1983) wildfires a case study Pages 173-180 | Received 30 Nov 1983, Published online: 15 Apr 2013 https://doi.org/10.1080/00049158.1983.10674396
103. Peet GB and Williamson AJ (2013) The Dwellingup Fire – Lessons From the Past January.
104. Tolhurst KG, Duff TJ, Chong DM (2013) From "Wildland-Urban Interface" to "Wildfire Interface Zone" using dynamic fire modelling. In: 20th International Congress on Modelling

and Simulation, MODSIM2013; Adelaide: Modelling and Simulation Society of Australia and New Zealand. p. 290–296. [accessed 2018 Mar 12]. Available from: https://www.academia.edu/30317129/From_Wildland-Urban_Interface_to_Wildfire_Interface_Zone_using_dynamic_fire_modelling
105. Russell-Smith J, Cook GD and Cooke PM et al. (2013) Managing fire regimes in north Australian savannas: applying Aboriginal approaches to contemporary global problems. Frontiers in Ecology and Environment 11 (1), e55-e63.
106. Stanton P, Stanton D, M. Stott M, and Parsons M (2014) Fire exclusion and the changing landscape of Queensland's Wet Tropics Bioregion. Australian Forestry 77 (1), 51-68.
107. AFAC (2015). National guidelines for prescribed burning operations: Case Study 2 – Burning young silvertop ash regrowth forests in NSW. Report for National Burning Project – Subproject 4. Australasian Fire and Emergency Service Authorities Council Limited (Melbourne: Victoria).
108. AFAC (2015) Overview of Prescribed Burning in Australasia Report for National Burning Project – Sub-project 1 Author Mark Poynter Editor Wayne Kington, AFAC.
109. Cruz MG, Gould JS, Alexander ME, Sullivan AL, McCaw WL, Matthews S (2015) Empirical-based models for predicting head-fire rate of spread in Australian fuel types. Australian Forestry 78, 118–158.
110. CSIRO PyroPage (2015) The Dry Eucalypt Forest Fire Model November.
111. Jurskis, V. (2015) Firestick ecology: fairdinkum science in plain English. Australia: Connor Court.
112. Underwood R (2015) 'Fire from the sky.' (York Gum Publishing: Perth, WA, Australia).
113. Underwood R (2015) Early Days of Aerial Burning Report Summer 2015 The volunteer fire fighter pages 52 to 54 https://volunteerfirefighters.org.au/wp-content/uploads/2016/07/vffa-2015-v7-2-summer.pdf
114. Florec V (2016) Economic Analysis of Prescribed Burning in the South-West of Western Australia . PhD Thesis, Perth: University of Western Australia.
115. Florec and Pannell (2016) Economic assessment of bushfire risk management options in Western Australia: case studies in the Perth Hills and in the south-west of Western Australia. Report Prepared for the State Emergency Management Committee Secretariat, June.
116. Johnson CN (2016) Fire, people and ecosystem change in Pleistocene Australia. Australian Journal of Botany 64, 643-651.
117. Tolhurst KG and McCarthy GJ (2016) Effect of prescribed burning on wildfire severity: a landscape-scale case study from the 2003 fires in Victoria. Australian Forestry. 79:1–14. doi:10.1080/00049158.2015.1127197.
118. Egloff, B. (2017) Lightning strikes: rethinking the nexus between Australian indigenous land management and natural forces. Australian Forestry 80, 275-85.
119. Barker JW and Price OF (2018) Positive severity feedback between consecutive fires in dry eucalypt forests of southern Australia Ecosphere Open Access First published: 05 March 2018 https://doi.org/10.1002/ecs2.2110Citations: 34.
120. Adams et al (2020) Causes and consequences of Eastern Australia's 2019–20 season of mega-fires: Global Change Biology / Volume 26, Issue 7 / p. 3756-3758, Letter to the editor, A broader perspective, First published: 16 April 2020. https://doi.org/10.1111/gcb.15125.
121. Australian Institute of Health and Welfare (2020) Australian bushfires 2019–20: Exploring the short-term health impacts. Cat. no. PHE 276. Canberra: AIHW.
122. Davey SM and Sarre A (2020) Australian Forestry Editorial: the 2019/20 Black Summer bushfires Volume 83 Issue 2, 2020 Pages 47-51 | Published online: 04 Jun 2020.
123. Fletcher MS, Hall T and Alexandra AN (2020) The loss of an indigenous constructed landscape following British invasion of Australia: An insight into the deep human imprint on the Australian landscape. Ambio https://doi.org/10.1007/s13280-020-01339-3.
124. Hislop S, Stone C, Haywood A and Skidmore A (2020) 'The effectiveness of fuel reduction burning for wildfire mitigation in sclerophyll forests,' Australian Forestry, 83 (4) pp. 255-264. DOI: 10.1080/00049158.2020.1835032.

125. Howard T, Burrows N, Smith T, Daniel G, McCaw L (2020) A framework for prioritising prescribed burning on public land in Western Australia. International Journal of Wildland Fire **29**, 314–325.
126. Jurskis V, Underwood R and Burrows ND (2020) How Australian Aborigines Shaped and Maintained Fire Regimes and the Biota Ecology and Evolutionary Biology 2020; 5(4): 164-172 http://www.sciencepublishinggroup.com/j/eeb doi: 10.11648/j.eeb.20200504.17 ISSN: 2575-3789 (Print); ISSN: 2575-3762 (Online)
127. Morgan GW, Tolhurst KG, Poynter MW, Cooper N, McGuffog, Ryan TR, Wouters MA, Stephens N, Black P, Sheehan D, Leeson P, Whight S and Davey SM (2020): Prescribed burning in south-eastern Australia: history and future directions, Australian Forestry, DOI: 10.1080/00049158.2020.1739883 https://doi.org/10.1080/00049158.2020.1739883
128. Russell-Smith J, McCaw L and Leavesley A (2020) Adaptive prescribed burning in Australia for the early 21st Century – context, status, challenges CSIRO PUBLISHING International Journal of Wildland Fire 2020, 29, 305–313 https://doi.org/10.1071/WF20027
129. Steffensen V (2020) Fire Country. How indigenous fire management could help save Australia. Hardie Grant Travel, Melbourne.
130. Underwood R (2020) The Utter Failure of Yet Another Bushfire Panel, in Quadrant on 19 November.
131. Ward M, Tulloch AIT, Radford JQ.et al. (2020) Impact of 2019–2020 mega-fires on Australian fauna habitat. Nat Ecol Evol 4, 1321–1326 (2020). https://doi.org/10.1038/s41559-020-1251-1.
132. Barker JW, Price OF and Jenkins ME (2021) High severity fire promotes a more flammable eucalypt forest structure First published: 09 December 2021 https://doi.org/10.1111/aec.13134
133. Davey SM and Sarre AD (2021) Fire and Australian Forestry – key papers published since 1975 Pages 105-107 | Published online: 08 Oct 2021 Australian Forestry Volume 84, 2021 - Issue 3 https://doi.org/10.1080/00049158.2021.1970407
134. Tang W et al. (2021) Widespread phytoplankton blooms triggered by 2019–2020 Australian wildfires Nature, 597, 370–375.
135. Van der Velde IR et al. (2021) Nature, 597, 366–369. Vast CO release from Australian fires in 2019–2020 constrained by satellite. Blooms https://earthobservatory.nasa.gov/images/149039/australian-fires-fueled-unprecedented-blooms 6/6
136. Laming A, Fletcher MS, Romano A, Mullett R, Connor S, Mariani M, Maezumi Y and Gadd PS (2022) The Curse of Conservation: Empirical Evidence Demonstrating That Changes in Land-Use Legislation Drove Catastrophic Bushfires in Southeast Australia Fire 2022, 5(6), 175; https://doi.org/10.3390/fire5060175
137. Riley ML, Watt S and Jiang N (2022) Tropospheric ozone measurements at a rural town in New South Wales, Australia Atmospheric Environment 281 (2022) 11914 https://doi.org/10.1016/j.atmosenv.2022.119143
138. Santos JL, Hradsky BA David A. Keith DA, Rowe, Senior KL, Sitters H and Luke T. Kelly LT (2022) Beyond inappropriate fire regimes: A synthesis of fire-driven declines of threatened mammals in Australia Conservation Letters. 2022;e12905. wileyonlinelibrary.com/journal/conl 1 of 16 https://doi.org/10.1111/conl.12905
139. Fasullo JT, Rosenbloom N and Buchholz R (2023) A multiyear tropical Pacific cooling response to recent Australian wildfires in CESM2 SCIENCE ADVANCES 10 May 2023 Vol 9, Issue 19 DOI: 10.1126/sciadv.adg121 highlights
140. Laming A et al (2022The Curse of Conservation: Empirical Evidence Demonstrating That Changes in Land-Use Legislation Drove Catastrophic Bushfires in Southeast Australia Fire 2022, 5(6), 175; https://doi.org/10.3390/fire5060175
141. Brass N and Skillen S (2024) Twenty-seven fires on one weekend: the December 1978 replay of the 1961 Dwellingup Fire. Bushfire Front by Neville Brass and John Skillen November 2024. https://bushfirefront.org.au/wp-content/uploads/2024/11/27-Fires-1.docx
142. Chevis H and McCaw L (2024) Lessons from the 1937 Southwest Australian Fires July 2024

143. Kasel S, Fairman TA and Nitschke CR (2024) Short-Interval, High-Severity Wildfire Depletes Diversity of Both Extant Vegetation and Soil Seed Banks in Fire-Tolerant Eucalypt Forests Fire 2024, 7(4), 148; https://doi.org/10.3390/fire7040148