

Major bushfires in Australian history. The 1851 Victorian bushfires.

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1 Summary.

The weather conditions on 6 February 1851 were extreme, at midday on Thursday 6 February the thermometer at Charles Brentani's shop was 110°F (43.3°C) in the shade and 129°F (53.9°C) in the sun. Similar extremes were not reached again in Melbourne until 1876 (43.7°C in the shade), 1939 (45.6°C) and 2009 (46.4°C). Fuels were extremely dry. The bushfires on 6 February and at times after were intense and extensive, with up to 5 M hectares impacted. There are indications of very long distance firebrand movement in the 1851 bushfires as observed by Captain Reynolds.

The review has identified weather records in relation to the bushfires, however, these are not extensive. Also reviewed in detail is settlement, population and epidemics. Aboriginal use of fire and maintenance of forests as open and safe forests is considered in detail as is change in land management following European settlement.

Vegetation, fuels and fuel loads build up very quickly following reduction in Aboriginal cultural burning practices. It is apparent in 1851 the fire landscape wasn't safe, given the 1851 bushfires scale and intensity. As noted by Howitt and other explorers, seedlings and regrowth was reduced after low intensity burns. As noted by Howitt in 1891 "After some years of occupation whole tracts of country became overgrown by forest and arborescent shrubs. The Black Thursday fires of 1851 followed from and reinforced these changes, "open forest" that had been occupied by aboriginal people became "dense scrub", and red gum woodlands declined and died". (Howitt 1891) (Jurskis, 2006). It is understood that there was extensive forest regrowth following the reduction in Aboriginal burning for each of the 1805, 1824 (early 1820's) and 1851 bushfires.

The importance of Aboriginal cultural burning/ ecological maintenance burning in setting up safe and healthy landscapes is critical, apply this across landscapes.

There was some awareness of precautionary bushfire measures for crops and grasses at the time of the 1851 bushfires. Other risk measures were used such as in the Wimmera and provision was made for a place for safety in case of fire.

An Act to Restrain the Careless Use of Fire was passed in February 1854.

As outlined in Section 10, the review has identified a number of learnings and observations in relation to the 1851 bushfires (considered before, during and after the 1851 bushfires) and also for the future.

Looking at this laterally, there are potential opportunities to review farm and local practices to further reduce bushfire risks for stock, houses, structures at the paddock, farm and local government level, identifying strategic areas for stock safety areas. The same applies for identifying refuge areas, establishing effective firebreaks and managing fuel loads on roads which are escape paths.

Another potential learning area is provision of fire training and PPE for key personnel who will be involved in bushfires protecting houses, structures and infrastructure and will defend their homes. There will always be a lot of people assisting in bushfire control and mop up, and it is better that these personnel are trained and have sound PPE when megafires arrive than not be.

2 Introduction.

The Black Thursday bushfires were a devastating series of fires that swept the state of Victoria, Australia, on 6 February 1851, burning up 5 million hectares. This was 170 years ago.

Reasons for looking more closely into these major 1851 bushfires in Victoria include to understand the scale and severity of the bushfires; to better understand Aboriginal burning practices; to better understand what the early explorers settlers saw; to consider the earliness of the bushfires in European history; to better understand fuel loads and dynamics; to try and tease out any learnings observations, and to assist with future bushfire management.

Available time to research this review was limited and to a degree, restricted by Covid 19 restrictions on movement and library access.

If anyone has additional information in regards to the 1851 bushfires, it would be appreciated if a copy could be forwarded to:

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3 Key details on the 1851 bushfires.

Details are outlined in the sections below.

3.1 Key details on the 1851 bushfires.

Some key details on these bushfire as noted in Wikipedia Black Thursday bushfires information dated 23 August 2021:

The Black Thursday bushfires were a devastating series of fires that swept the state of Victoria, Australia, on 6 February 1851, burning up 5 million hectares (12 million acres; 50,000 square kilometres; 19,000 square miles), or about a quarter of the state's area. Twelve human lives were lost, along with one million sheep, thousands of cattle and countless native animals.

"The temperature became torrid, and on the morning of the 6th of February 1851, the air which blew down from the north resembled the breath of a furnace. A fierce wind arose, gathering strength and velocity from hour to hour, until about noon it blew with the violence of a tornado. By some inexplicable means it wrapped the whole country in a sheet of flame — fierce, awful, and irresistible." (Picturesque Atlas of Australasia published in 1886).

The Black Thursday bushfires, were caused in part by an intense drought that occurred throughout 1850 when the continent suffered from extreme heat. On 6 February 1851, a strong furnace-like wind came down from the north and gained power and speed as the hours passed. It is believed that the disaster began in Plenty Ranges when a couple of bullock drivers left logs burning unattended, which set fire to long, dry grass affected by the recent drought. The year preceding the fires was exceptionally hot and dry and this trend continued into 1851 (Kiddle, Margaret, 1980).

The weather reached record extremes. By eleven it was about 47 °C (117 °F) in the shade. The air cooled to 43 °C (109 °F) by one o'clock and rose to 45 °C (113 °F) around four o'clock. Survivors claimed the air was so full of smoke and heat that their lungs seemed to collapse. The air was so dark it made the roads seem bright ("Bushfires in Victoria 1851 Black Thursday". Romsey Australia). Pastures and plains became shrivelled wastelands: water-holes disappeared, creeks dried up, and trees turned into combustible timber. Clouds of smoke filled the air; forests and ranges became one large "sheet of flames". The hot north wind was so strong that thick black smoke reached northern Tasmania, creating a murky mist, resembling a combination of smoke and fog (Maitland Mercury, and Hunter River General Advertiser (Tasmania), Saturday 22 February 1851). Homes, crops and gardens were consumed by the rushing fire leaving a quarter of Victoria in a heap of desolate ruins. The community fled to water to escape the suffocating air around them, returning after everything was over to the sight of "blackened homesteads" and the charred bodies of animals that could not escape. The weather at sea was even "more fearful than on shore".^[1] The intense heat could be felt 32 km (20 mi) out to sea where a ship came under burning ember attack and was covered in cinders and dust ("Black Thursday". The Argus. Melbourne. 28 June 1924. p. 6. Retrieved 25 October 2013).

Eventually, a southerly breeze and light rain cooled the surface ("Bushfires in Victoria 1851 Black Thursday". Romsey Australia).

The catastrophic fire caused the loss of human life, cattle, and land for miles and affected many regions including Portland, Plenty Ranges, Western Port, (Empire, Sydney 19 Feb 1851)] the Wimmera and Dandenong districts, Gippsland, and Mount Macedon. Farms across the region were destroyed, along with a number of settlements in Gippsland, Western Port, Geelong, Heidelberg and east to Diamond Creek and Dandenong. Three men from Mount Macedon lost their lives. Overall, the disaster resulted in the deaths of twelve people, one million sheep, and thousands of cattle over 60 to 80 kilometres (40 to 50 mi).

The initial response to the calamity was a public meeting held on 11 February 1851 at Geelong. The community came together to discuss relief efforts for those affected, especially for citizens who lost everything. To assist the poor, many even cancelled outstanding debts.

Intense bushfires are not uncommon in southern Australia. The region is one of the three most fire-prone in the world. Within the last two hundred years, the area has experienced and documented at least twenty-five major fires, beginning with Black Thursday in 1851.

Wikipedia listed the cause of the 1851 bushfires as heat wave and careless burning.

Other information extracted as key points from Trove Mon 12 Jan 1953 - Portland Guardian (Vic; 1876 - 1953) Page 2 - Black Thursday, 1851 (by Gil Wain.):

- *On-the morning of February 6th 1851, the residents of the newly Built city of Melbourne awoke to find ashes from Mt. Macedon falling in the streets.*
- *With the exception, of Gippsland, where the grass was green and the river full, the stage was set for a major blaze. To add to the setting, the recent winter floods had caused excessively dense growth of vegetation Owing to the thinly spread population in the colony, little clearing was done. Only an act of carelessness was needed to start a trail of ruin It was not long forthcoming. Fires broke out simultaneously the country round Western Port, Dandenong Forest, and thence to Mount Macedon, and Barrabool Hills. Spreading quickly from the Black Forest across the Loddon district, they crossed the Pyrenees; and finished up by at tacking Mt Gambier, on the South Australian border.*
- *The settlement was soon covered by a dense smoke which stretched right across Bass Strait and darkened the sky over Tasmania. It was said that a man saddling his horse in Gippsland could not see animal beside him, so heavy and black was the smoke*
- *The whole colony of Victoria was on-fire at the same time. Farms and stations were burning in Portland and Port' Fairy."*
- *At one time it seemed that the whole of Melbourne would be destroyed. By midday of Black Thursday immense volumes of smoke converged on the city. Burning leaves fell everywhere. Conditions out of doors were unbearable. The black pall pressed down on the city and those in cellars found it impossible to breathe. Only a change of wind, it was said, could save the city. At sunset, luckily, a south wind sprang up and, the temperature dropped to 80 degrees. That night the frightened city gentry gathered on hilltops and gazed at the red glare over the Dandenongs, and the retreat of flames from Batman's village.*
- *The fires continued to burn In the Western District for another week (note from the 6 th February).*

3.2 Other important information in relation to the 1851 bushfires.

Extracted information from "Victoria's Bushfire History 1802 to Present" by Denis O'Bryan Director, Red Eagle Bushfire Protection Services September, 2018 highlights:

- *Weather Bureau of Meteorology (BOM) records are not available (for 1851). The 1850 winter and spring produced lush grass and settlers expected fires when it dried out. On Black Thursday, the whole state seemed to be alight. (Royal Commission, 1900).*
- *The Royal Commission in 1900 reported on Black Thursday fires. Presumably they had full access to all relevant government records, yet they did not quantify losses. "Population was sparse, agriculture was largely confined to Portland Bay and Geelong districts. Crown land was occupied by pastoralists, and understocked.*
- *A report by Tainsh (1949) on Forests Commission files said warm weather set in during October 1850 and by year's end, the country was dry almost to whiteness. Some landowners took advantage of weather to get a good burn, and there were already fires roaming the country. During January, high temperatures and thirsty winds blew from inland.*
- *The toll included - Dandenong township was engulfed, Diamond Creek - Plenty River suffered, where a woman and 5 children were killed, Mt Macedon ranges were fully alight, Barrabool Hills were engulfed, Barwon Heads to Mt Gambier was alight, towns of Warrnambool, Apollo Bay and Portland were threatened, Mt Cole and Buninyong burnt, Seymour and Kilmore fires joined and burnt between Broken and Goulburn Rivers. Hundreds left homeless. Inquests were held in Melbourne and Geelong on the deaths of 10 people, but more were missed.*
- *Nowadays, the authorities report Black Thursday as follows: deaths 15, area burnt 5 million ha, buildings lost 1300, stock losses 1 million (eg, VBRC 2010).*

As outlined in an undated document contributed by Alexander Romanov-Hughes (Port Phillip Pioneers Group PPPG Member No. 52) titled "Black Thursday" Bushfires 1851:

....At sea, the weather was even more fearful than on shore. Captain Reynolds reported that, when 20 miles from the Laurences, the heat was so intense, that every soul on board was struck almost powerless. A sort of whirlwind, on the afternoon, struck the vessel, and carried the topsail, lowered down on the cap, clean out of the bolt rope, and had he not been prepared for the shock, the vessel,

he had no doubt, would have capsized. Flakes of fire were, at the time, flying thick all around the vessel from the shore in the direction of Portland.

In summary, this detailed information in Section 3 indicates the 1850 winter and spring produced lush grass, hot weather dried the fuel, the intensity of the bushfires and extensive damage. More detail in regards to this is outlined in Section 5. The information also highlights the considerable distances that firebrands were carried. The references to “Flakes of fire were, at the time, flying thick all around the vessel from the shore in the direction of Portland” is very interesting. According to Wikipedia dated 27 August, 2021, the Lawrence Rocks are a group of two rocky islets, 6.8 ha and 1.5 ha in area, with an associated reef, 2.4 km south-east of Point Danger in western Victoria, Australia, and about 6 km south-east of the city of Portland. It is not clear which direction Captain Reynolds was from “the Laurences”, and where the fires were near Portland, but irrespective of this, these “flakes of fire” (likely firebrands), had travelled a considerable distance and possibly at the upper known range of firebrand travel, maybe greater.

4 Reported locations of the 1851 bushfires.

According to the CFA website 29 August 2021, Major Fires 1851 Black Thursday locations included Wimmera, Portland, Gippsland, Plenty Ranges, Westernport, Dandenong districts, Heidelberg.

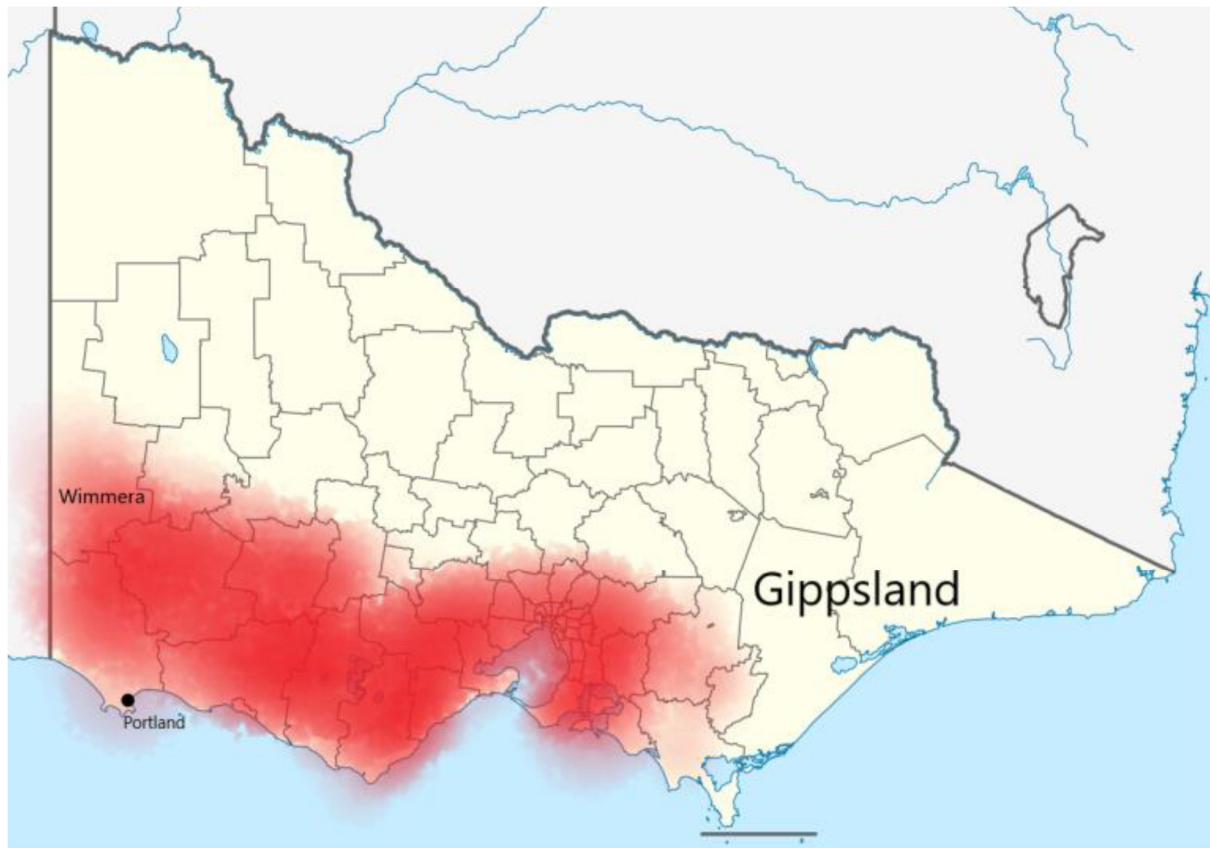
The website Bushfire Education Bushfires in Our History notes the locations for the 1851 bushfires as Portland, Plenty Ranges, Westernport, Wimmera and Dandenong and notes localities listed are indicative only.

There is a broad map of reported 1851 bushfire locations included in “Victoria’s Bushfire History 1802 to Present” by Denis O’Byrne Director, Red Eagle Bushfire Protection Services September, 2018, refer below.

The reported locations are shown as circles on this contemporary map.



There is another broad map of reported 1851 bushfire locations included in Anniversary Bushfire Exhibit, 2018, An Interactive Qualifying Project Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science, Sponsored by the Fire Services Museum of Victoria. Authors: Daniel Duff, Arkady Gobernik, Jacob Spada and Nicholas Janco, 12 December 2018. This map is highlighted below.



5 Weather details in regards to the 1851 bushfires.

Further details in regards to weather are outlined below.

5.1 Weather and fires before the 1851 bushfires.

A good summary of the period 1848 to 1851 is outlined in the National Museum Australia “Black Thursday bushfires” Defining Moments (<https://www.nma.gov.au/defining-moments>) 1851: Black Thursday bushfires devastate the colony of Victoria, Updated 30 June 2021:

Prelude to the Victorian bushfires. Permanent European settlement in Victoria began at Portland in 1834, and at Melbourne in 1835. In February 1851, only a few months before the area achieved its status as a colony independent of New South Wales, the settlers confronted their first cataclysmic bushfires. The fires followed a period of unusual and erratic weather. 1848 had seen heavy rainfall, followed by drought. Then high temperatures in the summer of 1848–49 led to significant bushfire risk. The following winter Europeans saw snow for the first time in Melbourne, followed by deluges and floods. High rainfall in 1849 encouraged the build-up of vegetation throughout the colony, only for further drought in 1850 to dry it out. The following summer of 1851 was long and hot. For weeks before Black Thursday, bushfires raged uncontrolled in the Plenty Ranges, north-east of Melbourne. There were also fires on Mount Macedon to the north and in the Pyrenees to the west. A newspaper proposed a ban on smoking on the road to Sydney, to minimise the risk of starting new fires.

Further detail in relation to the weather and fires is outlined below.

5.2 Weather on the day of the 1851 bushfires.

As noted above in Wikipedia Black Thursday bushfires information dated 23 August 2021:

The weather reached record extremes. By eleven it was about 47 °C (117 °F) in the shade. The air cooled to 43 °C (109 °F) by one o'clock and rose to 45 °C (113 °F) around four o'clock.

Information extracted from “Earth, wind, fire, water – gold Bushfires and the origins of the Victorian Gold Rush” by Douglas Wilkie History Australia Volume 10 Number 2 August 2013:

..... and after weeks of scorching temperatures, at midday on Thursday 6 February the thermometer at Charles Brentani's shop was 110 °F (43.3 °C) in the shade and 129 °F (53.9 °C) in the sun. Similar

extremes were not reached again in Melbourne until 1876 (43.7 °C in the shade), 1939 (45.6 °C) and 2009 (46.4 °C) (Bureau of Meteorology data for Melbourne. Accessed 30 March 2013).

Information extracted from “Victoria’s Bushfire History 1802 to Present” by Denis O’Bryan Director, Red Eagle Bushfire Protection Services September, 2018:

1851 Weather Bureau of Meteorology (BOM) records are not available. The 1850 winter and spring produced lush grass and settlers expected fires when it dried out. On Black Thursday, the whole state seemed to be alight. (Royal Commission, 1900).

Thursday (6 Feb) was one of the most oppressively hot days we have experienced for some years. In the early morning the atmosphere was perfectly scorching, and at eleven o'clock the thermometer stood as high as 117° (= 47 degrees C) in the shade; at one o'clock it had fallen to 109° (= 42.7C) and at four in the afternoon was up to 113 (= 45C) (from The Argus 8 Feb, 1851).

Other extracts from O’Bryan (2018) in relation to weather:

Extract from an eye witness account was published in England by Francis Peter Labilliere. *It was from the darkness of the day in Melbourne and Geelong, rather than from the charring effects of the fire, that the name was derived. In Melbourne the heat was excessive, and the atmosphere thick and smoky. It was known that great fires were raging in the country. Much uneasiness was felt lest one should break out in the city; for with the high, hot wind, it was impossible to say how far it might have carried destruction. Burnt leaves were falling everywhere—some being carried on board vessels many miles out at sea. The neighbouring colonies did not experience the horrors of Black Thursday.*

and:

Argus Sat 8 Feb 1851 The Weather. - Thursday was one of the most oppressively hot days we have experienced for some years. In the early morning the atmosphere was perfectly scorching, and at eleven o'clock the thermometer stood as high as 117° (= 47 degrees C) in the shade; at one o'clock it had fallen to 109° (= 42.7C) and at four in the afternoon was up to 113 (= 45C).

The blasts of air were so impregnated with smoke and heat that the lungs seemed absolutely to collapse under their withering influence; the murkiness of the atmosphere was so great that the roads were actually bright by contrast. The usual unpleasantness of hot wind was considerably aggravated by the existence of extensive bush fires to the northward, said by some to have an extent of 40 or 50 miles. In the evening, after an hour's battle for the supremacy, the cool breeze from the sweet south came down, sweeping away the pestilential exhalation of the day, and bringing in its train a light and refreshing rain

and:

Argus 10 Feb 1851 Otways: The station of Mrs Tate would have inevitably shared the same fate with the latter but the wind providentially happened to change, and the fire took a route by the coast, around which it swept with the fury of a demon devastating all before it.

and:

Argus 12 Feb 1851 I write in the midst of desolation, Thursday morning (note day of the bushfires) was ushered in with a fierce hot wind, which, as the day advanced, grew stronger and stronger. For three weeks bush fires have been raging to the westward and northward of the Bush Inn (= Gisborne). About mid-day, the whole of Mount Macedon and the ranges were one sheet of flame, careering on at the speed of a race horse, carrying all before it as clean as a chimney newly swept. The destruction in the vicinity of the Bush Inn is appalling.

In summary, the weather conditions on the day were very hot and windy on 6 February 1851. There is inadequate information for the author to undertake fire danger index or intensity assessments for grasslands nor forests with accuracy, noting the lack of wind speed and humidity data, specific times of datasets and fuel loads. However, assessing all information in a subjective manner and the available data, the weather information, the references to fierce hot winds (and the importance of wind speed in fire danger indexes, the fire descriptions, the scale of devastation, the very large area of the bushfires, human loss and firebrands at sea, it is more than likely that the grassland and forest fire

danger indices would have been extreme on 6 February 1851 and fire intensities of the bushfires likely very intense.

5.3 Weather and bushfires after 6 February 1851.

Information extracted from the very good informative document "Victoria's Bushfire History 1802 to Present" by Denis O'Bryan Director, Red Eagle Bushfire Protection Services September, 2018:

6 Feb 1879 Irrewillipe / Barongarook area - Multiple deaths Background: Using Melbourne weather as a reasonable indicator of Colac's, the maximum temperature at Melbourne on 4 Feb was 37.1C, on 5 Feb 38.9C, on 6 Feb 40C and on 7 Feb was 25C. Wind records are not available, but the temperature pattern suggests a typical summer heat spell, culminating with strong N – NW winds on the very hot 6 Feb, followed by an afternoon or evening cool change accompanied by a SW wind, which reduced maximum temperature on 7 Feb. Judging by the descriptions of the fire area on 7 Feb, the cool change brought no rain. Reports say some rain finally fell over the fire on 10 Feb. There was no rain in Melbourne till 11th Feb, when 19mm fell, and the previous rain was 19mm on 22 Jan. Based on the evidence given to the Coroner, the fire tragedy occurred during the arrival of the strong SW winds of the cool change, on afternoon of 6 Feb.

and:

Argus Sat 8 Feb 1879.

A terrible bushfire broke out yesterday (6 Feb) about eight miles south of Colac, and swept down with treat rapidity upon the township. A large number of small selectors inhabiting the borders of the forest have been burnt out, and the fire is still raging, after 21 hours of ineffectual attempts to subdue it.

Colac is now surrounded by thick smoke, and bush fires are visible in every direction. All the country is on fire between Johnson's Coast Track Sawmills and the border of the Colac township common. The immense fires in the forest at Irrewillipe, which endangered Sir Samuel Wilson's Corangamite Station and burnt out several selectors last week, are still blazing, and any change of wind will infallibly bring them among the thickly selected land.

Great fires are burning in the forest near Murroon (near Deans Marsh), and all the way along the Loutitt Bay (= Lorne) track. It is now, at 1 o'clock p.m., quite dark in Colac by reason of the clouds of smoke in all directions.

and:

Argus Wed 12 Feb 1879 (From the Colac Herald, Feb. 11), extracted applicable information as dot points:

- It is impossible to state precisely what the extent is of the property destroyed, but it is supposed to be about 1,500 acres, nearly all belonging to small holders.*
- The fire originated in Mr. Whitchell Standley's paddock, where he had for some time past been burning rubbish.*
- The onlookers describe the fire as looking like a wall of flames 30ft high, sweeping a mile of country before it. It would have been impossible for anyone to have passed through it, as everything combustible was immediately swallowed up. The fire completely swept away all dry timber and killed many fine green trees 50 and 60 feet high. The conflagration travelled at the rate of eight miles an hour.*
- An extraordinary occurrence took place in connexion with it. When it was raging in Mr. Danaher's paddock, a lighted piece of bark was carried by a whirlwind a distance of a quarter of a mile into Mr. Simon Campbell's paddock. Mr. Campbell was present at the time and saw the lighted material set fire to his land, but all his efforts to impede its progress were totally useless.*
- Fresh Outbreak of The Fire. Yesterday (10 Feb) a fire again started at Christie's paddock, north of where it was previously raging.The properties destroyed yesterday were those of Messrs. Kinane, (90 acres), Christie (300 acres), Prigg (100 acres), and Ballagh (the number of acres not known).....Fortunately, a copious downfall of rain set in, which will have the effect of bringing the fire into subjection.*

- *Colac, Tuesday. The hot wind was yesterday evening broken up by a violent storm from the westward, which fortunately extinguished the bush fires, though not until they had come perilously near to the township.* (Author note, Tuesday 11 February).

There were further fires after the 6 February, but there is limited information in regards to this issue. Note the above outbreak of bushfire on 10 February, raised in the Colac Herald on February 11.

5.4 Assessing the 1851 bushfires weather in regards individual weather variables.

Assessing the above information in regards to temperature:

- The summer of 1851 was long and hot.
- Thursday was one of the most oppressively hot days, at eleven o'clock the thermometer stood as high as 47 degrees C in the shade; at one o'clock it had fallen to 42.7C and at four in the afternoon was up to 45C.
- The temperature in Melbourne on 7 Feb was 25C associated with a SW wind, which reduced maximum temperature on 7 Feb. Judging by the descriptions of the fire area on 7 Feb, the cool change brought no rain.

Assessing the above information in regards to wind:

- Wind records are not available, but the temperature pattern suggests a typical summer heat spell, culminating with strong N – NW winds on the very hot 6 Feb, followed by an afternoon or evening cool change accompanied by a SW wind, which reduced maximum temperature on 7 Feb (in Melbourne).

Assessing the above information in regards to rainfall:

- The previous rain in Melbourne was 19mm on 22 Jan, nearly three weeks between rainfall events in the Melbourne area.
- *Argus Sat 8 Feb 1851 The Weather. – "Thursday (note the 6th) was one of the most oppressively hot days we have experienced for some years..... In the evening, after an hour's battle for the supremacy, the cool breeze from the sweet south came down, sweeping away the pestilential exhalation of the day, and bringing in its train a light and refreshing rain".*
- Reports say some rain finally fell over the fire on 10 Feb. May be refers to the Irrewillipe/ Barongarook area or the bushfires generally.
- *Argus Wed 12 Feb 1879 (From the Colac Herald, Feb. 11). Yesterday (10 Feb), "a copious downfall of rain set in, which will have the effect of bringing the fire into subjection".*
- *Colac, Tuesday 11 February. The hot wind was yesterday evening broken up by a violent storm from the westward, which fortunately extinguished the bush fires, though not until they had come perilously near to the township.*
- From the above information here was no rain in Melbourne till Tuesday 11th Feb (5 days after the bushfires of 6 February), when 19 mm fell.

6 Settlement, population and epidemics.

Details in regards to these issues are outlined in the sections below.

6.1 Early European settlement in Victoria.

Important points in regards to European settlement in Victoria using information in the Travel Victoria History Timeline:

- Before 1770. Victoria is home to many indigenous nations who had inhabited the land for many thousands of years prior to European discovery and settlement.
- 1770. The continent of Australia was first sighted by the crew on Captain Cook's Endeavour voyage at Point Hicks, located in the far east of Victoria between Bemm River and Mallacoota.
- 1798. George Bass sailed through Bass Strait and sighted the coast around Wilsons Promontory and Western Port.
- 1802. Lieutenant John Murray, aboard the Lady Nelson, entered Port Phillip, explored Corio Bay and formally took possession of the area for Britain. Matthew Flinders arrived in Port Phillip and climbed the bay's two major nearby peaks - Arthurs Seat and the You Yangs.

- 1803. Acting-Lieutenant Charles Robbins, surveyor-general Charles Grimes and gardener James Flemming sailed around Port Phillip and along sections of the Maribyrnong and Yarra Rivers. A British convict settlement was established at Sorrento, thus becoming Victoria's first official settlement, but it was abandoned the following year.
- 1824. Pastoralist Hamilton Hume and sea captain William Hovell journeyed southwards from New South Wales, crossed the Murray River, Goulburn River and arrived at Corio Bay.
- 1826. A convict settlement was set up for a brief time at Corinella in Western Port to protect the approaches to the bay from a perceived interest by French explorers in the area.
- 1830. Charles Sturt led an expedition along the Murray River, arousing interest in settlement of land to the south.
- 1834. Victoria's first permanent European settlement was established at Portland Bay by pioneer Edward Henty.
- 1835. Farmer and businessman John Batman declared a point upstream from the Yarra River's mouth would be the site for a village, which was later to become the Melbourne of today.
- 1838. The first overland mail service between Melbourne and Sydney began operating. Victoria's first vineyard was established at Yering Station near Yarra Glen.
- 1842. Melbourne's first mayor, Henry Condell, is elected.
- 1844. Melbourne's first crossing of the Yarra River opens as a wooden trestle bridge at the site of what is now the Princes Bridge.
- 1851. The colony of Victoria was formally separated from New South Wales. Captain Charles La Trobe was appointed as Lieutenant-Governor to head the new colony. Gold was discovered in Clunes which sparked discoveries elsewhere in Victoria, resulting in a gold rush and a period of huge population growth and prosperity as immigrants arrived from all over the world to search for gold.

Other important historical information uncovered by the author of this review is listed below:

- 1800-1 James Grant. Successfully passed through Bass Strait, the first ship sailing from England to Australia to do so. Surveyed Western Port. Narrative of a Voyage of Discovery, 1803.
- 1800 -02. Francis Barrallier. Charted Western Port, surveyed Coal Harbour and Part of Hunter River. Made unsuccessful attempt to cross Blue Mountains west of Sydney. Journal of the Expedition into the Interior of New South Wales in 1802.
- 1802 John Murray Discovered Port Phillip Bay.
- Colonel Stewart, Captain S. Wright, and Lieutenant Burchell were sent in HMS Fly (Captain Wetherall) and the brigs Dragon and Amity, with orders to proceed to Western Port and establish a colony on 18 November 1826. They took a number of convicts and a small force composed of detachments of the 3rd and 93rd regiments. Attached to the party was Hovell, who had travelled overland from Sydney to Port Phillip at a point about twelve miles from the present town of Geelong with Hamilton Hume the previous year. Hovell had insisted that it was Western Port, not Port Phillip they had visited on that occasion; but on viewing the former water with the expedition under Colonel Stewart he was soon aware of his mistake.
- 1835 John Batman. Explored Yarra River and founded place for site of Melbourne. Around 1835 John Batman Port Phillip. From Danielle Clode A future in Flame 2010. "the land ...with scarcely any timber on it", "The land excellent and very rich" and "The trees were not more than six to the acre, and those small sheoak and wattle".
- 1839-41 Angus McMillan Discovered La Trobe, Mitchell and Macalister Rivers.
- 1841 to 1851 Edward Curr settler. He attributed the barren nature of the Australian landscape to Aboriginal burning. From Danielle Clode A future in Flame 2010.

6.2 Population of Victoria at the time of the 1851 bushfires.

As outlined in Trove on Fri 29 Aug 1851 - The Sydney Morning Herald (NSW : 1842 - 1954) Page 2 - Population of Victoria:

- *Several graziers, chiefly from Van Diemen's Land, had settled there a year or two previously, and their number at the census of 1836 was 224. It was not, however, until 1837 that the district was formally taken charge of by the authorities of Government.*

- *The rapidity of its growth in its earliest stages is seen from the fact, that within the five years between 1836 and 1841, the population had increased from the small-number just mentioned, 224, to 11,738.*
- *The subsequent increase is shown below. Total Population. 1841.... 11,738 Increase. Percent. 1846 ...32,879....21,141 ...180-1 1851 ...77,315 .. 41,466 ...135 2 In the 10 years ...65,607 .. 658-8. Thus, in the first five years the population was multiplied nearly three-fold ; in the second five more than two-fold ; and in the whole ten nearly seven-fold. At the date of the late census, Victoria, under the name of Port Phillip, was still in law a part of the colony of New South "Wales.*

As detailed in My Place for Teachers "Australia in the 1850s, Indigenous events" on the web in August 2021:

- *While the non-Indigenous population grew in the 1850s, the population of Aboriginal people gradually contracted. European diseases such as smallpox decimated Aboriginal communities across the country. The pressure of urbanisation meant that more land was needed and Aboriginal people were pushed from their lands. At the same time, many Aboriginal people resisted dispossession and sought ways to maintain their own culture.*
- *Aboriginal men sought work opportunities with the Port Phillip Native Police Corps (1842–52) as trackers and bush guides, and in employment on pastoral properties. Bellibellary (c1799–1846), an Elder of the Kulin nation, and his nephew William Barak (1824–1903) joined the Native Police Corps in 1851 and served under Captain Henry Dana, the first government authority on the goldfields at Mount Alexander. The Native Police troopers also escorted the first packhorse convoys that carried gold from the diggings to Melbourne.*

6.3 Epidemics in the community in Victoria.

Important information in regards to epidemics is included in a document by Ben Huf and Holly Mclean, 2020, Research and Inquiries Unit Parliamentary Library & Information Service titled "Epidemics and pandemics in Victoria: Historical perspectives" Research Paper No. 1, Department of Parliamentary Services Parliament of Victoria May 2020:

This paper examines the history of epidemics and pandemics in Victoria over the past 200 years.

Smallpox outbreaks decimated Indigenous populations during early settlement. The smallpox virus occurred in Victoria between 1790s–1830s and there were an estimated 45,000 deaths (75% of Indigenous population).

Prior to European settlement, the Kulin people of what came to be known as the Port Phillip region suffered little communicable disease. The Kulin lived in low numbers and without domesticated animals, conditions not conducive to the spread of infectious diseases. Paleopathologists have shown that indigenous peoples living in other parts of Victoria, such as the Murray region, did suffer diarrhoeal diseases resulting from their near-sedentary way of life in a food-rich environment.⁹ Smallpox is generally accepted as the earliest-known epidemic episode in settler-Australian history, decimating Indigenous Australian populations in the south-eastern parts of the continent. There are continuing debates among historians as to whether smallpox was brought to Australia by the Europeans who settled at Port Jackson in 1788 or by Macassans (from South Sulawesi) with whom Aboriginal peoples in northern Australia had been trading since the mid-eighteenth century. Most historians accept the former argument, although the conventional account is complicated by the fact that there were no cases of smallpox recorded on the First Fleet or among early settlers. For similar reasons, some historians have argued the disease was in fact chickenpox, which is more infectious than smallpox and severe (even fatal) when contracted by adults, perhaps explaining its easy transmission over less densely populated parts of the continent.

Two major 'pox' epidemics, one in 1789 and another in 1829–31, severely impacted Australia's Indigenous population. The first recorded outbreak, in April 1789, swept through the Sydney area, and may have reached as far south as the Port Phillip region. A second outbreak spread along the MurrayDarling Basin from 1829, into eastern Australia reaching the south coast of what would later become Victoria. Records suggest the outbreak was 'universal' in 1830 and 1831 in the country west of Port Phillip, from the Murray River to the south coast. There is less evidence of the outbreak reaching Gippsland. Historian Judy Campbell estimates that the incidence of disease in the dwellings

of closely related clans in semi-settled and well-endowed districts, from Portland across to Westernport, would have been high and would have seen severe mortalities rates.

The two epidemics are estimated to have killed as many as three-quarters of Victoria's pre-colonial population. It is now thought that the Aboriginal population of Victoria was about 60,000 prior to 1788, which the epidemics halved twice, to a population of about 15,000. The Djadja Wurrung people living in the basins of the Loddon and Avoca rivers, for example, was probably halved from 4,000 to less than 2,000 by 1840.

These deaths would have had a huge impacts on Aboriginal communities and associated activities such as cultural burning activities, evidence of this is outlined below.

7 Aboriginal use of fire and maintenance of forests as open and safe forests.

Details are outlined in the sections below.

7.1 Aboriginal use of fire.

It is important to understand bushfire history before white man's arrival in Australia. There is good information within an article titled "The history of fire in Australia — and how it can help us face the bushfires of the future" ABC Radio National, by Monique Ross and Annabelle Quince for Rear Vision Posted Mon 10 Feb 2020 at 8:50am, updated Mon 10 Feb 2020 at 1:49pm.

Key points extracted from this article as dot points include:

- *This summer's horrific bushfires have felt more intense than ever, the threat more immediate and encompassing — but fires are not new in Australia. They have shaped our continent for thousands of years — and there are lessons in history to help us face the risks of the future. "We are the fire continent of the globe, so it's not surprising that we are so concerned about the future of fire as we go into hotter times," says Tom Griffiths, an Emeritus Professor of history at ANU. "The answers are always going to be local, ecological and historical."*
- *Indigenous Australians celebrated, hunted, cooked and fought with fire, and used it to manage the land. "What had already been a fire continent became even more so with the work that was done by Aboriginal people over a long period with the fire stick," Professor Griffiths says. Indigenous land management practices included "cultural burning", which helps prevent fire risks and protects native habitats.*
- *"When European settlers and newcomers arrived they saw a cultivated landscape," Professor Griffiths says. "To those colonists it seemed like it had been prepared for them and their stock, it seemed like some piece of magic. "What they didn't realise is that it was actually an open, carefully managed landscape that had been created that way by Aboriginal people over a very long time."*
- *The carefully managed fire practices used by Indigenous Australians were drastically altered with the arrival of Europeans in 1788 — with disastrous consequences. "They removed the managers from the landscape. And so the land was let go wild, effectively, in a way it had never been wild for tens of thousands of years," Professor Griffiths says. Professor Griffiths says the British settlers reacted to bushfires with astonishment — back home, fire had been something for warmth and cooking, not land management. "They didn't know the power of the element that they had unwittingly unleashed," he says. He says the first record of this astonishment was Black Thursday in 1851, where "virtually the whole of the newly established colony of Victoria was alight".*

As detailed in Fire-Stick Farming by Rhys Jones Research Fellow, Department of Prehistory, Australian National University, Canberra, A.C.T Fire Ecology Volume 8, Issue 3, 2012 doi: 10.4996/fireecology.0803001 Jones: Fire-Stick Farming Page:

The white man has been on this continent for 200 years in some places and less so in most others. Before he arrived, the continent had been colonized, exploited, and moulded by other men—the Australian Aborigines and their ancestors for tens of thousands of years

Aboriginal man's ecological impact was mostly due to hunting, gathering of plants, and fire. By far the greatest effects were caused by the use of fire. A study of Australian ethnographic literature will show that bushfires were systematically and universally lit by the Aborigines all over the continent. Explorers from Tasman onwards, seeing Australia from the sea, reported that the coastlines were

dotted with fires. Peron, in 1802, sailing up Derwent in southeast Tasmania, said that “wherever we turned our eyes, we beheld the forests on fire.” When men explored inland, the entire horizon was often filled with smoke from Aboriginal fires, and anthropologists have reported regular seasonal firings over hundreds of thousands of square miles in central and tropical Australia.

Why Did Aborigines Burn the Bush?

- For fun.
- Signalling.
- To clear the ground: Both in western Tasmanian tea-tree scrub and in Arnhem Land grassland, the best way to clear a path is to set fire to the bush. This removes the undergrowth for easier travelling and also kills snakes and other vermin.
- Hunting: In many parts of Australia a recognized method of hunting was to set fire to the bush and club or spear the animals which broke cover. Foraging over the burnt area also revealed animals such as lizards hiding in holes or burnt to death on the ground.
- Regeneration of plant food: After firing, the Australian bush shows remarkable powers of regeneration. Eucalypts throw out new leaves, and grasses grow afresh from the burnt ground. Many of the vegetable foods eaten by the Aborigines are more palatable when young—for example, ferns, grasses, leaves and shoots of trees. By promoting the regrowth of grasses and young trees, man also provides a food supply for grazing and browsing animals. Aborigines will return to a burnt area after rain in order to hunt the game drawn there by the plants. This promotion of regrowth through firing is exactly the same process as that practised by modern farmers burning off the stubble in a wheatfield, or by Welsh hill shepherds burning off the mountainside each winter to kill the old bracken. In all cases, whatever the long-term effects may be, the immediate result of burning is to increase the quantity of edible plants for man and his beasts.
- Extending man’s habitat: It is a thesis of mine that, through firing over thousands of years, Aboriginal man has managed to extend his natural habitat zone.

As extracted from the Journey of Discovery to Port Phillip Author: William H Hovell and Hamilton Hume * A Project Gutenberg of Australia eBook * eBook No.: 0400371.txt Edition: 1 Language: English Character set encoding: Latin-1(ISO-8859-1)--8 bit Date first posted: April 2004 Date most recently updated: April 2004 This eBook was produced by: Don Lainson. In the Journey of Discovery to Port Phillip Author: William H Hovell and Hamilton Hume Journey of Discovery to Port Phillip, New South Wales; By Messrs. W. H. Hovell, and Hamilton Hume:

In 1824 and 1825 there were numerous references to aboriginal use of fire:

- Aboriginal use of fire, 14 references. In my cases there was fire all around the explorers.
- Smoke, 6 references.
- Burn, burning, burnt, 3 references.

7.2 Other information in relation to Aboriginal use of fire.

Important information extracted from “Victoria’s Bushfire History 1802 to Present” by Denis O’Byrne Director, Red Eagle Bushfire Protection Services September, 2018:

Observations of aboriginal practices by European exploration parties before 1835.

1802 – 1803

The first European explorers of Port Phillip Bay witnessed the frequent application of fire by the aborigines, and assumed they lived in high density around the Bay. It is possible, as suggested by my former colleague Ron Hateley (2010) [Hateley R F (2010) "The Victorian Bush: its original and natural condition" Polybractea Press, Melbourne Australia] that some of the smoke could have been signalling, some purposefully lit to clear away scrub, or to generate green pick, that some was natural bushfire, and some accidental. But we can be sure the frequent use of fire by local aborigines maintained a grassy open woodland environment around the Bay and beyond, whereas their use of fire in denser forests was spasmodic or accidental, meaning their undergrowth could range from scrubby to open. They tended to avoid large areas of dense forests, but over the years they developed passageways and trade routes to traverse them, often running alongside water courses or linking water holes.

John Murray saw the summer fires. His first observation of the Port Phillip Bay area was of smoke too dense to map the shoreline of Sorrento back beach. The easterly wind was blowing across what must have been a large blaze on the Mornington peninsular. His second entry indicates the smoky haze from fires on the Geelong side, and the variability of the weather. His final entries refer to substantial firing activity all around the Bay in late summer, early autumn. Flinders and Grimes saw evidence of recent burns and their influence on vegetation composition and structure. We can interpret their observations as a snapshot of typical local aboriginal practices and deduce that the running flames and smoky skies must have been a feature of the Port Phillip Bay summers for centuries before European settlement.

Further observations in O'Bryan (2018) by John Murray, between January to March 1802, extracted as dot points for ease of reading:

- *"Friday, February 19th. Numbers of native tracks, fires and huts were seen. One native fire in sight on Arthur's Seat distant about 10 miles.*
- *Tuesday, February 23rd. We walked through the country some distance, found the soil invariably good, the ground almost clear and the ranges of trees as regular as they are in general in the Park, with fine strong short grass underfoot.*
- *"Saturday, February 27th. A number of very large native fires on the hills round the eastern and western shores of the Port have been seen these two days past.*
- *Wednesday, March 10th. For these last two or three days great numbers of native fires have been seen all round the Port except between Arthur's Seat and Point Palmer (= near Pt Nepean).*

Further observations in O'Bryan (2018) by Grimes January (author note also in February) 1803:

- *23 January Arthurs Seat The country all newly burnt.*
- *29 January Hill behind Frankston . I ascended a hill where I could see eight or ten miles, hills without trees, narrow valleys with scrubby brush.*
- *11 February Werribee plains Went to the top of the hill; it is stony; could see about ten miles around us a level plain with a few stragglng bushes. The face of the ground is one-third grass, one-third stone, and one-third earth, mostly newly burnt.*
- *8 February North Bellarine. The land is a light sand from the point of the hill, and in some places swampy; the timber something larger, consisting of gum, oak, Banksia, and mimosa, some small pine, one half of it dead by the country being lately burnt. One of his conclusions: The country in general is newly burnt.*

O'Bryan (2018) further outlines:

Later that year (October to December) 1803, James Tuckey was an officer of the temporary first settlement of Port Phillip Bay near Sorrento. His observations confirmed the frequent burning around the fringe of the bay created an open grassy woodland, but there were other areas where the forest and scrub were impenetrable, eg, south of Arthurs Seat.

Tuckey at Sorrento 1803. Oct to Dec A Voyage to Establish a Colony at Port Philip in Bass's Strait on the South Coast of New South Wales, in His Majesty's Ship Calcutta, in the Years 1802-3-4 Author: James Hingston Tuckey (1776-1816) A Project Gutenberg Australia eBook 17 November 1826. Dumont D'Urville's party explored the area around Sandy Point [Westernport]. They went all over this tongue of land ... applied themselves to hunting kangaroos ... came upon a watercourse which seemed to belong to a river, although the water was still brackish, and he [Gaimard] noted recent traces of the presence of natives ... the open terrain is delightfully undulating. Here there are fine stands of trees easy to get through, there are vast grass-covered clearings, with well defined paths and linked by other tracks so regular and well-marked that it is hard to conceive how these could have happened without the hand of man. (Fels, 2011).

As outlined in Fire and Aboriginal People in Colonial Victoria Dr Fred Cahir, Associate Professor in Aboriginal History Federation University Living with Bushfire: A Community Conference:

From earliest period of colonisation on the coastline:

- In January 1802, Cape Schanck and Port Phillip Bay, Murray 'found it impossible to survey any part of the Coast as yet from the numerous Native Fires which cover'd [sic] this low Shore in one volume of smoke'.
- Flemming, Arthurs Seat, Nov. 1802 'country was all newly burnt'.
- Grant, Dec 1802, Cape Bridgewater: 'Many fires seen... While near shore we saw plainly several fires... Saw several fires... plenty of grass and fine woods... many fires a little way inland... Many fires were seen
- Knopwood, Dec 1803-Jan 1804 frequent observations: 'native fires' on the Mornington Peninsula and 'across the bay' (Geelong), and 'large native fires' to the northwest (Melbourne).
- Captain King, 1818: 'In passing Cape Howe, we observed large fires burning on the hills, made by the natives'.
- Dumont D'Urville, 1826, Western Port: 'enveloped in huge spiralling clouds of smoke, no doubt resulting from the habitual burning off by the savages... fine stands of trees easy to get through... vast grasscovered clearings, with well defined paths linked by other tracks so regular and well-marked... it is hard to conceive how these could have happened without the hand of man.'

Inland too!

- Hume and Hovell's 'Journey of Discovery to Port Phillip' in 1824 is punctuated with references to Aboriginal people firing the land.
- Edward Henty in southwest Victoria, January 1835: 'Many fires in the bush',
- Webster, Hume R. Dec. 1840: 'from what I could judge, the firing of the grass had been quite recent... blacks have set fire to the grass ... we saw that as far as we could see from the camp the country was burned black...'
- Kirby, Swan Hill, 1840: 'In the distance where the blacks had not burnt the reeds, it looked like large fields of ripe wheat; and nearer where they had burnt them, it had the appearance of a splendid crop just before it comes into ear.'

Aboriginal traditions of fighting fire:

- Gilmore (1934) recalled how local Aboriginal people would educate them in how to fight fire by: 'running for bushes, put them into the immigrants hands, and show how to beat back the flame as it licked up the grass.'
- Fires of 1854 in western Victoria were, according to one squatter 'fought with as many of his Black troop as he could muster' and in 1858 'The blacks are busy fighting fires for me'
- Early 20th century photos of Kurnai/ Gurnai titled 'The First Bushfire Brigade'
- "Send for the blacks!" was the first cry on every settlement when a fire started'.

7.3 Aboriginal maintenance of forests as open and safe forests.

Delving further into Aboriginal use of fire, there is important information in the paper "Human fire maintains a balance of nature" by Vic Jurskis Forests NSW Abstract (R.P. Thornton (Ed) 2011, 'Proceedings of Bushfire CRC & AFAC 2011 Conference Science Day' 1 September 2011, Sydney Australia, Bushfire CRC):

- Eucalypt forests are fire dependent ecosystems that were shaped by human burning over about 50 ka (Pyne 1991; Bowman 2003). Loss of species (e.g. Bowman 2003; Penman et al. 2008; Jurskis 2011), chronic decline of eucalypts (Jurskis 2005; Close et al. 2009, 2011; Jurskis et al. 2011) and megafires (Jurskis et al. 2003; Adams and Attiwill 2011) can occur with environmental changes in the absence of frequent burning. Human fire is essential to maintain diversity, resilience and fire safety in these forests.
- A perception of conflict between conservation of biodiversity and burning for socioeconomic protection persists in Australia. Numerous studies of 'impacts of burning' have concluded that burning depletes nutrients, simplifies vegetation structure by reducing woody vegetation and fallen timber, and threatens biodiversity. However ecological history shows that burning can maintain a dynamic balance in eucalypt ecosystems whereas nutrients, woody vegetation and fallen timber accumulate in the absence of fire, impairing their health, resilience, diversity and safety. Some recent studies of fire and nutrient cycling have elucidated the underlying

processes and provided insights into the intervals between fires that can maintain health, resilience and diversity. Human fire is part of the 'balance of nature' in eucalypt ecosystems.

As explained in Jurskis V., Turner J. 2007 "In conservation's name". In ANZIF 2007 Growing Forest Values, the 2007 Institute of Foresters of Australia and New Zealand Institute of Forestry Conference, there is "unequivocal evidence" that frequent fires prior to European settlement maintained open savanna woodlands by killing shrub seedlings (Noble 1997). Graziers used fire to maintain open forests (Mackenzie 1851, Tasker & Bradstock 2006), doing so by "ancient authority" (Townsend 1849) as had their Aboriginal predecessors. They did not, could not and had no reason to simplify, reduce or deplete the dense shrubby understoreys whose distribution was governed by the physical environment just as the distribution of grass and grassfires were governed by the physical environment before European intervention (Dawson 1830, Jurskis 2005a). Forests with dense understoreys on steep terrain remained as they were.

7.4 Open-forest park like landscape.

Important information noted in "Victoria's Bushfire History 1802 to Present" by Denis O'Bryan Director, Red Eagle Bushfire Protection Services September, 2018:

As noted in O'Bryan (2018), John Murray observed on 15 February 1802:

"Monday, February 15th. The southern shore of this noble harbour is bold high land in general and not clothed as all the land at Western Point is with thick brush but with stout trees of various kinds and in some places falls nothing short, in beauty and appearance, of Greenwich Park. I went on shore and walked through the woods a couple of miles. The ground was hard and pleasant to walk on. The trees are at a good distance from each other and no brush intercepts you. The soil is good as far as we may be judges. I saw several native huts and very likely they have burnt off several hundred acres of ground. Young grass we found springing up over all the ground we walked.

As noted in O'Bryan (2018), further observations by John Murray:

Tuesday, February 23rd. We walked through the country some distance, found the soil invariably good, the ground almost clear and the ranges of trees as regular as they are in general in the Park, with fine strong short grass underfoot.

Observed in April 1802 by Matthew Flinders and reported in 1814 Indented Head, at the northern part of the western peninsula, had an appearance particularly agreeable; the grass had been burned not long before, and had sprung up green and tender; the wood was so thinly scattered that one might see to a considerable distance (quoted in Scott 1914).

As outlined in Fire and Aboriginal People in Colonial Victoria Dr Fred Cahir, Associate Professor in Aboriginal History Federation University Living with Bushfire: A Community Conference:

'It was their custom to burn off the old grass and leaves and fallen branches in the forest, so as to allow of a free growth of young grass for the mammals that feed on grass ... they were at least careful to see that harm was not done to vegetables that yielded food.'(Smyth, 1878).

Regional differences eg 'in Gippsland' [specific vegetation zones?] Le Souef (1840-60), Robinson (1840s) and Howitt (1890) considered the yearly burning of the eucalypt forests by Aboriginal people had ensured that the country was kept 'open' and that the re-forestation of the country had occurred when the Aboriginal firing regime had declined.

More from Dr Cahir:

- *'having the appearance of an English park' Gov. Bourke, 9 March 1837.*
- *'Most of the high hills were covered with grass to the summit, and not a tree, although the land was as good as land could be. The whole appeared like land laid out in farms for some hundred years back, and every tree transplanted' J Batman, 29 May 1835.*
- *'The [Werribee] Plains are as open as the heaths of Cambridgeshire' Charles Wedge, 1837.*
- *'The ground is like a beautiful carpet, covered with grasses, herbs and flowers of various sorts – the scenery was that of an extensive park' J Norcock, Sept 1836.*

7.5 Aboriginal burning declines.

Important information extracted from “Victoria’s Bushfire History 1802 to Present” by Denis O’Byrne Director, Red Eagle Bushfire Protection Services September, 2018 in regards to Aboriginal burning declines:

- *The early settlers were attracted by open grassy woodland areas and brought stock onto them. As the sheep population encroached into aboriginal territory and as the aboriginal population declined, mainly due to western diseases, aboriginal burning declined.*
- *Cahir quotes early observers (Le Souef (1840-60), Robinson (1840s) and Howitt (1890)), who considered dense undergrowth returned when the Aboriginal firing regime had declined. Robinson, for instance noted in 1844 that once the Aboriginal peoples in Gippsland had been usurped of their land: ‘the country in consequence is unburnt, and that this is the reason the country is so scrubby.’ This may have been the case in specific areas of high activity aboriginal areas. Indeed, Cahir concludes that the written accounts of Aboriginal burning practices in Victoria indicate that the application of fire was managed, frequent and over generally small areas of grassland plains.*
- *The analysis by Hateley (2010) allows a broadening of this conclusion - that so-called aboriginal firestick farming was mainly employed in the grasslands and the open woodlands and that, if fire was applied in denser forest, it was opportunistic and targeted, eg, associated with water courses, track systems, specific food gathering sites or specific camping or gathering areas.*

In summary to Section 7, as the population encroached into aboriginal territory and as the aboriginal population declined, mainly due to western diseases, aboriginal burning declined. The carefully managed fire practices used by Indigenous Australians were drastically altered with the arrival of Europeans in 1788, with major consequences, removing the managers from the landscape.

8 Changes in land management.

Further details in relation to land management are outlined below.

8.1 Changes occur after European settlement.

Information highlighted by Vic Jurskis in “How to Burn” Double Creek, Mallacoota on 17th September 2016:

When Aboriginal people were managing the country it was open and safe. They survived fifty thousand years without emergency services bureaucracies, water bombers, fire engines, computer models and uniforms. The fire disasters we are seeing now are due to lack of responsible land management. And they have nothing to do with climate change.

For example, on 5th December 1792, Aboriginal fires were burning northwest of Sydney and Parramatta in temperatures above 109 degrees Fahrenheit or 43 degrees Celsius. They were driven towards the European settlements by searing north westerly gales. But the whitefellas beat them out with green branches. At Sydney they lost only one hut and a few gardens and fences, even though the roofs were mostly thatched. At Parramatta they thought they had “got it under” when an ember from the top of a burning tree landed on a hut and destroyed it with its outbuildings and a stack of newly harvested wheatsheaves. But that was all.

Two centuries later, in January 1994, fires burning under identical weather conditions around Sydney destroyed hundreds of houses and claimed human lives. An army and air force of firefighters with the best technology couldn’t stop them. Thousands of people were evacuated. There were only four places where the fires were contained before they got into the suburbs. Each of these areas had been previously burnt to reduce fire hazards.

The difference in 1792 was that the whole landscape was safe. In 1994 it was choked up with three dimensionally continuous fuels. Extreme fire weather is inevitable as it has been for many thousands of years, but firestorms are not. They are a consequence of 3 dimensional continuous fuels.

In 1802, Matthew Flinders described the results of a mega-fire started by lightning on Kangaroo Island. The island had been uninhabited for about 4,000 years after rising sea levels cut it off from the mainland 5,000 years earlier. Flinders saw huge dead trees, standing and fallen, in a young even-

aged forest with a dense understorey on deep “vegetable soil”. He contrasted this wilderness against the open grassy vegetation and mineral soil maintained by Aboriginal people on the mainland.

On our big island, the first mega-fire for about 40,000 years burnt what's now called the Strzelecki Ranges around 1805 less than 2 decades after local Aborigines were devastated by smallpox (in 1789) and abandoned their management of the rougher country. There were no whitefellas around there at the time to witness it, but the history is evident in descriptions of the so-called virgin scrub by settlers who started clearing it from the 1860s. There were big old dead trees, a thick young even-aged forest, impenetrable scrub and fallen timber. Just like the wilderness described by Flinders on Kangaroo Island. When they cleared the South Gippsland Scrub, they found lots of stone axes, grinding stones, cooking ovens and other signs showing that until recently most of the scrub had been open country managed by Aboriginal people.

Our second mega-fire burnt 5 million hectares of Victoria in 1851, less than 2 decades after European settlers disrupted Aboriginal management of the flatter country. By the 1860s, Alfred Howitt recognized that big scrubs, mega-fires and so called eucalypt dieback, better described as chronic decline, were direct consequences of disruption of Aboriginal fire management.

Vic Jurskis further expands on this matter in his submission on 9 January 2014 to the Director, General Purpose Standing Committee No. 5. Inquiry into the Wambelong Fire:

I gave evidence to the House of Representatives Inquiry after the 2003 fires. In their report – A Nation Charred - Chairman Garry Nairn stated that The Committee heard a consistent message right around Australia:- there has been grossly inadequate hazard reduction burning on public lands for far too long; This is still the situation and this was the fundamental cause of each and every megafire that has occurred in Australia since the first one broke out on Black Thursday 1851 and burnt five million hectares of Victoria, only sixteen years after Europeans began to disrupt Aboriginal burning. Explorers and naturalists including Tench, Flinders, Mitchell, Darwin, Curr and Howitt recognized right from the start that Aboriginal burning made Australia what it was and that its disruption caused woody thickening, megafires and loss of biodiversity.

Delving further to this issue, the Vic Jurskis submission to the Inquiry into Koala Populations and Habitat in New South Wales Name: Vic Jurskis Date Received: 22 July 2019:

A notable exception to the scarcity of koalas was observed at the same time in South Gippsland. Strzelecki's party of exploration survived by eating koalas as they struggled for 26 days through dense young eucalypt forest (Strzelecki 1845). This Great Scrub was initiated by a megafire around 1820 in a 'no-man's land' created by the demise of the Yowenjerre people after a smallpox epidemic in 1789 (Wesson 2000). Three dimensionally continuous fuels developed in the absence of Aboriginal burning. These were apparently ignited by lightning during severe weather, and the resulting conflagration initiated an extremely dense young forest. Another extreme fire affected the area in 1851 creating a second age class of scrub (Howitt 1891, Coverdale 1920, Jurskis 2017). When Europeans started clearing the scrubs in the 1870s, they reported that there were plagues of dingoes preying on plagues of koalas.

As outlined by Vic Jurskis in the “The Truth About Giant Trees and Megafires 19 May 2020”

In the 1870s, when European settlers started clearing the great forest of South Gippsland they found three age classes of blackbutt – now called mountain ash: one of “a few very large old trees” and two of dense young regrowth. The younger regrowth was about 20 years old, dating from the Black Thursday megafires of 1851. The older regrowth was about 50 years old. It grew up after the Yowenjerre people were all but wiped out by disease in 1789. Dense and woody understorey spread from deep dark gullies and took over their country. The dense scrub exploded when it was ignited by dry storms in extreme weather around 1820 and eucalypts germinated as thick as hairs on a cat's back.

When Strzelecki's party battled through the dense young forest in 1840, he recorded

Sometimes they actually progressed for chains [a chain is a fraction over 20 metres] on top of the scrub by felling some of the tall straight saplings in the direction they were going and scrambling along them.

Strzelecki referred to the unusual *red-brown stems* of the *blackbutts*. His party avoided starvation by eating koalas because there were no kangaroos or emus to be had as they struggled for 26 days through 50 miles of dense young forest.

Surveyor-General Mitchell wrote:

“Fire, grass, kangaroos, and human inhabitants, seem all dependent on each other for existence in Australia ; for any one of these being wanting, the others could no longer continue.” After the demise of the Yowenjerre with their firesticks, the natural system was disrupted, creating dysfunctional and explosive ecosystems dominated by a few irruptive species. A few decades after Black Thursday, Europeans clearing the virgin forest, discovered stone axes and spearheads, grindstones and clay cooking ovens. They recognised that it had been open grassy country with big old trees under Aboriginal management.

As outlined in Vic Jurskis “They Can’t See the Forest for the Disease” 14 December 2020:

Dense scrub, robust tussocks, or forbs choked out herbal diversity, and small mammals which relied on it for nutrition became extinct. This was largely in semi-arid areas where there was no logging or clearing. In forests, three dimensionally continuous fuels exploded into firestorms and megafires when ignited by lightning in extreme weather. The first was in South Gippsland around 1820, thirty years after the Yowenjerre were ravaged by smallpox. The second, Black Thursday, incinerated 5 million hectares of Victoria in 1851, less than 20 years after European occupation.

As explained in “Landscape, koalas and people: A historical account of koala populations and their environment in South Gippsland” Faye Wedrowicz A B E, Wendy Wright B, Rolf Schlagloth C D, Flavia Santamaria C, Fred Cahir D, Australian Zoologist 38 (4):

Anecdotal reports, from early settlers of the nearby Gippsland Plain indicate that the Strzelecki Ranges were widely burned by the ‘Black Thursday’ fires of 1851 and that the dense undergrowth, later encountered in the area, was a result of regrowth following these fires (Murray 1920). Subsequent major fires affecting the region included the Red Tuesday fires of 1898, which burned about 2,600 square kilometres throughout South Gippsland and the Black Friday fires of 1939, which affected an extensive area of the eastern Strzelecki Ranges (Pyne 1991; DELWP 2015a).

Reviewing the above information, in summary:

- There appeared to be two major bushfires in Victoria before the 1851 bushfire. The first mega-fire burnt what’s now called the Strzelecki Ranges around 1805 less than 2 decades after local Aborigines were devastated by smallpox (in 1789) and abandoned their management of the rougher country. The second was in South Gippsland around 1820 (maybe 1824), thirty years after the Yowenjerre were ravaged by smallpox and 31 years before the 1851 bushfires.
- There was extensive forest regrowth following the reduction in Aboriginal burning for each of the early 1820’s and 1851 bushfires. Early 1820’s regrowth covering many areas likely contributed to the 1851 bushfires.

8.2 Evidence of changes in land management.

As outlined in Jurskis V, 2020, “The efficacy of past and current land management in influencing wildfire regimes and consequent risks to people, the environment and the economy”. Submission 17 to Federal bushfire inquiry:

An outstanding spike in biomass burning during 70,000 years of records occurred after European settlement. It is clear that woody thickening and intense fires consequent to disruption of Aboriginal burning fueled megafires that produced unprecedented amounts of charcoal (Mitchell 1848; Mooney et al. 2011, Fig. 5; Jurskis and Underwood 2013). For example, high intensity fires burnt 5 million hectares of Victoria in 1851 only two decades after Europeans began to disrupt Aboriginal management (Adams and Attiwill 2011, Jurskis 2015). After Europeans arrived, woody thickening, megafires and pestilence occurred firstly when Aboriginal burning was disrupted, and secondly when foresters attempted to suppress fire.

As explained in “How Australian Aborigines Shaped and Maintained Fire Regimes and the Biota“ by Vic Jurskis, Roger Underwood, Neil Burrows, *Ecology and Evolutionary Biology* 2020; 5(4): 164-172

- *European explorers and pioneering pastoralists described frequent mild burning of mostly open grassy ecosystems by Aboriginal people [Refer references 6-8, 10-13, 36, 43, 44, 57, 58 in their paper].*
- *An outstanding spike in biomass burning during 70 000 years of records occurred after European settlement. This evidence suggests that woody thickening and intense fires consequent to disruption of Aboriginal burning fueled megafires that produced unprecedented amounts of charcoal [Refer references 11, 23, 52].*
- *The first known megafire after Europeans arrived in 1788 occurred around 1820, prior to European occupation of what is now Victoria. It established dense young eucalypt forest in the Strzelecki Ranges [Refer references 12, 40]. Dendrochronology has dated a megafire in the nearby Central Highlands at 1824 [Refer reference 59].*
- *This first known high intensity fire event in The Strzelecki Ranges was almost certainly a consequence of lack of mild burning after the demise of the Yowenjerre people. The disruption of Aboriginal fire management likely applied to a wider area including the Central Highlands. Within two decades after Europeans began to disrupt Aboriginal fire management across Victoria, high intensity fires burnt 5 million ha in the Black Thursday fires of 1851 [Refer references 13, 60]. Woody thickening, megafires and pestilence occurred firstly when Aboriginal burning was disrupted, and secondly when foresters attempted to suppress fire in the early 20 th Century [Refer references 13, 50].*

As outlined in “The Links between Cattle Grazing and Fuel Reduction in the Grazing Zones of the High Country” prepared by the Mountain Cattlemans Association of Victoria in February 2010:

Howitt (1891) observed the changes that occurred after European settlement of Gippsland: The influence of settlement upon forests has not been confined to lands devoted to agriculture. From the day the first pioneers drove their herds down the mountains any cause which would lessen the force of annual fires would alter the balance of nature, and thus produce new and unexpected results. The annual crop of grass was burnt off by aborigines, this tended to keep forests open and prevent open country from being overgrown. Sheep and cattle lessened the annual crop, and settlers (protected) their improvements. The valley of the Snowy River and the mountains were in many parts clothed with grass and but a few large scattered trees. After some years of occupation whole tracts of country became overgrown by forest and arborescent shrubs. The Black Thursday fires of 1851 followed from and reinforced these changes, “open forest” that had been occupied by aboriginal people became “dense scrub”, and red gum woodlands declined and died. (Howitt 1891) (Jurskis, 2006).

8.3 Fire practices from 1840 to the time of the 1851 bushfires.

Information highlighted in “Victoria’s Bushfire History 1802 to Present” by Denis O’Byrne Director, Red Eagle Bushfire Protection Services September, 2018 is outlined below:

Aborigines apply fire for green pick by grazing animals and for food gathering. In 1841 Squatter William Brodrigg observed that ‘the natives had burnt all the grass in Gippsland late in summer’. By autumn, he continued, ‘the whole country was very green. It had the appearance of young cornfields, the grass was about six inches high and in places very thick’. (from Wellington Shire Heritage Study, 2005).

‘ Europeans recognise aboriginal knowledge of fire application 1840 An old man...went and set fire to the Bush...I bid him desist but he said - Black fellow would not know where they were if he did not make fire, and made one so [effectively] about him that I could not get aside him. [The fire] Burnt furiously beyond conception for a thick scrub but a quantity of old grass [decayed] was underneath which accounted for it. The Old Man persisted, at half past one I again went where it was burning and to my great surprise what 2 hours before was a dense forest was now passable... I came up [to] the old man who had an old close body coat on, which I suppose he had put on to keep his body from being burnt and kept perhaps for the purpose as I never saw him with it on before. ... I went on till I came to the end of that already burnt [section] about half a mile and was surprised at the extent [of the fire.] As far as the eye could take in was still in flames and burning. At a little distance it sounded like water coming down a gentle fall, [but the] fire appear[ed] like a wall around you... (Cahir quotes William Thomas, Cape Schanck, c.1840)

Vendetta fires harry the European invader or deprive their stock of feed:

- *'The fires in the bush are often the work of the natives, to frighten away the white men'* (Cahir quotes Kirkland, 1838).
- *'The landscape was being deliberately torched to drive us away'* (Cahir quotes Webster 1840).
- *Rawson and some of the men from Jamieson's visited and complained that the blacks had set fire to the bush all round, and 200 cattle had strayed.*
- *2 March 1840 William Thomas journal 'The woods are on fire every night. The blacks [Djabwurrung] set them alight in retaliation for being driven away'* (Cahir quotes Chabrilan, 1850s)

Europeans recognised aboriginal knowledge of how to avoid bushfire threats, local Aboriginal people would educate them in how to fight fire by: *'running for bushes, put them into the immigrants hands, and show how to beat back the flame as it licked up the grass.'* Cahir quotes Gilmore (1934)

Newspapers in Port Phillip at this time need to be read with caution. Mrs Madeleine Scott's letter to the editor, published 13 March 1841 is a good example. She wrote that the newspaper had published an account the previous week stating that the blacks had set fire to her property. In fact, they were helping her to put the fire out. This is a similar experience to Thomas at Meyrick's (Fels, 2011). *'It was the local Aboriginal people who saved Captain Hepburn's family from the inferno descending upon them on Black Thursday by directing them to a safe spot near a creek'*. Cahir quotes the year was 1851.

Important information extracted from "Victoria's Bushfire History 1802 to Present" by Denis O'Bryan Director, Red Eagle Bushfire Protection Services September, 2018. He concluded:

Many settlers continued the fire stick farming practice, initially for green pick and as settlement subsequently moved further into the forested landscape, others used fire for broad area land clearing. The early settlers also sowed crops and built houses and sheds. As before, the fires were let to run. Most went out. Fuel free gaps or rain finished them off. Some spread slowly overnight in the dry litter bed. Some smouldered for days. And so, the early years saw smoky skies as a common summer phenomenon. This summer pattern of smoked skies was to continue for up to 100 more years in many parts of Victoria.

Similar to aboriginal times, when the dry winds came, the smouldering flames perked up and ran with the wind. Unlike in aboriginal times, when these reinvigorated fires ran as infernos through the bush, refreshing its potential for future food supply, they now ran towards the vulnerable assets of the settlers - like crops and stock herds and homesteads, sheds and huts.

8.4 [European approaches to fire and bushfire management in Victoria just before, during and just after the 1851 bushfires.](#)

Information extracted from "Earth, wind, fire, water – gold Bushfires and the origins of the Victorian Gold Rush" by Douglas Wilkie History Australia Volume 10 Number 2 August 2013:

1848-1850 (before the 1851 bushfires).

In February 1848 – the middle of a long, hot summer – the Argus correspondent at Seymour reported that 'the whole country is parched up and ... stock are suffering from want of food and water' (Argus, 22 February 1848, 2). By September the weather had been 'extraordinary, alternating between hot winds and raw damp cold atmosphere' (Ibid, 22 September 1848, 2). Then in October – 'the present season has been more unsettled than any previous one ... settlers will have no occasion to complain of the want of grass and water this summer' (Ibid, 10 October 1848). In the same month the Geelong Advertiser noted that 'almost unceasing rains' had caused both crops and grass to grow to 'unprecedented height', but at the same time urged that precautionary measures be taken by farmers to protect their crops against bushfires in the coming summer (Geelong Advertiser quoted in Argus, 3 November 1848, 2).

and:

The summer of 1849 was a period of extreme bushfire danger and in December 1848 the Melbourne Morning Herald reported: there has never been a season since the colonization of Port Phillip in which the native grass has been so abundant ... as a consequence, those ravages by fire which are almost of annual occurrence, may be anticipated with fearful violence ... precautionary measures are always judicious, and those who do not avail themselves of the present hint may have reason to regret their negligence (Port Phillip Herald, 26 December 1848, 2).

and further on:

The potential danger of the situation emerged in press reports. At Warrnambool, Friday 26 and Saturday 27 January 1849 'were the hottest days we have had here. The north wind blew a perfect sirocco for thirty-six hours' (Argus, 6 February 1849, 2). At Moonee Ponds, a farmer 'was almost ruined by the destruction of thirty acres of wheat, occasioned by the obstinacy of some draymen, who ... persisted in lighting a fire amidst the dry bush grass'. The Herald called on the legislature in Sydney to outlaw the lighting of fires on public roads (Melbourne Morning Herald, 20 January 1849, 3). But by early February 'some twenty patches of bush were on fire about Melbourne ... too much caution cannot, therefore, be exercised', and the Herald urged that pastoralists be found guilty of 'criminal negligence' if they failed to control the risk of bushfire on their land; advocated the ploughing of fire-breaks around properties; and called for a ban on lighting fires during the high-risk months (Ibid, 8 February 1849, 2; 12 February 1849, 2). The Argus also observed that the 'horizon is beginning to be dimmed by the smoke from the burning bush', and urged those in the country to take 'immediate measures for the safety of their crops and homesteads'.

and:

As Robin observed, Europeans were often ignorant of the power of bushfire because 'Europe is itself a fire-starved place' (Robin How a Continent Created a Nation, 121). Indeed, in January 1854 the Argus warned that 'tens of thousands who know very little of what a bush-fire in Australia is, or how frightful a thing ... it may become', had arrived in the previous two years (Argus, 9 January 1854, 5). The same concern was expressed in February 1855 (Ibid, 1 February 1855, 4). The warning applied with at least equal force in 1849 before Black Thursday, and it is little wonder that Chapman was alarmed by the prospect of the gold seekers lighting a fire.

and:

*Sergeant McLelland had much greater difficulty, and claimed many set fire to bush to hide their tracks, creating a shortage of fodder for the police horses, and causing what Edmund Finn described as 'an intense bush conflagration'. McLelland reported that the grass was 'entirely burned up for miles around this place' (McLelland to Dana, 17 March 1849, Public Record Office of Victoria (PROV) VPRS 4466, Box 1/5, Unregistered Papers Relating to the Native Police Corps, unit 1; 'Garryowen' (Edmund Finn) *The Chronicles of Early Melbourne 1835 to 1852: Historical, Anecdotal and Personal*, Melbourne: Fergusson and Mitchell 1888, 785.*

*D C Simpson, a squatter, reported Aboriginal people burning the grass on his run at Glenisla 'to avoid their tracks being seen' after stealing sheep – perhaps the Aboriginal police who accompanied McLelland thought this was the motivation of the gold seekers at Daisy Hill (Samuel Carter *Reminiscences of the Early Days of the Wimmera*, Melbourne: Norman Bros 1911, 15; Geoffrey Blainey *Triumph of the Nomads: A History of Ancient Australia*, Sydney: Macmillan 1983, 77; For a discussion of Aboriginal use of fire see Bill Gammage *The Biggest Estate on Earth: How Aborigines made Australia*, Melbourne: Allen & Unwin 2011). Some of the gold seekers who returned to Melbourne in the second week of February also said they had 'set fire to the bush to prevent their tracks being followed' (Argus, 13 February 1849, 3).*

1851.

..... and after weeks of scorching temperatures, at midday on Thursday 6 February the thermometer at Charles Brentani's shop was 110 °F (43.3 °C) in the shade and 129 °F (53.9 °C) in the sun. Similar extremes were not reached again in Melbourne until 1876 (43.7 °C in the shade), 1939 (45.6 °C) and 2009 (46.4 °C) (Bureau of Meteorology data for Melbourne. Accessed 30 March 2013. Available at: <http://reg.bom.gov.au/climate/data/>).

and:

The Macedon, Pyrenees and Plenty Ranges were ablaze, and Melbourne was surrounded by fire (Garryowen' Chronicles of Early Melbourne, 443; Argus, 8 February 1851, 2; 10 February 1851, 2). The bushfires did not suddenly start and finish on Black Thursday, as it became known, for the Plenty fires had been 'raging on the mountains for a month' and they would continue for some time after 6 February. Although an inquest into the deaths of the McLelland family (not Sergeant McLelland) could find 'no evidence of the origin of the fire' – it may have been a lightning strike, or had some other natural cause – there had been people searching for gold in the Plenty Ranges since February 1849 (Argus, 10 February 1851, 2).

and:

In late February, near Geelong, 'the young grass [was] just touching over with green the blackened plain', while at Kilmore in April 'the whole country' was still 'a parched and arid desert' (G H Wathen, The Golden Colony or Victoria in 1854, London: Longman 1855, 93; Argus, 15 April 1851, 1s).

And further on after the 1851 bushfires:

During the summer of 1852–53 there were, in fact, significant fires and in January 1854 the Argus, concerned at the arrival of 'tens of thousands who know very little of what a bush fire in Australia is', published a detailed account of the precautions that should be taken in the country districts, including the burning of firebreaks around dwellings and other important buildings (Argus, 9 January 1854, 5).

As noted in Wilkie (2013), "an Act to Restrain the Careless Use of Fire had been passed in February 1854" (*Ibid*, 4 January 1856).

8.5 A case study of early European approach to fire and bushfire management at the time of the 1851 bushfires.

A good study of European understanding of bushfire risks is explained in Barbara Hamilton-Arnold Port Phillip Pioneers Group "Black Thursday - 6th February 1851", Contributed by Barbara Hamilton-Arnold - PPPG Member No. 971, extracted key parts from the web on 30 August 2021 in relation to one family in the Wimmera:

Francis and Janet Hamilton with their six children were early pioneers in the West Wimmera, Victoria, where they took up 98,000 acres in 1846. It was James, one of their sons who wrote "Pioneering Days in Western Victoria" published in 1914 by Exchange Press, Melbourne and republished in 1981, by Warrnambool Institute Press.

This extract about the bushfires on the Hamilton properties, "Bringalbert" and "Ozankadnook," in 1851 is particularly pertinent today as we witness fires burning across the countryside during summer.

Barbara Hamilton-Arnold, whose great uncle is the writer, is particularly interested in the fact that boys were given the responsibilities of a man before they were in their teens. James was the main drover in the family from the age of eight.

In 1846 all the country round here, then called the New Country, afterwards the West Wimmera, was covered with kangaroo grass - splendid summer feed for stock of all kinds. It was at its best during January, February, and March, and remained good up to May, but lost its colour after that, and gave place to a finer grass - herbs such as yams, etc. You get a fair representation of what the district was like in local cemeteries, which have been fenced for years, and in parts of which the grass is allowed to grow untouched. The country was like this for some years after 1846, until destroyed by the indiscreet use of fire.

Sheep were all shepherded in those days, and provision was made for a place to fly to for safety in case of fire. This was done by burning the grass in patches when it was half green. These patches were all over the run, and when a shepherd saw a fire coming he would drive his flock there, and remain in safety until the fire had passed. Of course, on such a day as the 6th of February, 1851, it was almost impossible to find a place of safety.

My own share of the day was as follows:- I was in charge of all the sheep we possessed, and cut off from all the places of safety and help. Fortunately, there was a large swamp (near where Messrs.

Bull Brothers now live) within my reach. I made haste and drove my flock to it, staying with them until all danger was over. About three in the afternoon, a thunderstorm came on, with a heavy downpour of rain. I just laid down flat on the ground, and opened my shirt and let the rain pour down on my naked breast. Soon after, my uncle, who was staying with us (my father having been accidentally killed a few months before) came out to look for me and the sheep, and found me there. I was only a boy of fourteen at the time, so that it was a trying position to be in.

We could never tell when a fire would swoop down on us and burn both fences and sheep. I have seen a fire coming out of the Mallee twenty miles wide, clearing all before it, but with the provision we used to make, we never had any serious loss, although we had many a hard fight. I have been on the run fighting one of these big fires for three days and three nights without going to bed, and that is in the hottest days of summer. The squatting fraternity used to muster when a fire was seen coming and fight it until it was got under. There was less loss in those days than now. We were in the habit of burning all rubbishy country in the autumn. I myself, made a practice of setting aside all station work in March, and, taking five or six men and a supply of water, we burned the country into comparative safety, often working up to a late hour at night and starting early in the morning.

9 [Recent research in regards to the importance of cultural and low intensity ecological maintenance burning.](#)

In this review the term ecological maintenance burning has been used rather than prescribed burning, controlled burning or hazard reduction burning, as well as cultural burning.

As extracted from “Prescribed burning in south-eastern Australia: history and future directions”, 2020 G. W. Morgan, K. G. Tolhurst, M. W. Poynter, N. Cooper, T. McGuffog, R. Ryan, M. A. Wouters, N. Stephens, P. Black, D. Sheehan, P. Leeson, S. Whight & S. M. Davey to cite this article: G. W. Morgan, K. G. Tolhurst, M. W. Poynter, N. Cooper, T. McGuffog, R. Ryan, M. A. Wouters, N. Stephens, P. Black, D. Sheehan, P. Leeson, S. Whight & S. M. Davey (2020):

The risks to human lives, property, biodiversity and the environment associated with wildfire are increasing in south-eastern Australia due to climate change, and the wider use of prescribed burning is essential for managing these. The increasing extent and occurrence of wildfire disasters in the region indicates that current fire management will not sustain the full range of ecosystem processes and biodiversity, nor reduce to an acceptable level the impact of wildfires on human lives and property. There is compelling evidence for the greater use of prescribed burning to reduce wildfire risks and impacts, rather than committing increasing resources to wildfire suppression.

In 1890, the explorer and naturalist Alfred Howitt reflected on the impacts of European settlement and farming on the pre-European fire regime. In a report to the Royal Society of Victoria, he recounted his extensive observations of the previous 25 years in eastern Victoria, linking a thickening of forest growth and an expansion of forest cover to the decline of Aboriginal influence on land management, thereby overturning a regime of regular light fire in favour of periodic but more intense and damaging blazes in heavier fuels (Howitt 1890).

As outlined in “Scientist investigating Australia's past says Indigenous cultural burning key to controlling bushfires” Landline, by Tim Lee Posted Sat 26 Jun 2021 at 9:37am (the article information is included as dot points for easier reading):

- *Dr Fletcher's work may be providing the most compelling data yet about the crucial role of fire in Australia's ecology. Cultural burning is the Indigenous people's practice of skilfully using low-intensity or "cool" fires to manage the landscape. It removes the fine fuels on the forest floor, such as fallen leaves and twigs, or consumes dry grass to promote new, green growth.*
- *In much of northern Australia, this traditional practice has never stopped. In southern Australia, however, European settlement severely disrupted traditional Indigenous life. Some colonists, fearful of fire, saw cultural burning as an act of resistance.*
- *The removal of fire from the landscape soon had drastic consequences. The catastrophic Black Thursday Bushfires in February 1851 burnt 5 million hectares of Victoria. It was a chilling portent of the nation being periodically scorched by catastrophic bushfires in the years to come. The Black Thursday Bushfires in 1851 burnt 5 million hectares, about a quarter of Victoria.*

- *In his laboratory at the Earth Sciences Building at the University of Melbourne, Dr Fletcher has a core sample from Bolin Bolin that marks the grim event that was the Black Thursday Bushfires. It is a lump of charcoal the size of a thumbnail that has been dated to about 1850.*
- *Dr Fletcher's findings are profoundly important for understanding the past. Crucially, they point to how we approach the future. "We see a shift from an open-forest system to a closed-forest system in all the examples that we've analysed," he said. "Universally, across landscapes that [are] not now farms, we see open forests turning into closed forests.*
- *"In terms of fire, that's a ramping up of fuel levels. "We have really densely stocked forests now that are really high in flammable biomass — that is a real danger."*
- *Sediment taken from the Bolin Bolin Billabong shows a lump of charcoal dating back to 1850. (ABC Landline: Tim Lee)*
- *The study of pollens and other organic matter from earth samples also indicates a loss of plant biodiversity. Many less flammable species have disappeared, replaced by highly combustible eucalypts. Dr Fletcher believes the loss of cool, mosaic burning since European settlement has left us, as a nation, dangerously fire prone.*
- *"It has created a situation where we have connected incredibly flammable overstocked forests that go for hundreds, if not thousands, of kilometres across the south-east Australian seaboard," he said.*
- *This ground breaking work has some sizeable support, including from prominent Indigenous leader and academic Marcia Langton, who is also a geographer and anthropologist. Professor Langton has been a long-time advocate of restoring Indigenous people's burning practices across the continent. She believes that if we are to avoid catastrophic wildfires such as the Black Saturday and Black Summer events, we need radical changes to fire prevention and management.*
- *Professor Langton has advocated for more than three decades for wider use of Indigenous fire regimes in land management. (ABC Landline: Tim Lee). "Take a commonsense view, adapting to the Aboriginal way of managing country, using science and coming to grips with this Australian landscape and its ecologies, and not importing European ideas here which frankly have been disastrous for the country," she said.*
- *With predictions that a warming climate will see more extreme fire events, Dr Fletcher's scientific work is attracting global attention. "That ties in to some of the big challenges we're facing now, such as catastrophic wildfires and biodiversity loss," he said. Professor Langton agreed. "I think we're at a critical point in Australia's history," she said.*

The above research highlights many of the observations in this review in regards to open forests thickening very quickly in this period and following the 1851 bushfires. The above research by Morgan et al (2020), by Vic Jurskis, at Bolin Bolin and other research highlights the importance of mild Aboriginal cultural and ecological maintenance burning in the landscape keeping forests healthy, biodiverse with fuels at safe levels in that process. As noted by Morgan et al (2020), the current fire management will not sustain the full range of ecosystem processes and biodiversity, nor reduce to an acceptable level the impact of wildfires on human lives and property.

10 [Learnings and observations in relation to the bushfires at the time of the 1851 bushfires and for the future.](#)

Noting that these bushfires were 170 years ago, identified learnings and observations at the time of the 1851 bushfires include:

Before the 1851 bushfires:

1. It is readily apparent that smallpox in particular had large impacts on the Aboriginal people, restricting cultural burning practices.
2. The importance of Aboriginal cultural burning/ ecological maintenance burning in setting up safe and healthy landscapes is critical.
3. Vegetation, fuels and fuel loads build up very quickly following reduction in Aboriginal cultural burning practices. In regards to the 5th December 1792 at Parramatta, Aboriginal fires were burning northwest of Sydney and Parramatta in temperatures above 109 degrees Fahrenheit or 43 degrees Celsius. The fires were driven towards the European settlements by searing north westerly gales. But the settlers beat them out with green branches. The apparent difference in 1792 was that the whole landscape was safe. It is apparent in 1851 the fire landscape wasn't safe, given the 1851 bushfires scale and intensity.

4. There appeared to be two major bushfires in Victoria before the 1851 bushfire. The first mega-fire burnt what's now called the Strzelecki Ranges around 1805 less than 2 decades after local Aborigines were devastated by smallpox (in 1789) and abandoned their management of the rougher country. The second was in South Gippsland around the early 1820's, thirty years after the Yowenjerre were ravaged by smallpox and 31 years before the 1851 bushfires.
5. It is understood that there was extensive forest regrowth following the reduction in Aboriginal burning for each of the 1824 (early 1820's) and 1851 bushfires. Regrowth covering many areas likely contributed to the 1851 bushfires. As noted by Howitt and other explorers, seedlings and regrowth was reduced after low intensity burns. As noted by Howitt in 1891 "After some years of occupation whole tracts of country became overgrown by forest and arborescent shrubs. The Black Thursday fires of 1851 followed from and reinforced these changes, "open forest" that had been occupied by aboriginal people became "dense scrub", and red gum woodlands declined and died". (Howitt 1891) (Jurskis, 2006).
6. There was some awareness of precautionary bushfire measures for crops and grasses.... *"the Geelong Advertiser noted that 'almost unceasing rains' had caused both crops and grass to grow to 'unprecedented height', but at the same time urged that precautionary measures be taken by farmers to protect their crops against bushfires in the coming summer (Geelong Advertiser quoted in Argus, 3 November 1848, 2)".*
7. Other risk measures were used such as in the Wimmera *"and provision was made for a place to fly to for safety in case of fire. This was done by burning the grass in patches when it was half green. These patches were all over the run, and when a shepherd saw a fire coming he would drive his flock there, and remain in safety until the fire had passed".*

During the 1851 bushfires:

1. Prior to and at the time of the 1851 bushfires, there were varying levels of awareness of the risks of bushfires by settlers and consequent practices to reduce bushfire risks. The settler community was small and considered overall, inadequately prepared for such extreme bushfires as the 1851 bushfires. However, as outlined in this review, there were exceptions to this, landholders who had made preparations and plans and undertook them.
2. The weather conditions on 6 February 1851 were extreme, at midday on Thursday 6 February the thermometer at Charles Brentani's shop was 110°F (43.3°C) in the shade and 129°F (53.9°C) in the sun. Similar extremes were not reached again in Melbourne until 1876 (43.7°C in the shade), 1939 (45.6°C) and 2009 (46.4°C). Fuels were extremely dry.
3. The bushfires on 6 February and at times after were intense and extensive, with up to 5 M hectares impacted.
4. There are indications of very long distance firebrand movement in the 1851 bushfires as observed by Captain Reynolds.

After the 1851 bushfires:

1. In regards to bushfire learnings, it is uncertain to the extent if issues such as use of late spring and summer burn offs, action on fire in the landscape in summer, action on fire escapes into bush, better use of weather forecasts and coordinated bushfire attack were explored, there is little detail on this. However, as noted by Wilkie (2013), *"During the summer of 1852–53 there were, in fact, significant fires and in January 1854 the Argus, concerned at the arrival of 'tens of thousands who know very little of what a bush fire in Australia is', published a detailed account of the precautions that should be taken in the country districts, including the burning of firebreaks around dwellings and other important buildings (Argus, 9 January 1854, 5)".*
2. Also noted in Wilkie (2013), an Act to Restrain the Careless Use of Fire had been passed in February 1854 (Ibid, 4 January 1856).

Potential lessons for current bushfire management:

1. The importance of Aboriginal cultural burning/ ecological maintenance burning in setting up safe and healthy landscapes is critical. Research by Morgan et al (2020), by Vic Jurskis, at Bolin Bolin and other research highlights the importance of mild Aboriginal cultural and ecological maintenance burning across landscapes.

2. Vegetation, fuels and fuel loads build up very quickly without regular cultural/ ecological maintenance burning practices and managing fuel loads across landscapes. After hot bushfires there is extensive forest regrowth following bushfires.
3. Review farm and local practices to reduce bushfire risks for stock, houses, structures at the paddock, farm and local government level, identifying strategic areas for stock safety areas, in some cases similar to ideas in this document. The same applies for identifying refuge areas, establishing effective firebreaks and managing fuel loads on roads/ tracks which are escape paths. Opportunities to work with farm groups on this issue is an area that could be explored.
4. There will always be a lot of people assisting in bushfire control and mop up, similar to the 1851 bushfires. Provision of fire training and PPE for key personnel who will be involved in bushfires protecting houses, structures and infrastructure and will defend their homes is an important action issue. It is better that these personnel are trained and have sound PPE when megafires and other bushfires do arrive to maximise their safety and effectiveness.

Future research.

1. There are indications of very long distance firebrand movement in the 1851 bushfires as observed by Captain Reynolds at sea. It may be beneficial if a researcher could look into this issue further, including both land and sea fire brand movement.

11 Conclusions.

One of the reasons for undertaking this review of the major 1851 bushfires in Victoria included to understand the scale and severity of the 1851 bushfires. Other reasons for this review was to better understand Aboriginal burning practices; to better understand what the early explorers settlers saw; to consider the earliness of the bushfires in European history; to better understand fuel loads and dynamics and to try and tease out any potential learnings for current bushfire management. This review has considered all these areas in as much detail as possible and hopefully the reader will enjoy the ride.

The weather conditions on 6 February 1851 were extreme, at midday on Thursday 6 February the thermometer at Charles Brentani's shop was 110°F (43.3°C) in the shade and 129°F (53.9°C) in the sun. Similar extremes were not reached again in Melbourne until 1876 (43.7°C in the shade), 1939 (45.6°C) and 2009 (46.4°C). Fuels were extremely dry. The bushfires on 6 February and at times after were intense and extensive, with up to 5 M hectares impacted. There are indications of very long distance firebrand movement in the 1851 bushfires as observed by Captain Reynolds.

Vegetation, fuels and fuel loads build up very quickly following reduction in Aboriginal cultural burning practices. It is apparent in 1851 the fire landscape wasn't safe, given the 1851 bushfires scale and intensity. As noted by Howitt and other explorers, seedlings and regrowth was reduced after low intensity burns. As noted by Howitt in 1891 "After some years of occupation whole tracts of country became overgrown by forest and arborescent shrubs.

The importance of Aboriginal cultural burning/ ecological maintenance burning in setting up safe and healthy landscapes is critical, apply this across landscapes.

There was some awareness of precautionary bushfire measures for crops and grasses at the time of the 1851 bushfires. Other risk measures were used such as in the Wimmera and provision was made for a place for safety in case of fire. An Act to Restrain the Careless Use of Fire was passed in February 1854.

Noting that these bushfires were 170 years ago, the review has identified a number of learnings and observations in relation to the 1851 bushfires (considered before, during and after the 1851 bushfires) and also for the future.

Looking at this laterally, there are potential opportunities to review farm and local practices to further reduce bushfire risks for stock, houses, structures at the paddock, farm and local government level, identifying strategic areas for stock safety areas. The same applies for identifying refuge areas, establishing effective firebreaks and managing fuel loads on roads which are escape paths.

Another potential learning area is provision of fire training and PPE for key personnel who will be involved in bushfires protecting houses, structures and infrastructure and will defend their homes.

There will always be a lot of people assisting in bushfire control and mop up, and it is better that these personnel are trained and have sound PPE when megafires arrive than not be.

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