

## Inquiry into Ecosystem Decline in Victoria

### *Comments on Terms of Reference*

#### *(a) the extent of the decline of Victoria's biodiversity and the likely impacts on people.*

My comments relate primarily to the effects of megafires on the forests of eastern Victoria

It is widely accepted that that high intensity extensive megafires are detrimental to the ecosystems in which they occur. The 2019/20 fires are reported to have killed billions of animals, and possibly driven some species to extinction. Some ash forests, adapted to major fires intervals of no less than 50 years have burnt repeatedly. It is generally accepted that the frequency of such fires is increasing, with three such fires of long duration, each in excess of 1 million hectares occurring this century, in 2003, 2006/07 and 2019/20. This followed only one such season, 1939, during the 20<sup>th</sup> century and one (1851) in the 19<sup>th</sup>. There were also the "Black Saturday" fires of lethal intensity in 2009, B. All fires have generated inquiries, see refs, 1,2,3 for those this century.. All have concluded that inadequate fuel reduction is a major contributing to the scale and intensity of these fires.

This is not surprising. It has been understood for decades that the intensity of fires is approximately proportional to the square of the fuel load, and that high intensity fires cannot be controlled by direct attack (4). This became blindingly obvious during the 2019/20 fire season.

Climate and weather factors also have a major impact on fires. Climate change is often cited as a major cause of catastrophic conditions, spurring calls for action on climate change. However, any action which can be taken to reduce emissions of carbon dioxide will take decades to have any effect. The present levels of atmospheric CO<sub>2</sub> are locked in, and projected to continue to rise for decades yet. We will have to combat fires under current or worse conditions. The only factors which we can influence are fuel loads or firefighting techniques and equipment.

Firefighting equipment such as aircraft will never be successful if fuel loads over vast areas become excessive. The 2003 and 2019/20 fires started when dry lightning storms triggered multiple ignition points. Although most of these were quickly extinguished those which became established in heavy fuel loads could not be controlled. The present situation in California, a state with possibly the most advanced aerial firefighting capability in the world illustrates this point. Thousands of lightning strikes have triggered multiple fires; severe weather conditions and heavy fuel loads have resulted in massive fires which will only be brought under control when forests are consumed or weather conditions moderate.

During the East Gippsland fires from 21<sup>st</sup> November 2019 to late January 2020 there were no days when the fire danger was rated as either "extreme" or "code red", and only 4 widely separated "spike" days which were rated "severe". Yet over one million hectares were burnt. As was the case in NSW under more extreme conditions, fires burning in heavy dry fuels created their own weather, making control impossible. It was indeed fortunate that rain from mid-January, and heavy rain in February truncated the fire season for what is traditionally the worst month for fires.

The people worst affected by these fires are clearly residents who have lost houses and other property, and farmers who have lost fences, stock and other assets. Many areas designated for

harvest by the timber industry have also been burnt. This, and government regulation which have reduced the areas available for harvest are likely to spell the end of this industry.

*(b) the adequacy of the legislative framework protecting Victoria's environment*

The Land Conservation Council (5) in 1986 recommended greatly expanding the area of National Parks in East Gippsland, hence reducing the areas of State Forest available for timber harvesting. Since the 1970s the area reserved in National Parks has quadrupled (2).

Claims made that the increase in National Parks and reserves would lead to improved protection of native animals and ecosystems have proved to be illusory. The increasing size and intensity of megafires has mirrored the increase in National Parks.

If logging increases the flammability of forests, it would be expected that the reduction of logging with the increase in areas reserved in National Parks would have led to a decrease in the areas consumed by wildfire. In fact, the exact opposite has occurred, with National Parks, as well as State Forests being severely affected. Large areas of forest burnt this century have never been logged, giving credence to the theory that the major factor in the intensity of these fires is in fact the failure to reduce fuel loads. When climatic conditions allow these fuels to dry out catastrophe becomes inevitable.

*(c) The adequacy and effectiveness of government programs protecting Victoria's ecosystems.*

Government field staff who attempt to undertake hazard reduction burns are subject to numerous legislative and operational restrictions. It is extremely difficult to safely and successfully undertake fuel reduction in forests with a scrub understory. Bark and leaf litter becomes caught in the shrubbery under the tree canopy. "Cool" burns become extremely difficult, as shrubs either will not catch at all, or once ignited burn intensely, flames scorching the treetops. In March 2012 I was present as a CFA volunteer at a Department of Sustainability and Environment burn at Providence Ponds in East Gippsland under almost drizzly conditions. The area had not been burnt for many years, with a bracken and scrub understory under banksia and eucalypt trees. We had difficulty getting the edge to burn with drip torches. DSE used aerial ignition and once the understory ignited the flames reached well above the tops of the banksias. Any wildlife trapped would have been incinerated. Fires like this have led to some conservationists opposing fuel reduction burning entirely.

There appears to be an assumption in some academic circles that the current scrubby understory of the Australian bush is natural, and hence fuel reduction programs are designed to retain "biodiversity". The removal of the Aboriginal inhabitants and their fire management is ignored. "Tolerable Fire Intervals" are set for various "Ecological Vegetation Classes" to ensure shrubs can recover. These frequencies exceed the intervals at which fuel reduction burns give protection.

Authors such as Bill Gamage 2011 ("The Biggest Estate on Earth") Bruce Pascoe 2014 ("Dark Emu"), Vic Jurskis 2015 ("Firestick Ecology") and Victor Steffenson 2020 ("Fire Country") argue strongly that the composition of the Australian bush today is very different to that experienced by the first white settlers. Frequent fires maintained a grassy understory which was conducive to low intensity burning. Early colonisers apparently rode horses and moved cattle and sheep through bush which today would be impenetrable were it not for roads. It is undisputed that early sailors and settler

saw numerous smokes in the bush, indicating that frequent small scale burns were common. There appears to be no evidence of megafires prior to white settlement.

Shrubs and grasses are natural competitors. Fires in grasslands destroy germinating shrubs, preventing encroachment. If grass is burnt every year or two flame heights can be minimised, and trees left undamaged. Perennial grasses rapidly reshoot after fire, providing a green pick for native or other animals. When I was captain of a CFA brigade in the 1980s and 1990s, before the introduction of “Tolerable Fire Intervals” we had one grassy roadside which was burnt every year or two. This developed into the best patch of kangaroo grass in the district.

However, if burning ceases, shrubs can germinate and eventually shade out the grasses. Many of our native grasses are now considered to be rare or threatened. Crown fires in eucalypts develop under severe conditions when heavy understory fuel loads ignite and carry fire into the crown. They are much less likely to develop over a grassy understory which has been regularly burnt. We are seeing the consequences of the understory build-up in the recent megafires fires. Heavy fuel loads in scrubby eucalypt forests lead to catastrophic fires which threaten not only wildlife, timber and private assets, but also adjacent rainforests. Intense fires destroy the organic layer of the soils, rendering them hydrophobic, so subsequent rainfall runs off, contributing to flooding rather than regrowth.

*(e) Opportunities to restore Victoria’s environment while upholding First Peoples’ connection to country.*

It is clear that if we continue with present policy of seeking to ensure that forests retain a shrubby understory, we will face ongoing cycles of major fires as fuel loads build up after each episode of fire. The “window” during which weather and fuel moisture conditions allow safe fuel reduction burning will remain small. A review of the aims of fuel reduction burning is urgently needed. We need to develop strategies to restore a grassy understory to much of the bush. This would facilitate future fuel management, provide safer areas for animals, widen the burn “window” and greatly reduce the risk of future catastrophic fires. The concept of “Tolerable Fire Intervals” needs to be reviewed or discarded. . Areas such as rainforests, which should never be burnt, will be much better protected if excessive fuel loads in adjacent forests are removed.

Much of the knowledge of “Aboriginal “ burning techniques in East Gippsland may well have been lost (2). Experiments should be set up to test burn intervals, ranging from as frequently as possible to unburnt in the absence of wildfire. Changes in vegetation must be monitored. It may be very difficult to return a grassy understory to some forests, however this should be a task given to the ecologists employed in the various forest conservation departments. There is normally a large regeneration of young trees and shrubs after major fires – these are likely to form the fuel load for the next. Strategies need to be developed to prevent this from happening. Victor Steffenson (“Fire Country”) does suggest techniques which may address this problem. These should be trialled.

It is obvious that more frequent controlled “Aboriginal” burning techniques will require considerable resources to employ and train staff. It would be ideal if many of these could be drawn from within the indigenous population, which would help to restore their connection to country. If these programs can reduce the massive costs in combatting wildfires and the destruction they cause they will be a wise investment.

The alternative, to continue to do what we are doing as the population expands and moves from the centre of the cities, and potentially the climate continues to warm, will lead to inevitable bushfire disasters in the future.

References:

1. Report of the Inquiry into the 2002-2003 Victorian Bushfires. Bruce Esplin, Chairman, ISBN 0731114884, State Government of Victoria, 2003.
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3. Report of the 2009 Victorian Bushfires Royal Commission.
4. Fire and the Australian Biota. Gill, AM, Groves, RH and Noble IR (eds). Australian Academy of Science, Canberra 1981.
5. East Gippsland Area Review: Final Recommendations. Land Conservation Council 1986