11 PRESCRIBED BURNING DESTROYS BIODIVERSITY

FACTS ABOUT PRESCRIBED BURNING AND WILDFIRE IN SOUTH-WEST FORESTS

Although fire is a threat to biodiversity, the Department of Biodiversity, Conservation and Attractions (DBCA) claims that its prescribed burning program in the south-west forest regions enhances biodiversity. This fact sheet examines some to the claims that DBCA makes about biodiversity conservation and prescribed burning.

In prescribed burning plans, DBCA claims, *"The department uses prescribed burning to maintain biodiversity ...."* and applies *"... planned fire as a management tool to maintain and enhance the natural environment."*[1,2] In the DBCA video 5 *Managing Bushfire Risk*, former DBCA officer Dr Neil Burrows says of prescribed burning: *"This will enable us to both reduce fuels to provide some protection to communities, but also to ensure that our prescribed burning program is not harmful to plants and animals, in fact it is beneficial to plants and animals."*[3]

PRESCRIBED BURNS KILLS UNKNOWN NUMBERS OF PLANTS AND ANIMALS, INCLUDING THREATENED SPECIES.

The Minister for Environment through Section 40 of the *Biodiversity Conservation Act 2016* gives DBCA permission to kill threatened species during in its prescribed burns. For example, in authorisation number TFA 2324-0111, which applies to 21 prescribed burns, the Minister authorised DBCA to take (kill) or disturb any number of 21 threatened species, including the critically-endangered Woylie and Western Ringtail Possum. The purpose of this taking/disturbance was stated as *"Frankland District prescribed burning in 2023-2024 for the purpose of bushfire, silviculture and **biodiversity** management."*

Humane International Australia analysed the wildlife toll of prescribed burning practices in south-west Australia.[4] Its conclusions included:

- *"Where prescribed burning impacts restricted, discontinuous or rare habitats, there is a high probability of species loss and irreversible changes to biodiversity."*
- *"The number of animals impacted across south-west Western Australia in each fire season is very high – conservatively in the tens of thousands of individuals."*
- *" ...prescribed burning is unequivocally resulting in reductions to biodiversity values."*

"DBCA does not measure annual mortality of mammals, reptiles, and birds in areas where prescribed burning has been undertaken or in areas impacted by bushfire." (Answer to Legislative Council Question in Parliament No. 1454 of 2023.)

A critically-endangered Western Ringtail Possum after Warrungup Spring prescribed burn in 2018. The prescribed burn killed 17 of the 22 individuals being monitored.[8] Source: Allison Dixon.

PRESCRIBED BURNS ARE TOO FREQUENT TO MAINTAIN BIODIVERSITY OR MAINTAIN AND ENHANCE THE NATURAL ENVIRONMENT.

Prescribed burning return intervals in jarrah and karri forests are 5–7 and 8–11 years respectively, compared with historical wildfire return intervals of around 80 years in jarrah and even longer in karri.[5] This means that plant and animal species with long recovery times after fire (see table) will be in exponential decline in burn areas because they won't have recovered from the last prescribed burn before the next burn occurs. The current 'mosaic' burning strategy leaves only about 1% of the south-west forest region with time-since-burn of more than 30 years and about 6% with time-since-burn of more than 20 years.[6] This is insufficient habitat for plants and animals that have long recovery times after fire. Long unburnt forest, the most important for mammal conservation, is less flammable than recently-burnt forest.[7]

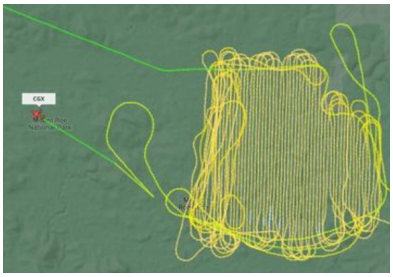
Minimum time for recovery after fire for some fauna species[9]:

Species	Recovery time (years)	Status
Western Ringtail Possum	> 11	CE
Tammar Wallaby	25–30	
Woylie	25–30	CE
Honey Possum	26	
Quokka	30–40	V
Numbat	25–30	E
Splendid Fairy-Wren	> 12	
Red-winged Fairy-Wren	> 12	
Mallee Fowl	20– >55	V

V = vulnerable; E = endangered; CE = critically endangered

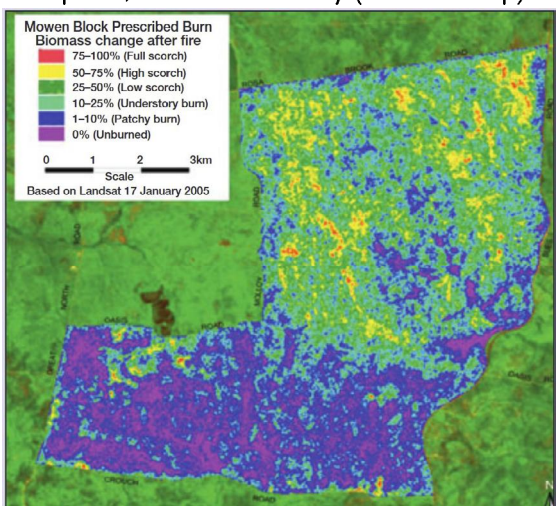
MANY PRESCRIBED BURNS ARE TOO BIG, TOO INDISCRIMINATE OR TOO SEVERE TO MAINTAIN BIODIVERSITY OR MAINTAIN AND ENHANCE THE NATURAL ENVIRONMENT.

DBCA ignites many prescribed burns from aircraft, as this is the most effective way to burn a large area when ambient conditions are suitable. Igniting prescribed burns from the air by dropping incendiaries on a grid pattern 100–200 metres apart means that animals have difficulty escaping because there is no natural firefront and they are likely to encounter fire in every direction. Mammals are most affected by this practice because many are too large to take refuge in natural shelters.[10]

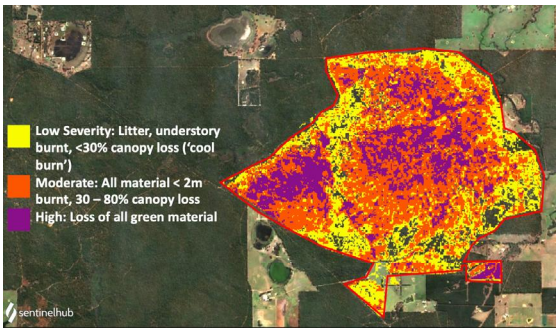


Ignition of Clear Hills, Walpole Wilderness (FRK_086) 9344 ha prescribed burn on 14 October 2023. Incendiaries were dropped 100 m apart on gridlines with 200 m separation.
Source: Flight Radar 24.

Many individual prescribed burns cover thousands of hectares (e.g. Ordnance FRK_017 is 14 733 ha). Because they are not controlled at ground level, these fires are often hot and have severe impacts, many being as damaging as wildfires. This is despite DBCA messaging that prescribed burns have low severity.[3,6] Compare, below, the fire severity map published by DBCA[6] (top map) with the one from Dr Tristan Campbell, Curtin University (bottom map).



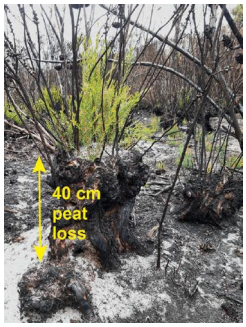
Fire severity of Mowen Block prescribed burn: Only a small area with 50–100% scorch. Source: Burrows & McCaw.[6]



Fire severity of Perup March 2021 prescribed burn: 22% of area had loss of all green material. Source: Tristan Campbell.

Because prescribed burns are not controlled at ground level, they burn all ecosystems in their path including those on granite outcrops and in riparian zones, wetlands and peatlands. Peatlands can smoulder for months, and even years releasing huge amounts of carbon dioxide into the atmosphere, posing severe bushfire risk and destroying unique threatened ecological communities.

Karara block, Frankland District. A November 2020 prescribed burn continued to burn a large peat swamp for approximately 5 – 6 months including through summer. Source: Fire & Biodiversity WA *Icon to Ashes*.[11]



Sharpe Block Frankland District November 2021 prescribed burn. 40 cm peat loss represents a loss of at least 5000 years of peat accumulation. Source: FaBWA *Icon to Ashes*.[11]

DBCA IGNITES MOST PRESCRIBED BURNS IN SPRING, THE WORST TIME OF YEAR FOR ECOSYSTEMS AND THE NATURAL ENVIRONMENT.

Wildfires occur naturally in summer, the hottest and driest time of the year. DBCA ignites most prescribed burns in spring, the worst possible time for burning as it kills nesting birds and plants that flower in spring. Spring burns deprive surviving fauna of food and shelter until regrowth occurs with the next rains.

PRESCRIBED BURNS DAMAGE TREES, CAUSING THEM TO COLLAPSE.

One of the easily-observed impacts of frequent prescribed burning is the loss of older trees. Fire burns unevenly into the bases of trees. Once this process has started, successive fires readily increase the damage until the tree's base and roots are weakened to the point that it falls down. The structural damage to trees is cumulative so that there will be increasing numbers of tree falls if prescribed burning continues in its current form.

Nesting hollows for animals, particularly the endangered black cockatoo, are lost with the loss of mature trees. Johnstone *et al.* noted the loss of 60–80% of known nest trees for forest red-tailed black cockatoos in their Perth Hills study areas.[12] It takes a minimum of 150 years for a tree to develop nesting hollows. As many as 180 mature trees, including

400–1000-year-old tingles, were estimated to have fallen as a result of a December 2024 prescribed burn in Giants Block in Walpole Wilderness.[13]

Mature tree with base burnt out that has fallen over due to structural weakness (Styx FRK_062), November 2024.

PRESCRIBED BURNS DAMAGE ECOSYSTEMS AND MAKE THEM LESS RESILIENT TO WILDFIRE.

Using a large amount of data from the eastern states, South Australia and the Stirling Ranges in Western Australia, Driscoll *et al.* showed that burning damages ecosystems and makes them susceptible to worse impacts when wildfires occur.[10] The two conditions that contributed most to worsening wildfire impact on biodiversity were related to antecedent burning. Two or more antecedent burns during the previous 40 years, and a time of 10 years or less since the most recent fire led to much greater biodiversity impact than less frequent or longer than 10 years since burning. Of all the taxa considered, mammals were the most affected by burning.

PRESCRIBED BURNING IS DRIVING SOME PLANT SPECIES TO EXTINCTION.

DBCA states that some Australian plant species require fire to complete their life cycle[6] and this is one of their main justifications for so-called *'biodiversity conservation'* burns. In the video *History of Fire in Western Australia*, Burrows states, *"Many plants and animals depend upon fire at certain intervals and certain times of the year for their persistence."*[3]

For trees such as banksias and hakeas that store seeds for many years in the canopy, a trait known as serotiny, it is widely believed that the seeds are only released by fire. These species are referred to as obligate fire followers. However, many banksia and other serotinous species release seed over time if a fire does not occur. Whether there are in fact any plant species that fail to reproduce in the absence of fire is not known.[5] Bradshaw *et al.* cited a 'pyrogenic' orchid, *Pyrorchis nigricans* that flowers only after fire in the south-west of Western Australia, but flowers without fire in the south-eastern part of its range, near Ravensthorpe.[5]

Obligate seeders are badly affected by frequent fire because the mature plants may be killed by the fire, and the young plants that germinate following the fire do not reach maturity before the next fire occurs. The red flowering gum (*Corymbia ficifolia*), an obligate fire follower with limited natural range in the Walpole Wilderness, is being severely impacted by prescribed burns.[11] Experimental studies on small plots with repeated burning at 3–4-year intervals have shown significant reductions in the abundance of key obligate seeder species such as *Acacia browniana* and *Crowea angustifolia*.[14] The vulnerability of banksias, the primary food source of Honey possums, was highlighted by a study of flowering and fruiting of *Banksia baueri*, *B. nutans* and *B. baxteri* in Kwonkgan heathland on the southwest coast of Western Australia in which all three were extinguished from an area burnt twice during an interval of nine years. Burning on a four-year cycle in Kings Park in central Perth led to the demise of Banksia trees and the abandonment of the practice.[15] Some believe that the frequent prescribed burning in south-west forest regions will drive all obligate seeder species to extinction.[16] Karri trees (*Eucalyptus diversicolor*) are fire sensitive for up to 25 years after burning[5] and in jarrah (*Eucalyptus marginata*) and other forests, research suggests prescribed burning on a 5–7 year rotation is likely to permanently simplify the litter microbes, fungi and invertebrate fauna, with far-reaching effects on forest health.[17]

OVER THE PAST 25 YEARS THERE HAS BEEN A DECREASE IN BIODIVERSITY.[18]

DBCA's own data show that since 1999, 51 plant and 24 animal species from south-west Australia have been added to WA's threatened species list.[19,20] However, DBCA claims that there has been no decrease in biodiversity. Former DBCA officer Roger Armstrong in *Evidence for Prescribed Burning*: *"We've been monitoring biodiversity across our south-west forests for some 40–50 years and we have yet to detect any decrease in biodiversity."*[3] He offers no evidence to support this statement.

Fire is recognised as a *key threatening process* under the *Environment Protection and Biodiversity Conservation Act 1999*[21] for many south-western Australian threatened species and ecosystems (Granite Banksia (*Banksia verticillata*), Eastern Stirling Range Montane Heath and Thicket, *Banksia* Woodland, *B. montana*, as well as the animals, Western Ground parrot, White-cheeked honeyeater, Woylie and Gilbert's Potoroo). Changed fire regimes are recognised, world-wide, as a threat to biodiversity.[22] Fire destroys native animal habitats and favours introduced species such as foxes, cats and pigs.[10]

THE CURRENT PRESCRIBED BURNING REGIME IS RELATIVELY INEFFECTIVE IN ITS MAIN PURPOSE OF PROTECTING PEOPLE AND THEIR ASSETS.

A study using data from 1952–2020 from across the whole south-west forest region showed that on average every 50 ha of prescribed burning has prevented a mere 1 ha of wildfire.[23] So the current regime of burning 200 000 ha annually, has prevented only about 4000 ha of wildfire per year. It is also apparent that, from an economic viewpoint, DBCA's current prescribed burning program is a waste of money. The cost of the prescribed burns and the consequent ecosystem damage costs, in terms of loss of ecosystem services, outweigh the potential savings in wildfire suppression and damage costs (see fact sheet 10). This is without factoring in the tens of millions of dollars spent annually on addressing the health impacts of prescribed burning, and the human suffering due to prescribed burn smoke-related premature deaths and disease.

DBCA DEPICTS ITS PRESCRIBED BURNING PROGRAM AS SIMILAR TO BURNING BY INDIGENOUS PEOPLES.

In *Managing Bushfire Risk* (video 5), Burrows states: *"We can't control the weather, but we can manage the accumulation of flammable vegetation and we can do this by prescribed burning, pretty much the same way as Aboriginal people managed the bushland for thousands of years."*[3]

There are few if any similarities between DBCA's prescribed burning and Aboriginal burning. DBCA ignites many prescribed burns from the air on grid points 100–200 metres apart (other than at the perimeter). The fire is then not controlled at ground level; it burns all ecosystems at an intensity and severity determined by the ambient conditions. The Noongar peoples ignited fires in limited locations at ground level and controlled them at ground level. The strong spiritual connection that Indigenous peoples have for their lands ensured that their burning practices did not harm plants and animals.

DBCA DOES NOT COMPLY WITH THE CONSERVATION AND PARKS COMMISSION DOCUMENT, *POSITION STATEMENT: PRESCRIBED BURNING ON VESTED LANDS*,[24] whose primary objectives of fire management for conserving biodiversity are: "*protect fire-sensitive and fire-dependent ecosystems and niches, including riparian zones, aquatic ecosystems, and peat wetlands.*"

It is clear that DBCA's prescribed burning regime is destroying biodiversity, not conserving it.

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