Future fire and a future for our biodiversity

Kingsley Dixon Curtin University and The University of Western Australia

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Review

Understanding the long-term impact of prescribed burning in mediterranean-climate biodiversity hotspots, with a focus on south-western Australia

S. D. Bradshaw^{A,E}, K. W. Dixon^B, H. Lambers^A, A. T. Cross^B, J. Bailey^C and S. D. Hopper^D









Badja Sparks ; Wytaliba.

"So, the politicians (and the media) turn the talk to hazard reduction burns, or the lack of them, as something else to blame on the inner-city raving lunatics. We had a bushfire two months ago that burned most of our property. It didn't matter. It burned again."

Royal Commission to focus on hazard burns

Prime Minister Scott Morrison is set to unveil the terms of reference for a royal commission into the devastating bushfires which burned across Australia. Matt Coughlan

Australian Associated Press February 20, 20209:08am

Hazard reduction is expected to be a key focus of a royal commission into Australia's bushfire crisis

The inquiry will look at fuel loads and the management of hazard-reduction burns.

Climate change will be acknowledged as a contributing factor to the fires, but the issue is not expected to be specifically addressed. Prescribed burning assumes all species are adapted to 20th Century prescribed burning

- In 200 years Australia has been responsible for more mammal extinctions than any other country.
- Australia is the fourth worst country for extinctions.
- 35 per cent of global mammal extinctions since 1500 are Australian.
- >500 threatened animals and 1300 plant species are federally listed.
- Australia is one of seven countries responsible for half of the globe's biodiversity loss.

"We are the kings of extinction"

• Leslie Shultz (Njadju elder – Great Western Woodlands)

Australia is more biodiverse than 98% of other countries with >90% endemism

Kwongkan 10 meters x 10 meters = 110 flowering plant species

Endemism: 82% mammals, 45% terrestrial birds, 85% flowering plants, 89% reptiles and 93% frogs.

Moore R National Park Sept 2019



Mundaring; Jarrahdale Sept 2019





Area of prescribed fire in WA



Plot courtesy P Zylstra

A million hectares each 5 years in forests 4.5 million ha burned 2018/19 in WA







Key Threats to Australia's biodiversity



Percentage of listed species

Fires rage near Albany.









Stirling Range National Park May 2018

Impacted 7 threatened invertebrates, 16 threatened plants (10 CR);

Critically endangered Montane Heath and Thicket Ecological Community

After last summer's fires, the bell tolls for Australia's endangered mountain bells **The Conversation** July 8, 2020 5.52am AEST



The Review Found One size does not fit all

• All five Mediterranean regions at risk of biodiversity loss through imposed fire.

For Southwest WA

- Target driven burning of 200,000ha pa with 6 year fuel ages is the largest and most severe landscape impact since agricultural clearing
- Frequency (up to 10 times natural frequencies) and aseasonality of PB will challenge species and ecological resilience
- Long unburnt sites are critical for many animal and plant species
- A rapidly drying climate will require longer inter-fire recovery periods
- Protective value of PB is uncertain focus on asset protection
- Rapid response and suppression capabilities

















Fire sensitive plants – one third of the plant diversity and keystone resource species

(climate change will extend the recovery times)

- Banksia cuneata 20-30 years Lamont et al. (1991)
- Banksia goodii 15-20 years Drechsler et al. (1999)
- Banksia hookeriana 15-18 years. Enright et al. (1996)
- Banksia shrubland 10-14 years Enright et al., 2011
- Native heaths, sedges 15 years Meney et al 1998



Honey possum (Bradshaw and Bradshaw, 2017) Post fire recovery 25.6y

Wilson et al (2014) Banksia woodlands 20-25y fire free to sustain populations



Mardo (Hindmarsh and Majer 1997) Common in >40y unburnt forest

Christensen and Kimber (1975) Rare in areas regularly [prescribed] burnt



Ngwayir Western Ringtail Possum (Wayne, 2006). 20 year fire free proposed



Valentine (2012) < 16 year fire-free reduces reptile fauna



Rowley and Brooker (1987) Splendid wren return >12 years post-fire – not winter or spring

1960's – extinct in Kings Park



Figure 6. Idealised relationship between the abundance of various forest mammal species and time since fire Source: N. Burrows pers. comm.

High frequency fire degrades vulnerable, fragmented ecosystems more rapidly Veld Grass in Kings Park





Impacts Kings Park's 'banksia' woodland





Missing: key fire sensitive species (Ericaceae, Dilleniaceae, Rutaceae)



Crosti et al. 2008







Loss of diversity, resilience, ecological simplification and increase in fire-proneness





Climate change means we have longer postfire recovery; risks of recovery failure



Summer 2009/10 drought deaths in Kings Park bushland

Alternatives : safe, effective and acceptable interventions? Rapid detection and at-source suppression



Alternatives

- The nation's aerial firefighting centre called four years ago for a "national large air-tanker" fleet to confront a growing bushfire threat but was turned down in a federal government ruling that the task was one for the states.
- The National Aerial Firefighting Centre, which oversees a fleet of 145 aircraft, warned of hotter and more extended bushfire seasons in a call on governments in May 2016 to establish the major new capability.



Our actions today determine the biodiversity of tomorrow

F Prescribed Burns?

