

Hazard reduction burn in the Blue Mountains. Photo: NSW NPWS Key Topics:
• fire [2]

- prescribed burning [3]
- risk management [4]

From hectares to tailor made solutions for risk mitigation [5]
The key finding of the project is that the effectiveness of prescribed burning at mitigating area burnt by bushfire and other key values varies considerably across landscapes and values. This has major implications for fire managers, suggesting that tailored prescribed burning solutions are possible based on the unique risk mitigation profile for any given suite of management values in that region. The key product of the project is the Prescribed Burning Atlas, a new website that informs prescribed burning strategies and helps fire and land managers tailor their approaches to outcomes that will best reduce risk in a target area within available budgets.

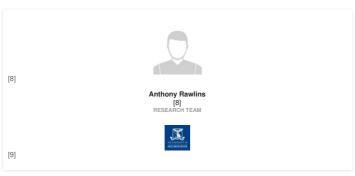
Project: detail Notabs

Research team

Research leader



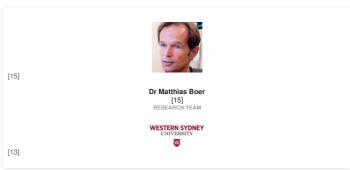
Research team



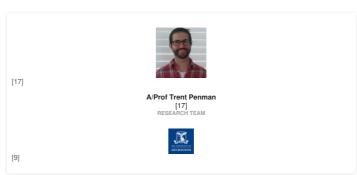








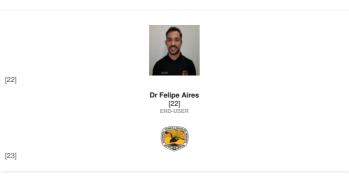




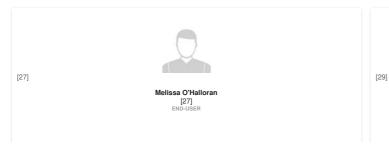
End User representatives

















Student researchers



Description

Prescribed burning is a central feature of contemporary fire management, not just in Australia but in fire-prone countries around the world. Yet we lack a firm quantitative basis for understanding and comparing its effectiveness at mitigating risk across different regions. This project aimed to address these gaps and provide critical support to agency decision makers across southern Australia by undertaking a systematic investigation of the drivers of prescribed burning effectiveness across the region. This project is thus supporting fire managers in transitioning from hectare targets to a set of tailor-made, risk-based approaches.

The key finding of the project is that the effectiveness of prescribed burning at mitigating area burnt by bushfire and other key values varies considerably across landscapes and values. That is, there is no one-sizefits-all solution to prescribed burning. This has major implications for fire managers, suggesting that tailored prescribed burning solutions are possible, based on the unique risk mitigation profile for any given suite of management values in that region. Further details are included in this report and journal articles listed herein.

While the project has been completed, its findings live on in the Prescribed Burning Atlas, a dedicated website for fire managers, researchers and anyone else interested in using our project to support their planning, decision making and communication. The Prescribed Burning Atlas will provide a geographically-based summary of risk for decision makers in an accessible, user friendly format. The Prescribed Burning Atlas provides quantitative risk-response relationships for prediction of the most probable outcome of different treatment strategies across varied bioregions. The Atlas has an interactive interface for end-users that allows them to explore not just these risk-response relationships, but also fuel accumulation and ignition probability models as well as projections of changes to risk under different climate, land use and management scenarios. The Atlas can be used in a range of ways, from strategic and tactical decision-making to policy development, resource allocation and education. Access the Atlas here https://prescribedburnatlas.science/ [33]

Read the final report here. [34]

Related News



Young Tall Poppy Award for researcher





A staggering 1.8 million hectares burned in 'high-severity' fires during Australia's Black Summer CLIMATE CHANGE, FIRE IMPACTS

30 MAR 2021

[36]



How best to burn the bush LAND MANAGEMENT, PLANNING

21 DEC 2020



An upcoming Prescribed Burning Atlas webinar

FIRE, PRESCRIBED BURNING

[38]

[39]



New online - October 2020

COMMUNICATION, EMERGENCY MANAGEMENT

04 DEC 2020

20 OCT 2020



New online - July 2020 COMMUNICATION, EMERGENCY MANAGEMENT

[40]



Science shows how to best burn the bush to reduce bushfire risk FIRE, LAND MANAGEMENT

22 JUL 2020



Science galore - key CRC event dates

EMERGENCY MANAGEMENT, PRESCRIBED BURNING

[42]



New online - May 2020 COMMUNICATION, EMERGENCY MANAGEMENT 21 MAY 2020

30 JUN 2020



Media seek research insights

COMMUNICATION, FIRE

[44]



Special edition Monographs share AFAC19 science

23 JAN 2020

11 DEC 2019



Answering burning questions FIRE, PRESCRIBED BURNING

[46]



CRC science making national impact FIRE, FIRE SEVERITY

[47]

26 NOV 2019

19 NOV 2019



Global database published in prestigious journal

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[48]

IE WINDOW IDER CLIMATE CHA

More evidence for increases than decreases
Changes in seasonality
Regional variation
Highly sensitive to weather definition

Will the prescribed burning weather window close?

CLIMATE CHANGE, LAND MANAGEMENT

[49]

09 SEP 2019

15 AUG 2019



New online - July 2019 EMERGENCY MANAGEMENT, FIRE

[50]



New online - June 2019 COMMUNITIES, EMERGENCY MANAGEMENT

27 JUN 2019

24 JUL 2019



Global fire focus on diversity, cultural burning and communities



Prescribed burning research warm up to conference

15 MAY 2019

15 MAY 2019



New online – November 2018 EARTHQUAKE, MODELLING

[54]



New online - November 2017

17 NOV 2017

15 NOV 2018



Project update three - From hectares to tailor-made solutions FIRE, FIRE SEVERITY

[56]



New online - August 2016

16 AUG 2016

27 OCT 2016



Project update two - From hectares to tailor-made solutions FIRE, FIRE SEVERITY



Project update - From hectares to tailor-made solutions FIRE, FIRE SEVERITY

Publications

29 JUL 2016

20 MAY 2016

Year	Туре	Citation
2020	Journal Article	Di Virgillio, G. [60] et al. Climate Change Significantly Alters Future Wildfire Mitigation Opportunities in Southeastern Australia [61]. Geophysical Research Letters 47, (2020). DOI [62] Google Science Control of Contro
2020	Journal Article	Filkov, A. [66], Ngo, T. [67], Matthews, S. [68], Telfer, S. [69] & Penman, T. [17] Impact of Australia's catastrophic 2019/20 bushfire season on communities and environment. Retrospective analysis
2020	Journal Article	Cawson, J. [75] et al. Exploring the key drivers of forest flammability in wet eucalypt forests using expert-derived conceptual models [76]. Landscape Ecology 35, 1775–1798 (2020). DOI [77] 6
2020	Report	Clarke, H. [11] et al. From hectares to tailor-made solutions for risk mitigation – final project report [34]. (Bushfire and Natural Hazards CRC, 2020). Google Scholar [81] BibTeX [82] EndNote XM
2019	Conference Paper	Clarke, H. [11] et al. A new decision support tool for prescribed burning risk assessment [84]. Bushfire and Natural Hazards CRC Research Day AFAC19 (2019). at https://knowledge.aidr.org.au/
2019	Journal Article	Clarke, H. [11] et al. Climate change effects on the frequency, seasonality and interannual variability of suitable prescribed burning weather conditions in south-eastern Australia [89]. Agrical
2019	Journal Article	Florec, V. [94], Burton, M. [95], Pannell, D. J. [96], Kelso, J. [97] & Milne, G. J. [98] Where to prescribe burn: the costs and benefits of prescribed burning close to houses [99]. International Journ
2019	Journal Article	Cirulis, B. [10] et al. Quantification of inter-regional differences in risk mitigation from prescribed burning across multiple management values [104]. International Journal of Wildland Fire 29, 4
2019	Journal Article	Clarke, H. [11], Gibson, R. [109], Cirulis, B. [10], Bradstock, R. [6] & Penman, T. [17] Developing and testing models of the drivers of anthropogenic and lightning-caused wildfire ignitions in sou
2019	Journal Article	Cirulis, B. [10] et al. Quantification of inter-regional differences in risk mitigation from prescribed burning across multiple management values [115]. International Journal of Wildland Fire (2015)
2019	Journal Article	Yebra, M. [118] et al. Globe-LFMC, a global plant water status database for vegetation ecophysiology and wildfire applications [119]. Scientific Data 6, (2019). DOI [120] Google Scholar [121] B
2019	Report	Clarke, H. [11] et al. From hectares to tailor-made solutions for risk mitigation: annual project report 2018-19 [124]. (Bushfire and Natural Hazards CRC, 2019). Google Scholar [125] BibTeX [126]
2018	Conference Paper	Bates, J. [128] Research proceedings from the 2018 Bushfire and Natural Hazards CRC and AFAC Conference [129]. Bushfire and Natural Hazards CRC & AFAC annual conference 2017 (Bushfire and Natural Hazards CRC) and AFAC Conference [129].
2018	Report	Clarke, H. [11] et al. From hectares to tailor-made solutions for risk mitigation: annual project report 2017-18 [133]. (Bushfire and Natural Hazards CRC, 2018). Google Scholar [134] BibTeX [135]
2017	Report	Clarke, H. [11] et al. From hectares to tailor-made solutions for risk mitigation - systems to deliver effective prescribed burning across Australian ecosystems: annual project report 2016-17
2016	Journal Article	Driscoll, D. A. [141] et al. Resolving future fire management conflicts using multi-criteria decision making [142]. Conservation Biology 30, 196-205 (2016). DOI [143] Google Scholar [144] BibTeX
2016	Report	Bradstock, R. [6] From hectares to tailor-made solutions for risk mitigation: systems to deliver effective prescribed burning across Australian ecosystems: Annual project report 2015-2016
2015	Journal Article	Penman, T. [17] et al. Reducing the risk of house loss due to wildfires [151]. Environmental Modelling and Software 67, 12-25 (2015). DOI [152] Google Scholar [153] BibTeX [154] EndNote XML [1
2015	Journal Article	Price, O. [16], Penman, T. [17], Bradstock, R. [6], Boer, M. M. [15] & Clarke, H. [11] Biogeographical variation in the potential effectiveness of prescribed fire in south-eastern Australia [156]. Journal of the potential effectiveness of prescribed fire in south-eastern Australia [156].
2015	Presentation	Bradstock, R. [6] From hectares to tailor-made solutions for risk mitigation: systems to deliver effective prescribed burning across Australian ecosystems [161]. (2015). Google Scholar [162]
[4]		

Presentations & Resources

DATE [165]	TITLE [166]	DOWNLOAD	KEY TOPICS
04 Dec 2014	From hectares to tailor-made solutions for prescribed burning [167]	₹ 902.97 KB	[168];i(9202.97169), prescribed
11 Sep 2015	Hazard Reduction Burn Windows [170]	₹ 875.51 KB	[1751]±6875.5d bKB))ing [3]
02 Feb 2016	Research for better land management [172]	₫ 133.76 KB	[1 73})(183J76dKB) 174], land m
24 Oct 2016	From hectares to tailor-made solutions for risk mitigation: systems to deliver effective prescribed burning across ecosystems [176]	₫ 1.83 MB	[17i7] (2)83 MB)ribed burning [
07 Jul 2017	Building bushfire predictive services capability [178]	₹ 9.97 MB	[179] (2)97nMB)eather [180], m
31 Oct 2017	Prescribed burning cluster [182]	129.41 KB	[183] (129.41dfB[174], mitigati
31 Oct 2017	Prescribed burning and predictive services [184]	₹ 4.46 MB	[1866] (2)46 nVIB)npacts [186], pr
18 Sep 2018	Quantification of inter-regional differences in risk mitigation from prescribed burning across multiple management values [187]	₁ 1.96 MB	[18/8] (12)96/n/HD)npacts [186], pr
23 Nov 2018	The prescribed fire atlas [189]	₹ 960.9 KB	[19/0] (26/0;9el6B)ibed burning [
15 Aug 2019	Climate Change effects on prescribed burning conditions in SE Australia [191]	0 bytes	[192]r(@tbydea)nge [193], land r
27 Aug 2019	From hectares to tailor-made solutions for risk mitigation: An integrated prescribed burning research project [194]	2.57 MB	[1959]c(&i.577 MAD)ing [196], fire [:
14 Jul 2020	Prescribed Burning Atlas launch - webinar [197]	0 bytes	[198] (2) (2) (198) management [1
14 Jul 2020	Prescribed Burning Atlas Launch 14 July 2020 - Hamish Clarke [199]	₹ 2.49 MB	[2004] (2)49aMB)management [1
13 Aug 2020	Q&A with Dr Hamish Clarke - Prescribed Burning Atlas launch webinar [201]	0 bytes	[2012] (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)
09 Dec 2020	The Prescribed Burning Atlas: a new system to plan effective prescribed burns [203]	₹ 872.25 KB	[2014] (27,2,25<6B) ed burning [
21 Dec 2020	Fire Australia Issue Four 2020 [205]	₫ 4.58 MB	[20 /6]-n(An5/8i MAB)on [207], fire [2
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Posters



Delivering Effective Prescribed Burning Across Southern Australia

[209] FIRE [2], PRESCRIBED BURNING [3]

Although many jurisdictions are committed to prescribed burning, we do not understand its effects on risks to...



From hectares to tailor-made solutions for prescribed burning

[210]

PRESCRIBED BURNING [3]

This project will deliver a prescribed burning atlas to guide implementation of 'tailor-made' prescribed...



Developing wildfire risk metrics in Phoenix RapidFire

[211]

Bushfire management involves making decisions about complex issues that involve people, communities,...



From hectares to tailor-made solutions for prescribed burning

FIRE [2], PRESCRIBED BURNING [3]

How does prescribed burning effectiveness in mitigating risk depend on the diverse and changing biophysical,...



From hectares to tailor-made solutions

[213] FIRE [2], PRESCRIBED BURNING [3]

How does the diverse and changing biophysical, climatic and human context of southern Australia influence.



From hectares to tailor-made solutions to prescribed burning

MITIGATION [169]

Rising public and professional expectations require a greater, more transparent understanding of the trade-...



From hectares to tailor-made solutions for prescribed burning

[215]

MITIGATION [169], RISK ANALYSIS [216]

 $\label{thm:continuous} \text{Key findings: We found there is no one-size-fits-all solution for prescribed burning. Risk mitigation varies..}$



Suppression Firing Prevalence & Practice

[217] MITIGATION [169], RISK ANALYSIS [216]

Key finidings: Suppression firing is a prominent containment tool. It occurred on half of the large fires in...

Linked Projects

Economic analysis of prescribed burning

ECONOMICS AND STRATEGIC DECISIONS [219]

Dr Veronique Florec University of Western Australia [220]



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[1] https://www.bnhcrc.com.au/files/hazardreductionburninthebluemountains2may2018creditnswnpwsjpg-0 [2] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [3] https://www.bnhcrc.com.au/fresearch/topics/fire [4] https://www.bnhcrc https://www.bnhcrc.com.au/research/lopics/risk-management [5] https://www.bnhcrc.com.au/research/riskmitigationsolutions [6] https://www.bnhcrc.com.au/people/rbradstock [7] https://www.bnhcrc.com.au/organisations/uow [8] https://www.bnhcrc.com.au/people/arawlins [9] https://www.bnhcrc.com.au/people/bcirulis [11] https://www.bnhcrc.com.au/

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