

Preparation and Recovery in a Changing Environment

This University of Wollongong *Bushfire Research Brief* examines how changing environmental conditions have affected the bushfire preparation and recovery experiences of residents of Kangaroo Valley, a semi-rural area of southern New South Wales. On January 4th, 2020, the Currowan Fire destroyed around 48 homes in Kangaroo Valley and had devastating impacts on the local environment.

The fire was preceded by a long period of drought, which had produced extremely hot and dry conditions in an area generally thought of as cool and wet.

In the eighteen months following the fires, researchers at the University of Wollongong conducted forty interviews with Kangaroo Valley residents.

Interviews discussed life in ‘the Valley’ before the fire, preparations for and responses to the Currowan Fire, as well as the recovery process up to the time of the interview, ranging from three to eighteen months post-disaster. A number of participants were interviewed a second time to chart the progress of their recovery.

Participants frequently discussed concerns that the environment in Kangaroo Valley was changing. Their views that conditions

had become hotter and drier had a range of impacts on perceptions of risk and on bushfire preparations and planning.

Equally, changed environmental conditions created by drought and bushfire shaped the recovery process for many residents. Survivors were rebuilding and/or living within an environment that looked, felt, smelt, and sounded different. It was an injured space in which to attempt to recover.

This *Bushfire Research Brief* examines how residents of one Australian community perceive and experience environmental change, as well as how environmental change has shaped efforts to prepare for and recover from bushfire. These environmental changes are linked to climate change, which is increasing the frequency and intensity of bushfires globally.

“We were aware that there was a threat, not specifically to Kangaroo Valley directly, but from the last couple of years we’ve watched the drought, we’ve watched the build-up of things. Each year for the last three years, everyone said this could be the worst fire season yet and we dodged a bullet and we’ve gone “Wow, we got lucky that year”. There’s been nasty fires elsewhere. We’re constantly aware that this possibility was coming at us”.



Views of damage to the natural environment around Kangaroo Valley following the Currowan Fire (photos – Maureen Bell).

Drought

Perceptions of risk

Many longer-term residents remembered the cooler climate and frequent, steady rain that had once shaped their lives in Kangaroo Valley. One participant recalled that her children had grown up wearing gumboots year-round. Another noted that the causeways on their property used to flood each year.

"When we first moved to the Valley, it was so wet and mud, rain etc ... We'd been watching this for a couple of years and just going, "My God we have not seen it this dry"; the dams are lower, the bush is drier, the build up of fuel is more than we've ever seen".

These memories stood in contrast to the extremely hot and dry conditions prior to the 2019/2020 fire season.

From 2017 to 2019, large areas of south-eastern Australia were in drought. Residents of Kangaroo Valley watched as dams dried up, paddocks turned brown, and vegetation in areas that had once been cool and damp now struggled to survive. Watching this change was heartbreaking.

"Look, the drought, it was demoralising, the impacts, because the gardens are not irrigated ... when you're resorting to hand watering stuff that's eight, ten years old, just to stop it from falling apart, it gets pretty demoralising".

Adding to the challenge of living through a drought-related disaster was the fear that its environmental impacts were increasing the risk of bushfire.

Most participants were aware of the risk of fire when they first moved to Kangaroo Valley. Some had taken extensive precautions, including with house design

and retrofitting for resilience, purchasing protective equipment, and establishing bushfire survival plans (see two of our separate *Bushfire Research Briefs*, 'Home Retrofits and Preparation' and 'Community Connections').

For others, although they had acknowledged the possibility of bushfire, the risk had appeared small in an area seemingly protected by the damp conditions.

The changes wrought by the extended drought significantly altered the perceptions of risk among many members of the community.

Several residents described being conscious early in 2019 that they could expect a bad 2019/2020 fire season. These concerns were only heightened as the year progressed with little rain.

Fears that the local environment was suffering long-term damage because of the drought were escalated by the possibility of bushfire sweeping through dried out landscapes.

Many residents wondered whether a return to conditions of times past was possible, or whether climate change had permanently altered life in Kangaroo Valley.

Bushfire preparation

The changed conditions prompted increased preparation among Kangaroo Valley residents. The majority of participants spent weeks trying to ensure that their properties were as protected as possible.

Yet, years of drought and an extremely hot summer made completing preparation tasks much more difficult – physically and mentally.

Ensuring that leaf litter is cleared from rooftops and around buildings, for example, is critically important when preparing homes for a bushfire. The hot, dry conditions

increased the difficulty of this task in several ways.

Stressed trees shed more leaves and bark than they normally would, increasing the amount of vegetation that needed to be cleared and the frequency with which this work needed to be done.

Hot temperatures made the task more physically demanding. Particularly for some older residents, this impacted their physical capacity to prepare their properties. Working all day outside in such hot weather simply was not possible.

“It was just the worst. The temperatures. It was just horrible. The weather was dreadful. ... You’d go out early in the morning and do things, and then you’d be inside by 11 o’clock and you didn’t want to poke your nose out again until it was dark”.

Poor air quality, due to bushfire smoke and dust storms for example, also made outside physical tasks more challenging.

This also had impacts on emotional wellbeing. High-stake decisions needed to be made, but the environmental conditions were physically exhausting, reducing people’s capacity to think clearly.

Under these circumstances, some residents made the decision to evacuate early should a bushfire occur, aware that more could have been done to prepare their homes.

A heating climate increased the possibility of bushfire, while also increasing the amount of work involved in preparation and decreasing the physical and mental capacity of some residents to prepare.



A combination of smoke from the remnants of the Currowan Fire burning in Bundanoon Creek and a dust storm sweeping in from western NSW, January 2020, seen from the hydroelectric power station in the north western part of Kangaroo Valley (photo – Paul Cooper).

Recovery

Damage to the environment

Although large areas of Kangaroo Valley remained unscathed, the Currowan Fire left a devastating environmental scar through impacted areas.

This damage was deeply distressing to residents of the Valley (see our separate *Bushfire Research Brief 'Recovery'*).

Of serious concern to several participants was the fact that patches of rainforest, which had not been expected to burn, were ravaged by the fire.

This made life in the area feel more precarious, with established knowledge of how fire could be expected to behave seemingly now outdated.

“And then to get home and just, oh hard to believe that everything could just be, like, gone ... Total moonscape ... Just smoke and smouldering and black”.

The emotional recovery of survivors was often deeply entwined with the recovery of the local environment. While insurance covered the loss of buildings for most (although not all) participants, it could not replace cherished gardens or bushland.

In addition, the devastating impacts on local native animals and other species was all too visible, and sometime deeply distressing.



A local swamp wallaby that sadly did not survive the fire (photo – Maureen Bell).

Residents were dealing with the mental health impacts of a distressing and potentially traumatic experience while living in an ashy, burnt-out environment.

At first, the extent to which an already drought-impacted environment would be able to recover remained an open question.

The first signs of regrowth came from pioneer plant species including black wattle, which quickly dominated some areas, creating an unfamiliar landscape. Several participants described working hard to prevent weeds from taking over fields and creeks.

Over time, epicormic growth on trees and the return of birdlife provided reassuring signs of a more familiar renewal in the Valley. This, in turn, had beneficial impacts on the mental health and well-being of many survivors.



Epicormic growth six weeks after the fire (photo – Maureen Bell).

Yet, residents remained concerned that some plant and animal species would not return. New green growth offered hope, but the environment also appeared more fragile as a result of drought and bushfire.

Flooding rain

Just a few days after the Currowan Fire, heavy rain in Kangaroo Valley broke the long drought. While in some ways a relief, the intensity of the rainfall caused a new series of problems.

Landslides of ashy mud, for example, flowed down from hillsides that, thanks to the fire, were bare of vegetation. This caused more damage to fire-impacted properties.

The flooding rain further contributed to a sense of precarity and emotional distress



Heavy rain resulted in erosion of severely burnt soil and undergrowth, which filled many dams and waterways with ash and silt after the Currowan Fire (photos - Maureen Bell).

The threat of future fires

The 2020/2021 fire season was very different from the year before. Cooler and wetter weather reduced the likelihood of another fire in Kangaroo Valley that season.

This was a great relief to residents whose recovery process was still underway. They would not need to evacuate again, or face more flames, nor would they need to repeat the weeks of preparation in hot, dry, and stressful conditions.

"I think emotionally though, the compound effect of one disaster after another, drought, fire, flood, pestilence, it is compounding emotionally".

Some residents expressed a view that a fire of similar intensity was unlikely any time soon because of the thinning of the fuel load caused by the Currowan Fire. Yet, regrowth in impacted areas, along with the large areas of the Valley that were not burned, meant that many understood the continued risk of future fires. A cooler

living amid challenging environmental conditions.

This was quickly followed by the COVID-19 pandemic, resulting in a series of devastating disasters with overlapping preparation, response, and recovery periods.

summer provided a period of welcome relief, but uncertainty for the future remained.

Having witnessed first-hand the impacts of bushfire on an extremely dry landscape, Kangaroo Valley residents remained attuned to the impacts of climate change and were concerned what this might mean for future life in a changing environment.

Some also expressed concern that the cooler fire season might cause the lessons of the Currowan Fire to be forgotten, especially as new residents moved into the area who had not experienced the 2019/2020 season.

"If only we didn't have climate change to worry about, it might be easier going forward".

For those who had been present, however, the environment now carried reminders of a highly distressing event. Hot weather days or the smell of smoke continue to trigger challenging memories for some.

Only one participant had chosen to move away from the area because living within these memories was too challenging. For the majority, connections to the local community and their continued love for the environment had held them in place.

Many expressed a commitment to helping nature heal, while increasing their action to mitigate and prepare for future fires in an environment understood to carry increased risk.

Additional resources

Australian Institute for Disaster Resilience (2018), Community Recovery Handbook, <https://knowledge.aidr.org.au/media/5634/community-recovery-handbook.pdf>

Butler, A., Sarlöv-Herlin, I., Knez, I., Ångman, E., Ode Sang, Å., & Åkerskog, A. (2018). Landscape identity, before and after a forest fire. *Landscape Research*, 43(6), 878-889. doi: 10.1080/01426397.2017.1344205.

Fraser, Peg (2018) *Black Saturday: Not the End of the Story*, Monash University Publishing

Gibbs L, et al. (2020) *10 Years Beyond Bushfires Report*, University of Melbourne, Melbourne.

https://mbspgh.unimelb.edu.au/_data/asset/s/pdf_file/0009/3645090/BB-10-years-report-spread.pdf

The Australian Institute for Disaster Resilience (AIDR) YouTube page also includes a range of informative videos, including: [What is Disaster Recovery](#) and [Mental Health Recovery After Disaster](#).

After The Disaster: ABC Radio Podcast <https://www.abc.net.au/radio/programs/after-the-disaster/>

The CSIRO Bushfire Best Practice Guide: <https://research.csiro.au/bushfire/bushfire-basics/>

Building Community Resilience to Bushfires: A Case Study of Kangaroo Valley

was made possible by the generous financial support of

Shark Island Kangaroo Valley and

University of Wollongong Global Challenges Program

SHARK ISLAND
KANGAROO VALLEY



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

The project was undertaken by researchers from the Sustainable Buildings Research Centre (SBRC) and the Australian Centre for Culture, Environment, Society and Space (ACCESS) at the University of Wollongong.

The research team would like to thank all members of the Kangaroo Valley community and other individuals and organizations that participated in this study. We would also like to acknowledge the tremendous efforts of all volunteers and members of emergency services and other organisations that supported communities impacted by the Black Summer Bushfires of 2019/2020.

If this document has raised challenging issues for you, Lifeline Australia provides crisis support 24 hours a day: call 13 11 14 or see <https://www.lifeline.org.au>

November 2021