The story of fire in the Australian landscape

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“The New South Wales south coast has come under sustained attack from bushfires today. Meanwhile, more than 20 fires are continuing to burn across Victoria in what emergency services are calling a dynamic and dangerous situation.”

This time last year, fire raged from Queensland down the New South Wales coast to Victoria and across parts of Western Australia and South Australia. They destroyed hundreds of homes and caused the loss of too many lives. But fires are not new in Australia. We live on a continent that has been shaped by fire for thousands of years and in a landscape populated by vegetation dependent on fire.

Hello, I'm Annabelle Quince and this is Rear Vision on ABC News.

What can we learn from the history of fire in Australia?

So is there anything we can learn from the history of fire in Australia that might help us face the increasing risk of fire today? The story begins millennium ago as Professor Stephen Pyne, author of Burning Bush: A Fire History of Australia, explains.

I'd like to pair Australia with Antarctica. They were both twins of the old Gondwana supercontinent. And when that broke up, Antarctica spiral to the pole and became a continent and formed by ice. And Australia wandered north into the tropics and increasingly became a continent informed by fire. And for fire to happen, you need the right pattern of weather, a drying. It has to be wet enough to grow stuff and then dry enough at some point for it to burn.

Lightning is a prolific starter of fires. So as Australia's migration into its current position occurred, it acquired more and more continental climate suitable for fire. It had ignition, and because fire is happening, plants and animals accommodate accommodated.

Not only was there a fire, but the vegetation was adapting to fire.

David Bowman, professor of Fire, Geography and fire science at the University of Tasmania.
What the Australian flammable vegetation did is that diversified, adapted, and then it became highly specialised. So one of the features of Australian flammable vegetation is that it's very fine scale diversity. So slight changes in drainage or aspect or soil fertility and temperature, you will get slightly different

mixes of assemblages. That's what makes the Australian bush so fascinating than that. High diversity speaks of the antiquity of the soils, the antiquity of the landscape itself.

And so there are a whole variety of adaptations in Australia, a remarkable suite of adaptations. Things can sprout from the roots, they can reseed in burnt ash. They may require flame to open cones in certain species. They may resprout from the trunk. They may have thick bark that allows it to withstand, you know, surface fires as they pass over many grasses and shrubs may have most of their caloric reserves underground. So then after the fire comes, they can sprout.

So there all kinds of things. And then the insects, the reptiles, the mammals, all the rest sort of accommodate that as well. So there's a grand kind of juggling that goes on. So all of these things can accept fire. And what's really interesting is that there are also adaptations where species seem to promote fire, that they need fire to germinate or to compete against other species and so they can acquire properties that actually improve the combustibility. All this is embedded in the Australian biota and its genome, in a sense, well before humans came on the scene.

And so is Australia unique or have other places been equally shaped by fire?

Tom Griffiths is emeritus professor of history at ANU and a co-author of Living with Fire.
No, not to the extent that we have here. This is a continent uniquely dominated by fire. You know, we are the fire continent of the globe. And so it's not surprising we are so concerned about the future of fire here as we go into hotter times. It's already a burning continent and it is the place where the greatest fire storms in the world take place, the most dangerous fires, particularly in south eastern Australia. So it is unique.

And indeed, when Captain Cook sailed along the east coast of Australia, what he noticed were lots and lots of human fires. He called it a continent of smoke, and everywhere he went was telegraphed by Aboriginal people. With their fires, so what Cook and other European navigators and explorers were observing was that fire is at the very heart of Aboriginal civilisation as it is of the nature of Australia. Aboriginal people farmed with fire. They celebrated with fire. They hunted with fire. They cooked with fire. They fought with fire.

Fire was integrated with everything that they did. And their whole culture, their rituals and their vision is centred on fire. And so over millennia, and it's an immensely long time, of course, that Aboriginal people have been on this continent all over it everywhere with distinct fire cultures and ecologies that they have developed.

They changed further the vegetation of the continent. So what had already been a fire continent became even more so with the work that was done by Aboriginal people over a long period with the fire stick. The great archaeologist Sylvia Hallam said that Australia was not as God made it, it was as the Aborigines

made it. Yes, they had very particular fire practices and attitudes, and essentially they regarded fire as an ally.

How Aborigines made Australia with the help of fire

Professor Bill Gammage from ANU, author of The Biggest Estate on Earth How Aborigines Made Australia with the Help of Fire. They did two broad things.

Firstly, they reduce fuel, but the other was to protect habitats of every plant bird, animal, reptile, so that they all had a place and that was built into their religious philosophy.

When we come to looking at the reducing fuel and combining that with protecting species, people had to allow for all kinds of vegetation because of their different plants and all of them entitled to a habitat.

So they had to make grass. They had to make forests, rainforests, very thick forest, swamp areas. And so they mosaic burned, that is, they burned in patches.

If you take a dense forest, for example, what they do is burn patches in it, grass patches, and they might be small clearings or they might be large plains that go over several kilometres.

But their idea therefore is to create grass next to forest that is feed and habitat for different kinds of animals and also provides them with refuges and base areas in the grasslands to deal with fire.

So how were they able to control the way they used fire?

Well, I think the key aspect of fuel reduction is that it allows you to manage fire much more effectively. So, for example, you burn through a forest, an open forest with what's called a cool fire, not very hot or sometimes called a trickle fire today where the flames just move gently through the leaf area along the floor. And early settlers sometimes spoke of seeing these fires and being able to step over them.

And then in other areas, you've got scrub. Scrubs are highly flammable areas because as I said, you have those Hakeas and Callistemon and the like who want fire, who welcome fire. So what you need to do there is, in effect, quarantine scrub areas by surrounding them with open forest and no scrub or grassland or also confining the scrub only to certain patches. Quite big patches, of course, and similarly with dense timber. So you had highly flammable areas which are either quarantined or restricted in size.

It's hard to generalise about Aboriginal fire regimes because there were so many different ecologies and different cultural groups, you know, more than 300 language groups across the continent. And each of those language groups was attached to their own country, beloved country with its own dreamings, its own knowledge systems and stories, and their use of fire was attuned to their place and its ecological needs and their cultural needs. And the way in which Aboriginal peoples used fire was lightly and regularly. They managed the land in a way that minimized out of control wildfire and maximize the fine discrimination they needed for attracting animals, for example, that they wanted to hunt into green grass

that was created by fire. And indeed, when European settlers and newcomers arrived here, what they saw was a cultivated landscape. Many noticed that what they saw was not just bush, it was actually park land. And that was a very common term of description in those early journals. It was as common as the term bush park or park land.

And what they were describing were open woodlands with large, mature trees, well-spaced and lots of grassland. And to those colonists, it seemed like it had been prepared for them and their stock. It seemed like some piece of magic but what they didn't realize is that it was actually an open, carefully managed landscape that had been created that way by Aboriginal people over a very long time and created by Aboriginal people for their own purposes, for their own type of farming, which was farming with the fire stick.

So what happened?

The carefully managed fire practices used by indigenous Australians disappeared with the arrival of Europeans in 1788 with disastrous consequences. What happened when Europeans arrived is that they were dispossessing a people and they removed the managers from the landscape and for quite some time for a generation or two or three in many parts of Australia, land that had been carefully and lovingly managed by Aboriginal peoples was bereft of people.

Maybe they were stuck out there, introduced stock, maybe there were a few settlers. But essentially those people who'd managed the forests and the woodlands and the plains and the grasslands had been removed as part of the war of invasion. And so the land was let go wild effectively in a way it had never been wild for tens of thousands of years. And fire erupted from that landscape in a very, very different way in the European era.

So in essence, when you look back to the period before Europeans came and the period after Europeans came, did we see an increase in the number of wildfires that swept across the continent?

Yes, we did. Europeans unleashed a whole new era of wildfires, more intense fires and more frequent fires. So frequency and intensity of fires is what Europeans brought.

To be fair to some of the early settlers, they could see the benefits of Aboriginal fire. It's just that they couldn't imitate it. I'm reminded of early settlers in Gippsland. They encountered a forest landscape with an understory of grass, and they could see that Aboriginal people were burning to maintain that grassy understory which they wanted for their stock, of course. And so they knew that they should burn.

But to get a “good burn”, they would burn in summer. And this created a fire that was too hot and that allowed the scrub the seeds of the scrubby species to grow. And so that started to block out the grassland. And the more those settlers burned, the worse the scrub got. And in the end, the settlers created a scrubby landscape with virtually no grass at all. This was happening all over the country.

I'm reminded of James McArthur outside Sydney who said quite early on 1810, perhaps I'm guessing at that, that the landscape had become thick with young trees. There's no more grass and kangaroos, which used to be common and no longer to be seen because there's no feed. So he observed that, and he said the cause was the absence of Aboriginal fires.

But it's important to remember that for certain ecologies, there had always been raging crown fires in order to reproduce certain kinds of trees. And the mountain ash forests of south eastern Australia are a good example of this. They are the mountain alpine ash forests, the ones that really create the firestorms that have proven fatal in European times. We know the great dates of those fires. 1851, 1898, 1936, 1919, 1932, 1939, 1962, 1983, 2009.

These are all the dates of Victorian or South Australian or Tasmanian firestorms. And they are storms that grow out of the ecology of those forests. And Aboriginal people would have known that those particular forests, they need wildfire crown fires to regenerate. Aboriginal people would have burnt around the edges of them and kept pathways through those forests open and clear. But they didn't live in the heart of those dangerous forests and avoided them in dry summers for good reason.

So whilst we can say in general a wildfire is, I think, a creation of European settlement, there are some areas of Australia that have always needed fire storms in order to regenerate the kinds of forests that exist there now.

So what was the response when Europeans first encountered the wildfires?

Astonishment. Those British settlers were not used to free range fire, fire back home for them was something that kept them warm that they could cook with and they could have ritual and celebration with. But they didn't ever really see it ranging across the landscape out of control, that they didn't know the power of the element that they had unwittingly unleashed.

And the first record of this astonishment was Black Thursday, the renowned fire of 1851, where virtually the whole of the newly established state colony, I should say, of Victoria was alight and ash was falling on ships at sea. People were fleeing in the face of fatal and frightening flame. And another example of that astonishment, closer to our time would be 1939, the Black Friday bushfires.

With the coming of a new year, the harvesting of the timber receded, unusual, aggravated by remaining drought conditions. The forest floor, usually damp and moist, became quiet. And the weather? All the Bush workers realize that the most disastrous calamity in the history of the state was even then almost under a scorching sun and whipped by rising winds, the many small fires which were burning separately seemed to join together in a sudden avalanche of flame, thousands of square miles of blackened ruin.

Seventy one lives were lost. Travelers on the highway were trapped and perished. All townships were obliterated in a few minutes.

These fires were lit by the hand of man, and for a week or two fires were running loose in the Victorian ranges and eventually came together in a giant conflagration that led to a royal commission. And the judge presiding over that commission, Judge Leonard Stretton, said this was effectively an act of state suicide because he declared these fires were lit by the hand of man. And what he was saying was people didn't understand the power of fire in this country.

The royal commission in Victoria conducted by Judge Stretton, one of the remarks that he made was that Europeans have not lived long enough. And in other words, we haven't been in Australia long enough to understand fire. And that was a problem in 1939. And I'd say it's a problem.

We still have some of the things he suggested have come to pass. For example, he wanted the establishment of local rural fire brigades and support to give them equipment. He wanted better access roads, better communications between fire brigades and central authorities. He wanted a clear line of command. When a fire broke out before 1939, the Lands Department and the Forest Commission used to argue about whose responsibility it was, and they usually say it was the other person, nothing to do with us. And he wanted to put an end to that. And most of those things have come to pass. In other words, this superstructure has been tidied up.

Black Tuesday 1983. 62 lives were lost that day, February the 7th, the day Tasmanians will never forget. For Victoria it began with a thick dust haze, a northerly wind and a temperature which climbed rapidly to 43 degrees early in the afternoon. A fire was reported in the Dandenongs just above Melbourne. It was just the beginning. Coastal resorts along the edge of the Otway Ranges, south west of Melbourne, reported fierce outbreaks and townspeople were evacuated to the beaches in a Dunkirk style operation.

But the actual firefighting was still not so much based on hazard reduction, which he emphasised. He used the word prevention, but more on fighting the fire after it breaks out. And of course, when you look at it, literally, we don't fight the fire. We get it to from emergency to watch and act and advice. And then we have to leave it and it flares up again. So despite all our costs and so on, what Judge Stretton wanted in 1939 hasn't really come to pass about controlling fire.

There are some areas such as mountain ash forests, where you can't really do control burning. They either don't burn or they kill you. But there are areas such as the jarrah forests of Western Australia where control burning was introduced very successfully in those decades in mid-20th century. And it was strengthened by a royal commission over there in 1961 following what are known as the Dwellingup fires, where really they again sanctioned serious controlled burning and brought it about very successfully and in a way that brought the attention of the world, particularly Americans who noticed that they had a fire suppression policy very much dominant in America at that time in the USA.

And they noticed that Australians had a different method of management which involved state agencies planning and managing controlled burns. And it has worked quite well. But we are now in a different era again, with rapidly rising average global temperatures and climate change upon us, where the windows

for control burning in many forests are narrowing greatly. And even though we want to do sensitive control burning, the times in which we can do it are becoming fewer and fewer.

Black Saturday, Victoria, 2009. Houses, primary schools and other community buildings have been destroyed in the bushfires across Victoria. This has been an absolute tragedy for the state and we believe this figure may only get worse. Six of the dead have been found at Kinglake, along with others at Wandong, Strathewen and Clonbinane, north of Melbourne. If you look at the Black Saturday fire that occurred in 2009, you argue that it was almost a rerun of 1939.

Had we forgotten some of the lessons of 1939 that 2009 could happen again?

Yes. After the terrible tragedy of Black Saturday, 173 people died. Two thirds of them died in their own homes where they were told they would be safest. That was an incredible shock, the greatest death toll in a fire storm in our recorded history. And everyone wondered, how could that happen? Which somehow had in those 70 years between 1939 and 2009, which somehow felt that we'd learnt how to survive fire. We built better homes, we were more advanced technological society, and that we could just hunker down at home in an ordinary home and defend it and survive.

And that clearly didn't happen. So when I was trying to come to terms with Black Saturday, I kept thinking of Black Friday in 1939. And what struck me was, even though I recognised Black Saturday as a climate change enhanced fire, I was more disturbed by the familiarity of the fire. It was 1939 all over again, laced with Ash Wednesday 1983. This was a pattern that we're already familiar with and yet didn't manage to recognise.

So I thought the lessons of Black Saturday were chiefly that we had forgotten the deep inscribed history of fire in the nature of Australia and in particular regions of it, particularly in the Firestorm capital, which is where Black Saturday ranged far and wide.

The royal commission responded to that shock and recognised rightly that the stay or go policy, which would encourage people in this distinctively deadly fire region, encouraged them to stay and defend their homes on such a day, it realised that was unwise and dangerous and that it would be much better to develop a policy of evacuation, of early evacuation.

And so in this fire season of 2019 to 20, we've seen the evacuation policy being implemented across Australia. And it's been one of the successes of this fire season, I think, has been the careful planning of evacuation and the way in which that has surely saved lives.

People are always asking, what's the driver of these big fires? Is it climate?

Well climate is certainly an important factor, but fire is a driverless car. It's a reaction. It integrates everything around it. So it's just barrelling down the road and it may come up on a sharp curve called climate change, or a tricky intersection where town and country cross or a lot of road hazards from logging debris or past land practices. And it integrates all of those.

So it's not just one thing. There are many. And the way they come together varies place by place. So you need a finer grained understanding of it. But this also means that there are many points of intervention possible. It's not that we have no chance. We just need to build concrete bunkers until we climate change. We find the correct it.[1] We don't have to wait that long. There are lots of things to do. There's a lot of studies.

The original ones, though, fascinating ones, came out of Australia after the ‘61 and ‘83 fires about how is it that houses actually burn, and the critical role of embers. So you just have this sort of dust storm of sparks blowing through and they will find points of vulnerability that suggest ways you can prevent houses from burning without having to deconstruct the entire landscape. There are ways we can certainly eliminate some of the human controlled ignition sources, power lines, for example.

Arson can be used as an excuse

Certainly in the U.S., it's a national issue, getting a better control over human carelessness or arson where that comes into play. But arson can sometimes be used as an excuse because you're dealing with systemic problems. And when you blame arson, then it's not how you live on the land. It's not all these other large factors. It's just a few crazy people and you can dismiss it. We can certainly find ways to introduce the right kind of burning and not just leave fires to extreme conditions set by lightning or accident or arson.

The fire stick is a point of great continuity in Australian history, and I hope Australians can find a way to bring the various fire sticks and their various reincarnations together and find an appropriate way to exercise stewardship over a very fire prone land. You're not going to do it with air tankers and engines. You're going to have to do it with fire.

Living in this continent, we will be living with fire and with climate change. That fire is going to become more and more threatening. But what I hope is that we can empower regional solutions. I can't say it enough. The answers are always going to be local, ecological and historical. And you find in the national debate there all kinds of solutions that will come up. But few of them will be local, ecological or historical, because it requires a very different kind of thinking.

It requires that we actually listen to people on the ground in their own places who know their forests and know their histories. If we're always striving for national blanket, solutions we will be missing the point and in some places condemning people to death because national solutions will not work everywhere. And

[1] Audio unclear

sometimes they will seriously mislead people, as they did on Black Saturday, mislead people into thinking they can survive an atomic level firestorm that is simply knowledge out of place. So it is a huge challenge because it involves a very different way of thinking in a very different kind of politics.

It's going to have to be a regional politics and it's going to have to be by a regional knowledge that is empowered.

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