Right fire for right future: how cultural burning can protect Australia from catastrophic blazes

Traditional knowledge has already reduced bushfires and emissions in the top end, so why isn't it used more widely?

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Kija Rangers conduct prescribed burning in the East Kimberley in 2019. Photograph: Supplied/Kimberley Land Council

Indigenous fire practitioners have warned that Australia's bush will regenerate as a "time bomb" prone to catastrophic blazes, and issued a plea to put to use traditional knowledge which is already working across the top end to reduce bushfires and greenhouse gas emissions.

"This is a time bomb ticking now because all that canopy has been wiped out," says Oliver Costello of the national Indigenous Firesticks Alliance.

"A lot of areas will end up regenerating really strongly, but they'll return in the wrong way. We'll end up with the wrong species compositions and balance.

“That’s why we need to get Indigenous fire practices out into the landscape in the coming months, to start to read the country and look at areas that need restoration burning in the short term.”

As Australia comes to terms with this season’s catastrophic fires, Indigenous practitioners like Costello are advocating a return to “cultural burning”.

What is cultural burning?

Small-scale burns at the right times of year and in the right places can minimise the risk of big wildfires in drier times, and are important for the health and regeneration of particular plants and animals.

Different species relate to fire in different ways, Costello explains. Wombats, for example, dig burrows to escape, while koalas climb into the canopy.

“When you understand the fire relationships they have, their own fire culture, then you are really applying the right fire for that culture so that you’re supporting the identity of that place.

“When you do that, you get more productive landscapes, you get healthier plants and animals, you get regeneration, you discourage invasive elements, which are sometimes native species that might belong in the system next door.

“It’s so important to apply that right fire for right country, so you can maintain the right balance.”

Aboriginal rangers and traditional owners conduct burns in the Katiti-Petermann Indigenous Protected Area, in

the remote desert country near the Western Australia and Northern Territory border. Photograph: Helen Davidson/The Guardian

Dr David Bowman is a professor of pyrogeography and fire science at the University of Tasmania. Bowman describes Indigenous fire management as "little fires tending the earth affectionately".

"The affectional is the opposite of mechanical. It's with emotion. So it can be reverence, affection, fear, a whole range of emotions, but it's an emotional relationship you have with land using fire to create mosaics and flammable habitat mosaics, which are really good for biodiversity and a really good way of managing fuel load."

Where is it used in Australia?

In northern Australia, Indigenous land ownership is widespread. Caring for country and ranger programs in protected areas has delivered a degree of autonomy to traditional owners to walk the country, burning according to seasonal need and cultural knowledge.

Indigenous fire management involves "cool" fires in targeted areas during the early dry season, between March and July. The fires burn slowly and in patches.

> What we need is people getting out into the landscape now, with the knowledge to start to heal it
> Oliver Costello

In the Kimberley, the Land council holds community fire planning meetings throughout the early dry season to ensure the correct people are burning their country.

"Traditional owners are consulted and native title holders design burn lines and fire walk routes," the KLC acting CEO Tyronne Garstone says.

"These burn lines are approved by the group and Indigenous rangers perform the on-ground work, backed up by modern technology with rangers taking constant weather readings and recording the conditions of the day.

"They work very well at combining the old people's fire practices with modern techniques."

Even so, climate change is affecting their ability to do "right way" fire management, Garstone says.

“These ‘right way’ fire days are getting fewer and fire behaviour is changing along the same lines as over east. Late season conditions are also driving more fires in unusual ways due to the climatic conditions we are currently facing.”

Kija Rangers conduct prescribed or ‘cool’ burning in the East Kimberley in the dry season, 2019. Photograph: Supplied/Kimberley Land Council

How effective is it?

The Darwin centre for bushfire research at Charles Darwin University maps bushfires weekly. Since traditional burning was reintroduced on a large scale, the centre has collected enough data to show that the area of land destroyed by wildfires has more than halved, from 26.5m hectares in 2000, to just 11.5m hectares in 2019.

“We have annual fires up here,” the centre’s research fellow Andrew Edwards says. “Forty per cent of the top end could burn every year. So we had to do something about that.”

“We were originally much more interested in biodiversity, Aboriginal employment and getting people back on country to manage it properly, but when the carbon economy came along we saw a way to manage fire to abate greenhouse gas emissions.

“It was pretty bad before that happened,” Edwards says. “It was just fires running wild across huge tracts of north Australia that nobody was doing

anything about.”

Edwards says the top end cooperative model can be adapted to southern conditions.

“That’s what needs to be looked at. Obviously there’s a lot more infrastructure to set up, but it’s collaboration and education.

“If we want to manage our natural environment properly, we need to be doing prescribed burning. There’s so much cultural knowledge out there still, and it’s being totally ignored. There’s hundreds of Indigenous rangers out there now doing this work.”

The Oriners and Sefton Savannah Burning Project creates carbon credits, using strict scientific methodologies, approved through a rigorous accreditation process with the Department of Environment, to store carbon in the natural landscape. Photograph: Richard Wainwright/Caritas Australia

Will these practices be widely adopted?

In southern Australia, Oliver Costello says, Aboriginal knowledge systems are far less valued but hold important solutions.

The Coag national bushfire management policy includes a commitment to “promote Indigenous Australians’ use of fire”, but Indigenous fire groups like Firesticks Alliance say they need more resources to build capacity.

“There are a lot of policy settings at a high level that support us, but there’s nothing in between. There’re no resources,” Costello says.

“There’s no investment really outside of northern Australia Indigenous fire management of any significance, and they had to build a whole new economy to support it through carbon.

“There’s always investment going into future firefighting capacity, more trucks, more helicopters, more this, more that. What we need is people getting out into the landscape now, with the knowledge to start to heal it.

A small cool burn managed by Indigenous firesticks alliance. Photograph: Firesticks Alliance Indigenous

Corporation/PA

Professor Bowman says it is possible to "blend Aboriginal with European and modern scientific approaches to create an opportunity for all land users and land owners".

He suggests small-scale local "Green fire" groups modelled on the Landcare program.

"I would like to see a crossover between Indigenous and mainstream fire management groups, where there can be exchange and recognition.

"Because in the end there's two things which are important to [remember]: all humans have come from a fire management background in their cultures, it's just that some cultures ended up obliterating that knowledge because of industrialisation.

"We should really prioritise employment of Aboriginal people. But when there's a gap we could be filling that gap with community groups. And there's a really good opportunity for Aboriginal people to be involved in training.

If the bushfires won't force climate policy change, we need to circumvent Scott Morrison
Lenore Taylor

"We need to encourage and promote the philosophy of Aboriginal fire practice because that's going to be a really important pathway for sustainable fire management and also for healing because so many communities have been traumatised and shocked by the scale of the burning."

Costello says the areas that haven't burned this time around are now even more vulnerable.

"They are critical parts of the landscape [that need] to be able to support the animals and plants that have survived. And so those areas are going to be under increasing pressure and they're also at risk of a future fire.

"There was an economy before settlement that supported this, a resource economy based on people looking after the land and having all that they needed.

"Now in the modern society it revolves around money. So we need to build economies that support cultural practice and acknowledge traditional

custodianship.

“There’s all this canopy that’s been burnt away. We’ve got knowledge and techniques that can help heal that country in the future. It’s going to take some time. We’ve got probably two or three years before we can really be effective in some of that country because it needs to recover. But if we don’t get in there after that, then we miss our chance.”

Australia fires: Aboriginal planners say the bush 'needs to burn'

By Gary Nunn
Sydney
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Aboriginal people have long used techniques to manage fires

For thousands of years, the Indigenous people of Australia set fire to the land.
Long before Australia was invaded and colonised by Europeans, fire management techniques - known as "cultural burns" - were being practised.
The cool-burning, knee-high blazes were designed to happen continuously and across the landscape.
The fires burn up fuel like kindling and leaf detritus, meaning a natural bushfire has less to devour.
Since Australia's fire crisis began last year, calls for better reintegration of this technique have grown louder. But it should have happened sooner, argues one Aboriginal knowledge expert.

"The bush needs to burn," says Shannon Foster.
She's a knowledge keeper for the D'harawal people - relaying information passed on by her elders - and an Aboriginal Knowledge lecturer at the University of Technology Sydney (UTS).

Much of the ancestral information she shares relates to the bush, says Ms Foster.
"It's the concept of maintaining country - central to everything we do as Aboriginal people. It's about what we can give back to country; not just what we can take from it."

'Naive' techniques of today

Country is personified within Aboriginal culture. "The earth is our mother. She keeps us alive," Ms Foster says. This relationship shifts priorities around precautionary burning.
While modern-day **authorities do carry out hazard reduction burning**, focusing on protecting lives and property, Ms Foster says it's "clearly not working".
"The current controlled burns destroy everything. It's a naive way to practise fire management, and it isn't hearing the Indigenous people who know the land best.
"Whereas cultural burning protects the environment holistically. We're interested in looking after country, over property and assets.
"We can't eat, drink or breathe assets. Without country, we have nothing."

Shannon Foster relays techniques passed on by her D'harawal elders

Her great-grandfather Tom (left) and grandfather Fred (third from left) give lessons in the 1940s

Indigenous cultural burns work within the rhythms of the environment, attracting marsupials and mammals which Aboriginal people could hunt.

"Cool burning replenishes the earth and enhances biodiversity - the ash fertilises and the potassium encourages flowering. It's a complex cycle based on cultural, spiritual and scientific knowledge."

They also create a mosaic of ecologies, Ms Foster says, and this can lead to beneficial micro-climates.

"Soft burning encourages rain - it warms the environment to a particular atmospheric level, and once the warm and the cool meet, condensation - rain - occurs, helping mitigate fires."

Her Aboriginal elders in Sydney have been assessing the overgrown bush and extremely dry kindling for some time, warning that a huge fire is coming: "They compared it to a kid with unkempt hair, saying it needs nurturing."

But local authorities have forbidden them from cultural burning when they've asked for permission.

Where cultural burning is used

There's no one-size-fits-all approach to precautionary burning because the Australian landscape is so diverse from place to place.

Nonetheless, some states do integrate cultural burning with other strategies, according to Dr Richard Thornton, CEO of the Bushfire and Natural Hazards Cooperative Research Centre.

"There's a stark difference in northern Australia, where Indigenous cultural burning happens substantially. In southern states, it's sometimes done according to the needs and wishes of local communities."

The bushfire crisis has devastated Australia since September

Since Australia was colonised in 1788, cultural burning was slowly eradicated. But recent years have seen moves to reintegrate it.
Associate Prof Noel Preece, a former national parks ranger, wrote the first fire manual for central Australian park reserves.
He says cultural burning is still practised in parts of Melbourne, but largely stopped in south-eastern Australia because vegetation built up in "precarious areas" where cool burns don't work.
"That said, Indigenous people had extremely detailed knowledge of 'dirty country' that needs a good burn," says Associate Prof Preece, now of James Cook University.

Drawbacks of the ancient practice

Cultural burning, Prof Preece says, can reduce fuel on the ground from 10 tons to 1 ton. But it's only effective protection for moderate fires, so it needs to be done in conjunction with hazard reduction burns.
Even then, it only reduces hazards: "With the recent catastrophic conditions of humidity and high winds, nothing could stop these fires."
"Aboriginal people were taken off their country so there's a re-learning process which is very useful and important. But it's still early days and by itself, it's not enough," he says.

The orphaned Australian baby bats wrapped with love

Experts agree that cultural burning has limitations, partly because colonisation led to development and human-created climate change, presenting us with a very different landscape now to hundreds of years ago.
Prof Preece has been in areas where, day after day, the conditions for cooler cultural burning weren't right.
"It'd be too moist, too cool, too hot, too dry - you have a narrow window. And with many firefighters in Australia being volunteers, they're working during the week, and you could go four Saturdays till the conditions are right."

For thicker shrub running up tree canopies, he says a hot burn is required because cool burns won't get rid of such layers of fuel.

In addition, Dr Thornton says individual Indigenous burns, undertaken by specific agencies such as Firesticks, absolutely have their place, but need to fit within community expectations if done on a larger scale by others.
"We need to ensure fire doesn't escape and burn down somebody's property. It'd undermine community views of the entire practice so we need to ensure we operate within a safety framework which is defendable."

The way forward

Prime Minister Scott Morrison has promised a "comprehensive" inquiry into the ongoing bushfire crisis which has so far killed 27 people and scorched more than 10 million hectares.

When it goes ahead, Dr Thornton stresses the need to "talk to Indigenous elders in each different area and listen".

But he says not a single Indigenous person sits on the board of the national bushfire research centre he manages.
Shannon Foster is keen to work together with government agencies, but she worries about expanding development: "It terrifies me that so much land has been decimated, developers could move in and say we might as well put this estate here; the land is cleared."
"Aboriginal people have looked after this place for so long - to see it now destroyed because nobody has allowed us to care for it is devastating," she adds.
"It's not like we didn't tell you so."

Australia's indigenous people have a solution for the country's bushfires. And it's been around for 50,000 years

By Leah Asmelash, CNN

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(CNN) The fires in Australia have been burning for months, consuming nearly 18 million acres of land, causing thousands to evacuate and killing potentially millions of animals.

They're showing minimal signs of slowing down. The Australian state of New South Wales, where both Sydney and Canberra are located, declared a state of emergency this week, as worsening weather conditions could lead to even greater fire danger.
But a 50,000-year-old solution could exist: Aboriginal burning practices.

Here's how it works.
Aboriginal people had a deep knowledge of the land, said historian Bill Gammage, an emeritus professor at Australian National University who

studies Australian and Aboriginal history. They can feel the grass and know if it would burn well; they knew what types of fires to burn for what types of land, how long to burn, and how frequently.

"Skills like that, they have but we don't know," Gammage said.

Aboriginal techniques are based in part on fire prevention: ridding the land of fuel, like debris, scrub, undergrowth and certain grasses. The fuel alights easily, which allows for more intense flames that are harder to fight.

The Aboriginal people would set small-scale fires that weren't too intense and clear the land of the extra debris. The smaller intensity fires would lessen the impact on the insects and animals occupying the land, too, as well as protect the trees and the canopy.

A firefighter manages a controlled burn near Tomerong, Australia, set in an effort to contain a larger fire nearby.

And though current fire fighters on the ground still use some fuel control and hazard reduction techniques, Gammage said it's not enough.

"Some of it is being done, but not skillfully enough," he said. "We don't

really take into account plants and animals that might be endangered by fire. And secondly, we don't really know what's the best time of year, how much burn, how to break up a fire front."

It's not like they know nothing, Gammage said, especially the firefighters on the ground. But he said it's not enough to make Australia safe.

Why Aboriginal techniques are so difficult to implement

Setting smaller, low-intensity fires to prevent larger bushfires may sound like common sense. In practice, though, it's really hard.

It comes down to knowledge, Gammage said. When do you a start a fire? What time of the year? What time of day? How long you want it to burn? What plants are there? What's the weather like — is there a drought like now?

"You have to have a lot of local skill," Gammage said.

A firefighters backs away from the flames after lighting a controlled burn near Tomerong, Australia.

He cited an example. In Australia, fires that are too hot actually allows the flammable undergrowth to germinate more. When early Europeans tried to copy Aboriginal techniques by lighting fires, they made the fires too hot, and got even more of the flammable scrub. So, they tried again. And again.

"Even though people can see the Aborigines doing the fire control, and could see the benefits, they couldn't copy it," he said.

Now, the juxtaposition is clear.

"Where the Aboriginal people are in charge, they're not having big fires," Gammage said. "In the south, where white people are in charge, we are having the problems."

As climate change worsens, so will the fires

The bushfires in Australia are never going to go away but will get worse. That's according to Justin Leonard, a researcher dedicated to understanding bushfires and land management. Bushfires are ignited both naturally and by humans, but Leonard called them "inevitable."

Climate change only worsens the conditions for fires, he said. Droughts and hotter weather only make for more intense fires and longer fire seasons — changes that are already being observed, he said.

Under worsening conditions, fires are harder to put out: They grow too big to get to safely, and even aerial suppression isn't necessarily possible because of the wind.

So, what does that mean for indigenous fire techniques?

They'll still help, Leonard said. Areas that have undergone preventative burning lead to less intense fires. But the problem is, under the worst of conditions, the fire will still be able to burn straight through the land,

despite any preventative measures.

A resident throws a bucket of water onto a smoldering tree on his property in Wingello, Australia.

Which means that towns are still in danger.

"We need to solve that inevitability by effective township design," Leonard said.

In other words, indigenous burning techniques aren't enough on their own. Communities will need to properly manicure adjacent forests, landscape their own private property, and have effective house design and maintenance, Leonard said.

Aboriginal techniques require more money. The cost might be worth it

The most common way fires are handled now is with medium-intensity fires, Leonard said. It's similar to these smaller, more frequent fires, except it burns a little hotter, covers more land and is just a little more

intense.

Basically, it's more bang for your buck. And that's what this comes down to.

You have to "use limited budget on what will be the most prolific way" to prevent fires, Leonard said.

It takes a lot of labor to ignite small frequent fires everywhere — even just using these tactics near towns can be labor intensive, Leonard said.

Gammage noted that cost is a common concern when it comes to transitioning completely to Aboriginal fire practices. But he said he's not impressed by that argument.

"It's costing much more (to fight these fires)," he said. "Fires that destroy 2.5 million acres, which is what's happening now, it's shameful. It's a disgrace that anyone could let such terrible fires run amok."

A view of the landscape after a bushfire on Mount Weison, 74 miles (120 km) northwest of Sydney.

What Australians should really learn from the Aboriginal people is custodianship over the land, Leonard said. The way Aboriginal people

deeply know and care for the land is something Australians should ponder and embrace.

Gammage pointed to an incident on Tuesday, when a local fire brigade managed to steer a bushfire around their community, despite being told their town was "undefendable," according to the Sydney Morning Herald.

The brigade, using their knowledge of the land, stayed behind while others evacuated. And rather than burn right through their town, the brigade was able to save houses and prevent deaths.

It just shows the importance of knowing local fire conditions, Gammage said. Knowing the land -- just as the Aboriginal people do.