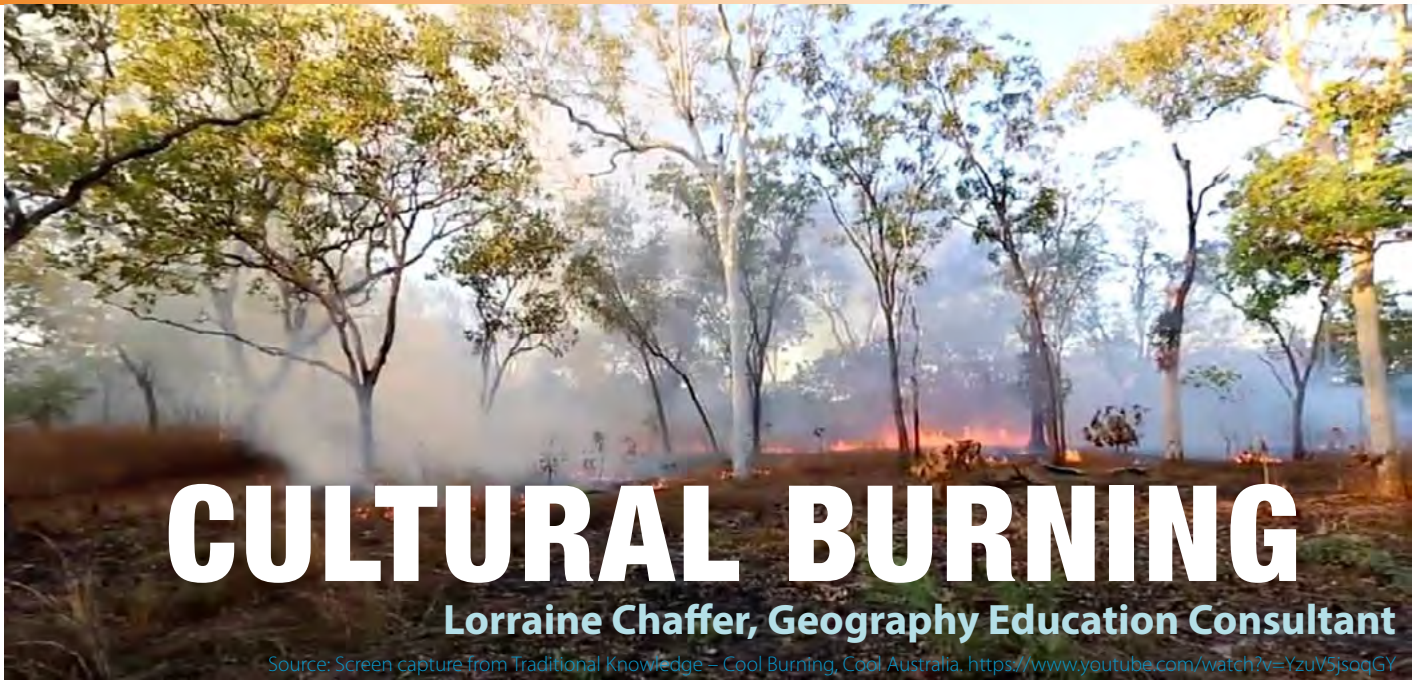


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CREATIVE SPIRITS®

RESOURCE: Cool burns: Key to Aboriginal fire management

Source: <https://www.creativespirits.info/aboriginalculture/land/aboriginal-fire-management>

Website Author Jens Korff

This article from the Creative Spirits website provides a comprehensive summary on the Aboriginal land management practice known as cool burning.

Before using this material with your students assess their current knowledge and understanding about cool (cultural) burning with a short quiz or a discussion.

Quick Quiz

(You could import these questions into a digital survey form.)

1. You are asked to describe and explain cultural burning to another student?

Locate your level of confidence on a scale of 1 – 5 or on the line below.

NO	POSSIBLY	YES
I am not confident	I have some ideas	I can do that

2. Suggest a reason for the title 'cool burning'.
3. Cool burning is used for land management. What do you think this means?
4. Is cool burning the same practice as backburning?
Yes No
5. Circle the places where you believe cool burning is used.
 - i. Aboriginal owned lands
 - ii. State forests
 - iii. National Parks and World Heritage sites
 - iv. Privately owned land such as farms
 - v. Land not managed by the Rural Fire Service.

Suggested activities

The following activities are differentiated to cater for students with varied levels of literacy and preferred learning leaning styles.

1. Guided Reading

Use the two guided reading templates in the Appendix. Selected information from Creative Spirits has been imported into these templates.

2. Create a Mind Map – Tony Busan method

This type of mind mapping uses colour, branches, images and mostly single words. Adding colour and sketches to a mind map makes students THINK about the information they are representing. As humans we think in images. When someone says 'elephant' for example, we visualise an image of an elephant. By visualising an idea by creating a simple image to represent that idea students have better recall at a later date.



A short video on the Tony Busan method can be viewed here. <https://www.youtube.com/>

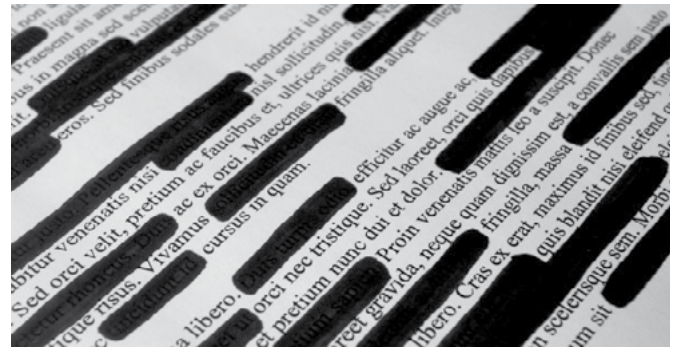
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- Provide students with piece of A3 paper and coloured pencils.
- Show students simple examples of this type of mind map to explain key features.
- Students read the following pages from the Creative Spirits website ONE section at a time to gradually build a mind map.
- Include each video as a new section. Hint: it may be convenient for a class to watch the videos at the same time.
- Model the Tony Busan method using the section 'Aboriginal Fire Management'. Hint: you might pre-prepare this to develop your own tips for students.
- This activity is also suited to students working in small groups or pairs of students to build confidence and encourage the sharing of ideas.
- At the end of the activity students share their mind maps with the class who are then required to ask questions to the authors.

Example of a simple mind map using this method



Source: <https://www.mindmapart.com/better-earth-mind-map-kartik-agarwal/>



3. Colour Out Activity (Reverse summarising)

This activity challenges students to think carefully about the most important information they read– once information is coloured out, they cannot get it back.

- Provide students with a copy of the article and a COLOURED MARKER.
- Students cover the words and sentences they do not want to keep, leaving behind the most important information.
- Students use the remaining text to write a brief summary.

NOTE: Use this approach for one or more sections of an article.

This activity is similar to redacting, but you are keeping the most important information. For older students, explain the difference between 'redacting' of important documents and 'blacking out' as a way of summarising information.

Other sources of information about Cultural Burning

SMH Explainer: What is cultural burning – <https://www.smh.com.au/environment/climate-change/what-is-cultural-burning-20200228-p545e2.html>

The conversation: Aboriginal fire management – part of the solution to destructive bushfires – <https://theconversation.com/aboriginal-fire-management-part-of-the-solution-to-destructive-bushfires-55032>

The Guardian: Right fire for the right future – <https://www.theguardian.com/australia-news/2020/jan/19/right-fire-for-right-future-how-cultural-burning-can-protect-australia-from-catastrophic-blazes>

APPENDIX

The two guided reading activities have been included as an Appendix in PPT form and can therefore be adapted to suit your students.



COOL BURNS: Key to Aboriginal fire management

Jens Korff, Creative Spirits

Source: <https://www.creativespirits.info/aboriginalculture/land/aboriginal-fire-management>
Licensed by Copyright Agency

When Aboriginal people use fire to manage country, they consider a plethora of parameters. Read why cool fires are key and why the canopy is sacred.

Meaning of fire

Fire is an important symbol in Aboriginal culture.

Traditionally it was used as a practical tool in hunting, cooking, warmth and managing the landscape. It also **holds great spiritual meaning**, with many stories, memories and dance being passed down around the fire.

But when out-of-control bush fires burn Aboriginal land, they are “also burning up our memories, our sacred places, all the things which make us who we are,” says Yuin woman Lorena Allam, because “[we] lose forever what connects you to a place in the landscape”.^[4]

‘Whilst popularly known as traditional burning, cool burning, Indigenous burning, etc., the practice is actually cultural land management.’

Bhiamie Eckford-Williamson, Euahlayi man and ANU researcher^[5]



Fire-managed country. Notice the lack of tall grass or thick bushes. This would have been an ideal hunting ground a few weeks after a fire.

Aboriginal fire management

Fire management is part of how Aboriginal **people look after country**. It is often called ‘cultural burning’.

Definition: Cultural burns

Traditional fire management applies cool and quick burns. These low-intensity fires are also known as **cultural burning**. They have several benefits:

- **Save flora and fauna.** Animals, including beetles and ant colonies, have enough time to escape. Young trees can survive, and the fire keeps grass seeds intact for regrowth. The heat, which is much cooler than a hazard reduction burn, doesn’t ignite the oil in a tree’s bark. It’s a “tool for gardening the environment”.^[6]
- **Self-extinguishing.** The fire extinguishes straight after it burns the grass (“self-extinguishing fire”).
- **Avoid chemical weed killers.** Introduced species, for example grasses, are not fire-resistant and can be removed with fire instead of chemicals.^[3]

You can tell if a fire was a cool burn when the burnt grass still has its previous shape.

Cultural burning is tightly connected to caring for country. It is applied more frequently than hazard reduction burning and is very labour intensive.

Cultural burns are used for cultural purposes and not simply for asset protection. They protect Aboriginal sites and clear access to country for cultural uses (e.g., hunting, access to fish traps, ceremony grounds).^[7] Aboriginal control of preparation and implementation is essential.^[8]

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Cultural fire means everything. It means healing Country and when you heal Country, you heal people.

— Wurundjeri Elder Dave Wandin [9]

After World War II, mission towns and cattle stations lured Aboriginal people away from **their homelands** with promises of work and education. [2] Fire management stopped with severe consequences for the land. Lightning strikes ignited large, hot fires late in the dry season, between August and December, when there was plenty of fuel.

The devastating 2015 Christmas bush fire at the Great Ocean Road in Victoria, triggered also by lightning, was only able to destroy a third of homes in Wye River and “entire streets” because “this country has not burnt, had a fire in it, in decades,” as Craig Lapsley, Victoria’s Emergency Management Commissioner admitted. [10]

This trend has not been reversed yet. “Since European settlement, fires in the north have increased in size and severity. This has threatened biodiversity as well as increased greenhouse gas emissions,” says Dr Garry Cook from the Commonwealth Scientific and Industrial Research Organisation (CSIRO). [1]

When Aboriginal people returned to country and properly managed it, the area that burned was cut in half. [2] Fire is an inevitable force in the dry season and needs to be managed. Fire burning has created a variety of habitats including places that are very sensitive to fire like rainforest.

In 2019, Forest Fire Management Victoria and Dja Dja Wurrung Clans Aboriginal Corporation (DDWCAC) jointly brought back cultural burning for the first time since invasion. [11] It follows a lesson learnt from the March 2018 fires across the Bega Valley in New South Wales which stopped where the Bega Local Aboriginal Land Council had done cultural burns the year before. [12]

But cultural land management cannot just be added to existing non-Aboriginal practices. Aboriginal people must be involved as they know **when** to burn, **where** to burn and **how** to execute a burn. [13]

Before Europeans arrived, Aboriginal people were practising a form of fire management that in some respects was more successful than that which has been practised since.

— Prime Minister Tony Abbott, after devastating bushfires in NSW [14]

Video: Cultural burning

Learn about cultural burning from Aboriginal fire practitioners (11 mins).



Source: <https://www.youtube.com/watch?v=RM72NtXxyLs>

When to burn

The timing of fire management is critical and needs to happen at the right time of the year. To Aboriginal experts, the country reveals when it is appropriate to use fire: indicators such as when trees flower and native grasses cure. “The knowledge is held within the landscape.

Once we learn how to read that landscape and interpret that knowledge, that’s when we can apply those fire practices,” explains Aboriginal community member Noel Webster. [15]

Ideal is the **early dry season, from April to July**, when vegetation that grew during the wet season begins to dry, fuel loads are low and wind patterns and dew support a burn. You don’t want to burn when certain seeds or fruits are ripe for harvest.

The bushfire threat **ends** usually in **November** when monsoon rains arrive and the wet season returns.

If burning too early, big thick shrub develops after the fire which can become a big fuel load and is hard to manage.

If burning occurs too late, trees ‘explode’ during the fire and not much will be left after the fire goes through. Such fires emit higher levels of greenhouse gases than early season fires. [16]

The right time depends on the ecosystem of the burn area because each system has its own identity and needs. An ecosystem is for example a forest of boxwood or tea trees, rainforest, or heath areas along rivers and springs.

FACT: Cultural burning is a practice not limited to Australia. Other indigenous peoples applied the same technique, for example the Indigenous Peoples of Canada.

The Northern Territory started supporting cultural burns on public lands from the early 1980s, New South Wales not before 2017. [8]

Cool fires

A central idea in fire management is to have a **cool fire**. Night-time or early mornings are ideal for cool fires as during the day plants sweat out flammable oils, and a nightly dew helps cool down the fire.

During a morning burn the wind is often gentle and supports Aboriginal people direct the burn. Without the help of the wind burning cannot happen at the right time. The sun, in contrast, encourages the fire to burn.

Cool fires don't bake the seeds and nutrients in the soil or destroy root systems. Flames are low so they cannot ignite the tree canopy and only char the bottom bark. They don't burn logs lying on the ground or habitat trees. ^[12] Burning supports certain soils to improve and enables them to hold more moisture.

The speed of the fire is slow enough to allow insects to escape. If you cannot see an army of insects crawling and flying away from the fire, it is moving too fast and is too hot. The humans who manage the fire can also walk with the fire and correct if necessary.

Cool fires help change the vegetation structure by reducing the density of plants like Bracken Fern or Casuarina which lead to extreme fuel loads. ^[11] But hot fires, such as hazard reduction burns, encourage their regrowth.

Aboriginal people who execute cool fires usually stay with the fire to manage it. ^[11]

Video :Burning to heal: Indigenous burning before and after the Tathra bushfire (11 min, ABC)

Video: How to conduct a cool burn

John Daly, an Aboriginal ranger from Fish River, Northern Territory, explains a cool burn (5:20 min).



Source: <https://www.youtube.com/watch?v=UJKdZpRbzMk>

'The trunks show that they know fire, they live and understand fire, they're trees that belong to the fire.'

— Dr Tommy George, Kuku Thaypan Elder ^[17]

Where to burn

Like a non-Aboriginal person reads a book, Aboriginal people can read the land to determine which areas need fire management.

They prepare a burn by looking at the different ecosystems, patches, fuel loads, grasses, soil type, and the kinds of ashes a fire will leave behind. It is not "one big grass area to be burnt".

Trees tell Aboriginal people about the soil type and this tells them what type of fire is needed. Aboriginal people know which areas will burn and where the fire is going to stop. Some areas "want to be burnt" while others need to rest and regrow.

Cultural burns burn "for country" and not to satisfy a certain number of hectares for bureaucrats or statistics.

Indigenous [fire management] knowledge is really Indigenous science and must be recognised as this.

— David Claudie, Kuuku I'yu Northern Kaanju traditional owner ^[18]

Burning usually occurs at the edge to the next ecosystem to not affect it as it might require a different approach of fire management at a different time. Many small mammals and birds need ground to stay unburnt for at least three years. ^[16]

How to manage a burn

Aboriginal people read the systems of fire—the grass, soil type, what animals live there and how they benefit from it. Burning styles differ depending on how "sick" the land is.

To **start a fire**, Aboriginal people traditionally used a tea tree bark torch. Contemporary fire management uses either a kerosene bark torch (the oil in the bark keeps torch alive) or a drip torch (hot fires).

The first fire burns a circle around Aboriginal people's living area so they are safe.

Early dry-season, cool fires trickle through the landscape and burn only some of the fuel, creating a network, or mosaic, of burnt firebreaks. These stop the late dry-season, hot fires.

The canopy is sacred

A cool fire preserves the canopy of trees. This is very important for several reasons:

- **Protection and provision.** The canopy provides shade, fruit flowers and seeds. It allows animals to come back quickly.
- **Carbon reduction.** Unlike a cool burn, a canopy fire releases too much carbon. Local land managers can then sell carbon credits for the emissions avoided. ^[1]

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- **Fire refugee.** When there's a fire insects and other small animals crawl up the tree to safety.
- **Preserve tree cycle.** With its canopy intact the tree does not miss its cyclic renewal.
- **Trigger for germination.** The smoke from a cool burn goes through the canopy and triggers off a reaction for seeds up there to germinate.

No wonder that Aboriginal people consider the trees' canopy "sacred".

This is in stark contrast to how non-Aboriginal people understand fire. "Non-Indigenous mob, their fires are based on their money," complains David Claudie. [19]

Non-Aboriginal people, like pastoralists or officers in land management departments and other government bodies, are trying to learn how to manage fire correctly on their own, but the knowledge is right there under their nose, with Aboriginal people. All they need to do is ask for help. Some do.

The land has become sick and the land is pushing [pastoralists] to us [Aboriginal people].

— Victor Steffensen, Tagalaka man from North Queensland [20]

Fire cannot be managed from the air alone; you need to have people on the ground.

The problem is not the fire, it's people with no proper relationship with the land.

— David Claudie [21]



Source: Wikimedia Commons

Comparison: Cool vs hot burn

Hazard-reduction burns are deliberate, authorised fires to reduce fuel loads and threats to people and property from wildfires. They are also known as fuel reduction burns, prescribed, planned or controlled burns. These burns can often be much hotter than cool burns, [22] [23] with devastating consequences to the burnt areas.

Backburns are different – they are lit during an emergency to create a burnt buffer to stop an active bushfire and do not consider environmental impact.

Comparative table: Cool vs hot burns

	COOL BURN	HOT BURN / HAZARD REDUCTION BURN
Objective	fuel reduction, weed control, healing country, cultural practices, access to country	fuel reduction
Size	small patches	large scale operations
Burn schedule	determined by reading the land (e.g. tree species) and local knowledge from traditional custodians [24]	determined by computer modelling
Ignition point	chosen specifically so animals can escape	chosen by topography, several points spread out (e.g. along lines or grids), [25] often via helicopter drops (aerial ignition)
Burn speed	slow	fast
Temperature	low	very high
Flame height	knee-high	more than 1.5 metres (the upper limit recommended for fuel-reduction burning [26])

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Post bushfire epicormic regrowth in eucalyptus, Blue Mountains, NSW, Australia. February 2020. Source: Wikimedia Commons

	COOL BURN	HOT BURN / HAZARD REDUCTION BURN
Timing	according to seasons and plant cycles	anytime, often not considering plant cycles
Extend of fire	controlled	controlled, but sometimes escapes control ^[27]
Flora impact	lower bark of trees scorched, burns grasses and leaf litter and some shrubs	significant parts of the tree burnt, often including its crown; burns all vegetation; sometimes loss of some native plant species from the ecosystem
Animal impact	time to flee or burrow	can be fatal
Soil impact	seeds, nutrients and roots intact, soil moisture increased	soil is baked, seeds and nutrients destroyed
Burn frequency	several times a year	annually, every seven years or not at all
Plants that regrow	native grasses and herbs	dominating ferns and trees
Fallen logs	don't burn, preserving animal habitats	burn to ashes
Fire stops	naturally (self-extinguishes) or controlled stop	at control (containment) lines (i.e. in a managed way)
Labour effort	very high	high
Weather impact	light and patchy smoke	heavy smoke, red or black sky, pyrocumulus (flammagenitus) clouds, lightning, ashy rains
Climate impact	greenhouse gases	heavy greenhouse gases
Property impact	little to none	severe loss of properties and infrastructure
Nature recovery	quickly	many years, sometimes decades

Source: Cool burns: Key to Aboriginal fire management - Creative Spirits, retrieved from <https://www.creativespirits.info/aboriginalculture/land/aboriginal-fire-management>

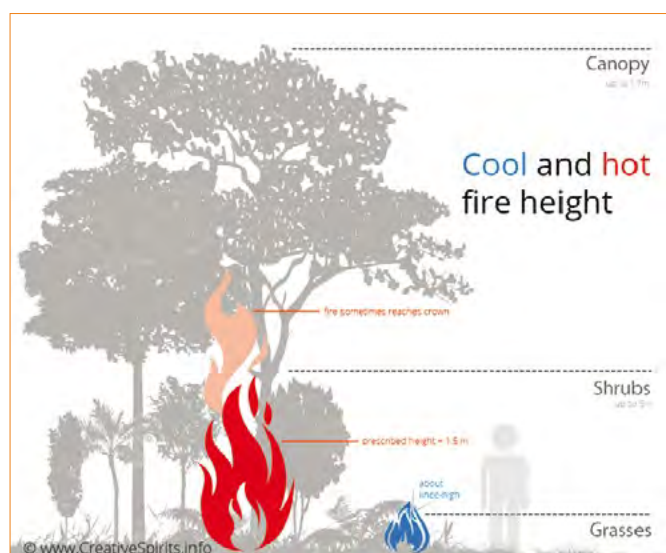
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Research shows that hazard reduction burning is not an effective method to prevent subsequent bush fires. [28]

Sick country needs fire to restore its health. One of the signs that country is sick is a heavy layer of leaf litter.

— Sue Stevens, Reduce Your Footprint [23]

Flame height of a cool burn vs. a hot burn



The prescribed flame height for hot burns is 1.5 metres, but sometimes these fires are much higher and occasionally reach the tree crown.

The “two toolbox” approach to fire management

Aboriginal Elder Terrah Guymala is a senior member of the Bordooh clan of the Warddeken people in remote west Arnhem Land and director of Warddeken Land Management.

He uses a “two toolbox” approach to manage fire: One virtual toolbox contains **traditional knowledge** and land management skills, the other **Western knowledge** like using helicopters and satellite imaging. [2]

This combined knowledge lets the Warddeken people manage their country successfully.

Elsewhere the Commonwealth’s Carbon Farming Initiative motivates Aboriginal people to restore traditional fire management practices on their homelands. They combine modern environmental and fire science with traditional “mosaic” burning practices. [1]

People here see burning as like mowing the lawn. It’s how they maintain and manage their land.

— Shaun Ansell, chief executive, Warddeken Land Management [2]

Fighting carbon with fire in western Arnhem Land, NT

Watch a video by the United Nations University about how the “two toolbox” approach saves thousands of tonnes of carbon each year.



Source: <https://www.youtube.com/watch?v=Qfjw5Vts8hQ>

Fire, fauna and flora

The discussion around the sacred canopy of trees already indicated the intricate links between fire, animals and plants.

During a fire, bush turkeys hunt for bugs and insects at the fire line while hawks scour it for small animals.

Animals know how to protect themselves from fire: ants and snakes go deep down into their nests and burrows; kangaroos find safe spots on rocky outcrops.

Regular burning is also an effective weed control to introduced species like the African gamba grass which can increase fuel loads 10-fold. [2]

After a fire, if it was cool, new grass is growing only weeks after a burn. It holds the soil together and provides a source of food for wombats, wallabies and native birds, and ample of hunting opportunities prior to invasion. Brolgas (Australian cranes) eat insects that have been burnt.

Wallaby, birds and other animals bathe in the cool ash to cleanse themselves, for example to get rid of lice. The black coals can also be used as medicine.

Do we burn too often, too much?

Fire management is not without its critics. It divides tourism operators, bushwalkers, environmentalists, ecologists and archaeologists.

Some believe that that too much land is burnt too often, and that fighting fire with fire worsens what it should protect: the loss of habitat, decline of species, erosion, flooding and the destruction of **Aboriginal rock art**. Bushwalking businesses are concerned to lead their customers “through ash” while environmentalists stress

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that “good” fire regimes should maximise the extent of unburnt areas. ^[16]

Another point of conflict arises when landowners are paid to burn early in the season, called **savanna carbon farming**. The fire stimulates grass regrowth, so carbon dioxide emissions from the fire are not included in emission calculations because it is assumed that vegetation regrowth removes an equivalent amount from the atmosphere. ^[29]

Farmers and landowners are reluctant to burn their land as kilometres of fences, often built using wooden posts, could catch fire. Their replacement can cost as much as a quarter million dollars. ^[30]

While Aboriginal custodians managed for thousands of years to preserve Aboriginal rock art within areas which were regularly burnt, current fire practices (“hazard reduction burns”) might no longer guarantee the same result. Archaeologists claim that aerial burning is responsible for fading and scorching art and destroying as much as 30% of it in the Kimberley. ^[16]

‘Controlled’ is not a word you’d use to describe Australia’s 2020 bushfires, our wildfires. They howled and devoured like fiery beasts themselves, they incinerated and razed.

— Kim Scott, Noongar author ^[31]

Passing on fire management knowledge

Aboriginal people understand that fire is part of the healing process of the land. Children as young as four learn how to lose their fear and manage fire.

Going back to their homelands, Aboriginal people want to heal the land from colonisation. Proper fire management is an essential part of this healing process. But it goes both ways – Aboriginal people who go out on country also reconnect with culture. ^[16]

Elders share knowledge with younger generations of Aboriginal men who receive training from the Royal Fire Service. Cultural burning also complements the fire service’s hazard reduction burns in fire-prone areas. ^[15]

As **Aboriginal rangers** increase their knowledge of how to manage fire, so rises their confidence and sense of identity. “Having the rangers here plays a big part in keeping identity alive and pride in what our people have,” finds Aboriginal ranger Robin Dann. ^[16]

Rangers burn vegetation to protect rainforest patches, rock art and traditional pathways. They track the progress of fires with online maps based on satellite images.

If we go by government plans, all of Australia will be burnt out and not just by fire.

— David Claudie ^[32]

FACT: The remote Lake Tyers Aboriginal Trust Country Fire Authority (about 350 kms east of Melbourne) employs Australia’s first all-Aboriginal, all-female fire brigade.

Did fire influence Australian trees?

For thousands of years, Aboriginal people have used fire to hunt and to manage the landscape. Some scientists have argued that when people first arrived in Australia about 45,000 years ago they set a large number of these fires, which **reshaped the country’s ecosystems**. This theory has become an accepted idea.

A study from the University of Tasmania examined this theory by analysing the genetic fingerprints of a particular fire-sensitive tree found across the continent. ^[33]

It found that fluctuations in populations of these trees across the continent since the arrival of people were **driven primarily by climate, not fire**. Aboriginal use of fire seems not have caused a major restructuring of vegetation across the continent.

“The effect of Aboriginal landscape burning is a lot more subtle. It’s still important, but it’s subtle and it’s region-specific,” the researchers concluded. ^[33]

Teaching resources

Cool Australia

Educational website CoolAustralia.org has prepared lessons and supporting material like worksheets for primary and secondary students.

Lessons revolve around cool burning, fire management, benefits, climate change and the Fire Triangle model. A login is required to access the material.

Check out [primary student](#) and [secondary student](#) material.

Firesticks Alliance Indigenous Corporation

The [Firesticks Alliance Indigenous Corporation](#) is an Aboriginal-led network that aims to re-invigorate the use of cultural burning. It offers cultural learning pathways to fire and land management and is open for Aboriginal and non-Aboriginal people to look after country, share their experiences and collectively explore ways to achieve their goals.

Firesticks offers fire workshops and burning forums and demonstrations.

Koori Country Firesticks Aboriginal Corporation

The [Koori Country Firesticks Aboriginal Corporation](#) is a non-for-profit organisation that works to revive cultural burning as an alternative approach to hazard reduction burns. You can participate in workshops, demonstrations, camps or events.

Source: Cool burns: Key to Aboriginal fire management – Creative Spirits, retrieved from <https://www.creativespirits.info/aboriginalculture/land/aboriginal-fire-management>

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