



The Impact of Planned Fires in Parks and Reserves – Cape Liptrap Coastal Park

This Report provides a detailed look at proposed planned burns for Cape Liptrap Coastal Park between Waratah and Walkerville, highlighting the planned for Second Creek.

This Report also provides a framework to evaluate planned burns in other Parks and Reserves.



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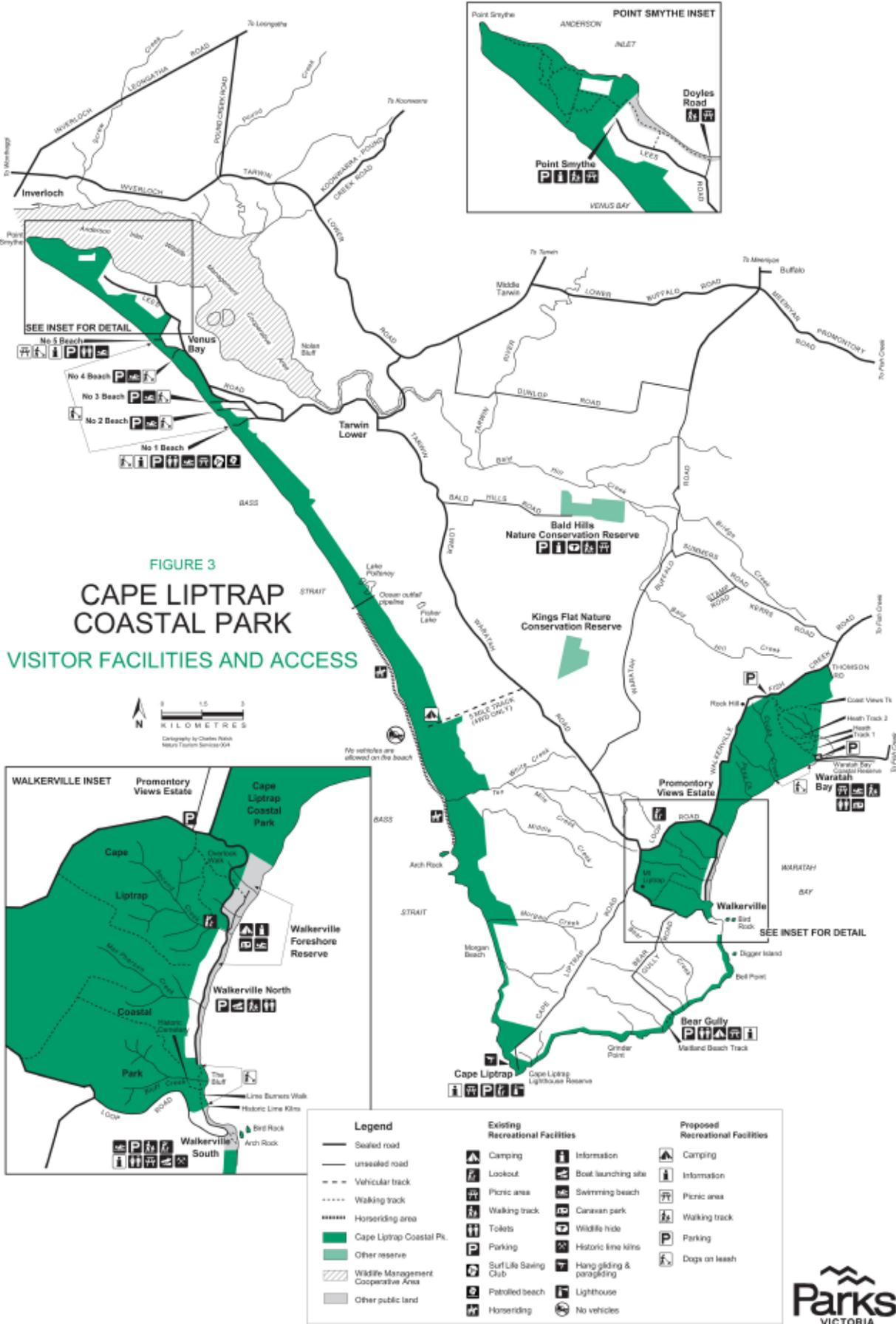
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OPERATIONS

Planned Burning Operations in accordance with the published Fire Operations Plan for the South Gippsland District are scheduled in this area between:

Date: January 31 – April 30 2013

Subject to suitable weather conditions.

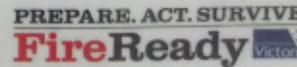


Planned Burning in our forests & parks is carried out to help protect life, property and the environment from the threat of bushfire and to maintain the health of ecosystems that depend on fire to survive.

For more information please call **136 186** or visit the website at:

<http://www.dse.vic.gov.au> (Please select Fire & Other Emergencies / Planned Burns)

Please Quote Burn Number: 2SMC0001 and 2SMC0007
and Burn Name: Walkerville - Prom Views South
Walkerville – Caravan Park



Above and below left:
Public notice; Planned Burn Operations Cape Liptrap Coastal Park



Introduction

With the frequency of management fires and bushfires increasing every year since 2000 for people who live, work or holiday in rural Victoria it can be a very difficult issue to consider.

Since 2009, especially since the Royal Commission of that year, there has been an increasing number of management fires described in a bewildering number of ways from ecological burns, to fuel reduction burns and asset protection burns. There has also been a significant increase in bushfires and the use of prolonged back burning, for up to two months after the original fire. This happened in Wilson's Promontory National Park in both 2005 and 2009.

The proposal to burn Cape Liptrap Coastal Park between Walkerville North and Walkerville South is one of these planned burns. This area contains the entire catchments of many small creeks that flow from the Cape Liptrap Ridge to the sea and has hidden wet ferny gullies which uniquely support Lyrebirds to the coast. This area is a small, isolated area of bushland, less than 1000 hectares, surrounded by farmland and bordered by the coast. In the upper catchments of its creeks are mostly older wet heathlands (up to 80 years of age) and Melaleuca Swamps. These store water soils made accessible by root systems and then aquifers feed water into springs and gullies - even during dry months like early 2013.

This vegetation is classified as 'Swamp Scrub', Is considered an endangered Ecological Vegetation Community under the Fauna and Flora Guarantee Act, with the potential threat identified as fire.

There are naturally questions about what these planned burns are designed to achieve and whether or not they are likely to achieve the goal of enhancing public safety.

There is then the question as to what the impact of these planned burns - should they proceed - on the birds and animals and plants Cape Liptrap Coastal Park was established to protect. What will be the affect on the creeks and springs that drain from this area and flow onto the rock pools with diverse marine life and fish?

To answer these questions we have talked with locals, especially those who know this 'patch', and sourced reports, papers and historical documents - conservative sources. These reports and other publications will be used to describe the area. The author has also had a more than 30 year association with this area. There has been additional intensive exploration at the site of the first proposed burn, Second Creek, which flows into the Walkerville Camping Ground, where the fire may be burned too or from.

As part of this project some 3000 photos have been taken of the landscape and plants which, apart from illustrating this report, are a permanent record of what this landscape was like prior to burning. Locals using wildlife cameras on adjacent land have already discovered a population of Long Nosed Bandicoots - an exciting find at any time. One cannot help but wonder, in addition to the Emu Wrens, Tiger Quolls, Dunnarts (marsupial mice), endangered King Quail, Powerful and Barking Owls (yet

to be confirmed) what other animals and birds await discovery or could be lost to fire, undiscovered.

There is also a negative economic impact from the fire - especially on tourism. Just hearing that a favourite area has been burned stops many people revisiting. Even when this is short term it still has a cost in accommodation not booked, shops and wineries not visited, petrol not bought and bait not purchased for fishing etc.

The benefit from these planned burns has been portrayed in terms of creating additional fire safety. However, if fire results in increased amounts of dead timber from plants and trees killed, more flammable plants like bracken etc .the opposite may occur.

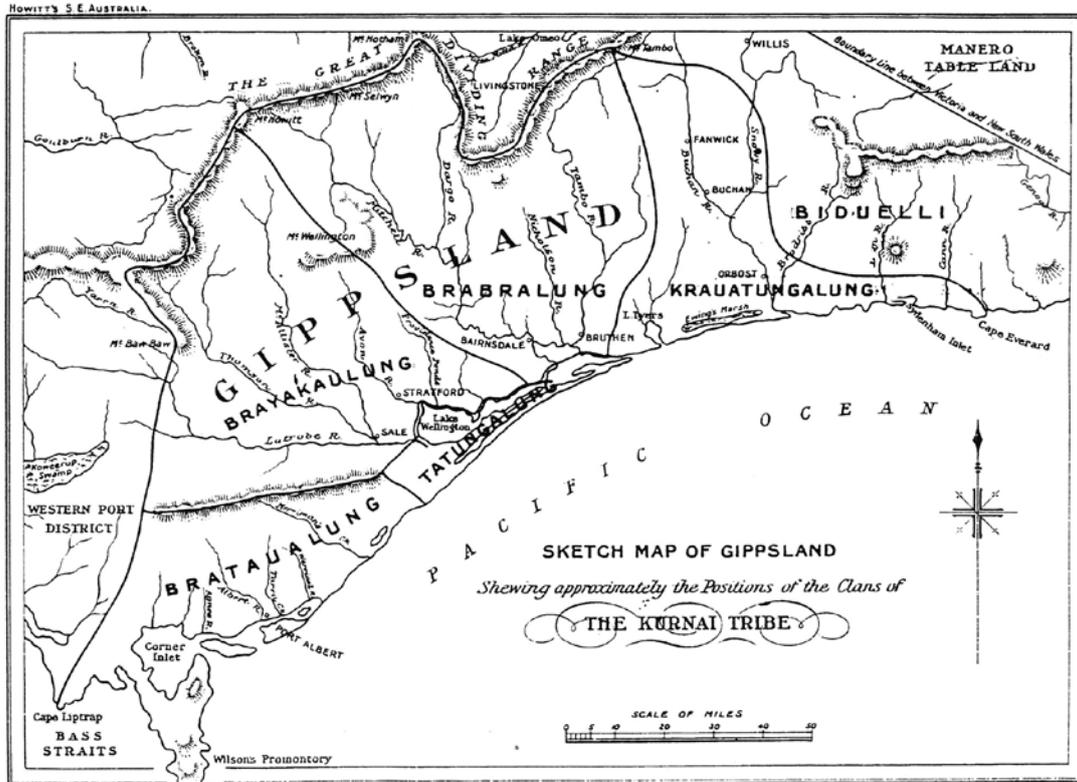
If the fire dries out the landscape and portions of wet heathlands and wet gullies are lost not only will it likely burn more easily but it will likely negatively affect streamflow, further drying unburnt bush downstream.

This bush has not been burned since 1927, yet termites and masses of fungi have rotted almost all fallen timber. If burned most plant species will regrow - but the future of the birds and animals that rely on this bush is far more uncertain and many could become locally extinct. Any of the remaining old stags and hollow trees relied on by many species of birds, mammals, reptiles and insects - if lost to fire will be lost forever.

Bob McDonald,
Naturalist. March 2013

1. Aboriginal Stories Regarding Fire

1.1 Gunnai (Kurnai) story of fire - by Wayne Thorpe¹



How the Boolum Baukun nearly stole the fire

The people were really tired of the tricks played by the Boolum Baukun. They were two mischievous spirits in one. That is why they were called Boolum – two Baukun - spirit. They were two females who had become one, and had a son, who is generally with them, is called Boolum Tut.

One time, the Gunnai were camped at Walrunjira, on the narrow strait which separates Lake Victoria from Lake Wellington. Plenty of fish could be caught there with the nets that the women made out of grass fibres.

Each day the people left the camp to go either hunting in the bush or go fishing in the lakes, and the towa - fire would be left unattended at the bunga - camp.

Each night everyone returned, and had a good feed on what they caught, and would sing and dance at their camp fires.

One night the women came back from the lakes earlier than usual. They all had a good catch of fish and wanted to have them cooked for when the men returned. The Boolum Baukun, who was lurking around, could smell the cooking fish and wanted some. They

¹ Wayne Thorpe, Gunnai Linguist. Lakes Entrance, March 2013.

approached the camp and asked the women for the fish. The women, knowing how mischievous they were, chased them away with their digging sticks.

The Boolum Baukun decided on revenge. The next day the camp was deserted once more. The Boolum Balkun sneaked up and scattered the fires, poured water on the smouldering ashes, and took the live coals.

At sunset the Gunnai came back to the camp and were shocked to see their fires out. Ngaroogal, the musk crow, tried to blow up the flames. Being unsuccessful he flew to Ngarang the swamp hawk, and asked his help in restoring the stolen fire.

Ngarang flew off, and before long saw the Boolum Baukun and their son, Boolum Tut, on the mountain of Yiruk Wilson's prom'. Ngarang swooped down and knocked some of the coals from the running spirits. The long grass began to blaze. Boolum Balkun stamped out the fire.

And while this was happening, Boolum Tut threw a cord of emu sinew into the sky where it stuck to the clouds. He pulled at it and it broke. He did the same with another cord made from the sinew of the kangaroo. It also broke. Then he threw up a cord made of the sinew of the red wallaby. It held real dedlee. Feeling that it was safe, he said to Boolum Balkun, 'You hold on round my neck and carry the fire', and then he began to climb up the rope.

Ngarang swooped again, and this time was able to knock the live coals from the Boolum Baukun climbing up the sinew. They realized defeat and continued climbing to the sky, where they have remained ever since. Tutbring, the red breasted robin, caught the blazing coals as they fell and held them to his chest, which made it red, as it still is, and carried the fire back to the waiting Gunnai people, who then made a big feast and celebrated.

Origin of Towa – Fire

There was a time when there was no Towa - fire for the Gunnai people. It was all kept by two nasty women, who would not give any of it away. After a while Bimba Towa, the fire tail finch, (photo right) decided that he would help get the Towa fire back.



His plan was to become friendly with the women; he even went with them on their journeys, and staying at their Bunga camp. In time, he completely gained their confidence, and he was allowed to handle the fire brands. This was the opportunity that he was waiting for.

When the moment was right, he grabbed the fire brands and hid them behind his back, and took off with them. He gave the fire brands to the Gunnai, saying - you must look after the fire.

*Bimba Towa means shoot out the fire. The red spot on his tail is where he carried the Towa fire.

1.2 Sandshoe and the Nharrandjeri story of Fire (in response to an article 'Moulding the Landscape with Fire' in online ABC Drum Opinion²)

As another suggested, interviews were done with elders who knew of some fire laws, results suggested different approaches around the continent.

In my opinion, clues to firestick history are embedded in dreamtime stories of when, the white crow, Nharrandjeri and his two wives, old elders, said the firestick was too dangerous for man to own and control, so they ran away with the firestick, hiding it and intending to drown it forever. New elders said the firestick was useful and valuable, they sent whan to save the firestick from being quenched, and he flew and plucked it from beneath the drowning hand of one of nharrandjeri's wives, then took it to the new elders for safe-keeping. The new firestick laws began then. The stories of the seven sisters are tied into the firestick histories, which may hold clues to the cycles and dates of some historical events?

I reckon Aussie kids are disadvantaged not knowing these mysterious old stories, because they are cryptic summaries of times past. When you figure the entire pantheon of actors, the stories share a lot about what ancestors experienced and what our country has been through. Valuable survival philosophies are interwoven throughout dreamtime stories.

Maybe scientific researchers could gain something in reading through the dreamtime stories too? It seems that Flannery promoted a theory that opposed dreamtime accounts of historical conditions, behaviours and events - he gambled his theory would prove to be correct.

But, Flannery's theories are beginning to unravel as other researchers tie up loose ends and answer important outstanding questions. In his defence, Flannery did not have access to a dreamtime interpreter to reveal the meaning and context of dreamtime information. Not that he would of regarded it as credible, but he lacked exposure to this indigenous body of research material. Only gaidaichai men knew the entire dreamtime; most people just learn their own part in detail. There are few are alive now to share these wisdoms. Fortunately much has been written down.

So I'm very happy to see science support a truth that I personally preferred, because this truth meshes with our dreamtime. I have felt sad whilst Flannery's theories have prevailed because his theory made me question the credibility of our dreamtime laws. So thanks Bob...it's a relief to see this getting sorted out.

2 <http://www.abc.net.au/unleashed/42088.html>

2. The Role of Aboriginal burning in the Australian Landscape

2.1 From 'Firestick farming In Victorian Forests' (In Press) By Ron Hateley³

'It may perhaps be doubted whether any section of the human race has exercised a greater influence on the physical condition of any large portion of the globe than the wandering savages of Australia'. This was Edward Micklethwaite Curr's view of his world in 1883, when he published his reminiscences at the age of 63, reflecting on his long association with Victoria which started 42 years earlier. He spent his life managing squatters' runs in northern and central Victoria near Heathcote and Tongala, on behalf of his father, the squatter and politician Edward Curr. He was peripatetic, and keenly observed the natural environment and its aboriginal inhabitants during his travels through northern Victoria. The bold statement he made in *Recollections of Squatting in Victoria* about the land management activities of aboriginal people has been used by groups intent on restoring what they call 'aboriginal burning practices' in forests. It is understandable that Curr's opinions (or speculations) have had such an influence because there were no contemporary challenges to his views, and social historians with little ecological knowledge took them up and propagated them through generations of students of Australian history.

Curr's assertion that aboriginals burned Victorian forests within, on average, every five years is obviously wrong, but it is perhaps too late to correct the myth he created.

Generations of history students have been taught about fire-stick farming in forests because their teachers only had access to questionable material, and that is no fault of theirs. It is no surprise that pressure groups demand that Victorian politicians push for frequent burning of forests to protect assets, based on the idea that aboriginals burned frequently.

It is interesting that most of the areas in which aboriginal agricultural practices using fire were perhaps employed were the grasslands and the open woodlands that were cleared many decades ago for agricultural purposes, with the possible exception of Red Gum woodlands with widely spaced trees in country suitable for production of sheep and cattle...

...It is a shame that Beth Gott's excellent work on bush foods and aboriginal burning in open woodlands and grassy plains in south-eastern Australia has been misappropriated by those campaigning for frequent burning of forests. Her paper presented at the Australian Bushfire Conference at Albury in 1999 is widely quoted,

3 http://webcache.googleusercontent.com/search?q=cache:wVeNwPxL2C4J:http://www.triplehelix.com.au/documents/ChapterfromforthcomingbookbyRonHateley_001.pdf%2BIndigenous+burning+in+Victoria+historical+record&oe=utf-8&rls=org.mozilla%3Aen-GB%3Aofficial&client=firefox-a&hl=en&ct=clnk

but it extrapolates observations from other States and other vegetation communities and applies them to Victorian dry sclerophyll forests which she was not actually talking about. She was probably not trying to be funny when she described Edward Curr as ‘a very perceptive pioneer settler’, but his claims about aboriginal burning of Victoria’s forests are so silly as to be almost comical. It’s not funny at all. It’s very serious as policy advocating frequent burning of forests appears to be founded on this myth that aborigines were firestick farmers in Victorian forests. They were not.’

2.2 Indigenous burn control a myth: study⁴

By Michael Vincent

New research puts paid to the belief that Aboriginal people used fire on a large scale to control vegetation across Australia. The research team, who published their findings in the latest edition of the *Journal Quaternary Science Reviews*, examined charcoal records dating back 70,000 years at 223 sites across Australasia.

Lead researcher Dr Scott Mooney, from the University of New South Wales, says the research shows Aborigines were using fire at a local scale, but not with the major impact that some people have previously thought.

He says the research suggests people have “imagined the past”. “There is a lot of historic information that [Aboriginal Australians] used fire. People ran with that idea and imagined that [they] were using fire very frequently and very extensively in the landscape,” Dr Mooney said.

“I personally think they were probably using fire much more selectively around their campsites and where it worked for resources.”

Dr Mooney says fire activity “definitely” changed when European colonisation occurred around 200 years ago.

“The fire sticks are definitely in the colonisers’ hands, not the original inhabitants,” he said.

According to Dr Mooney, the idea that Aboriginal people were burning off large swathes of the continent may be based on observations made by early explorers and settlers.

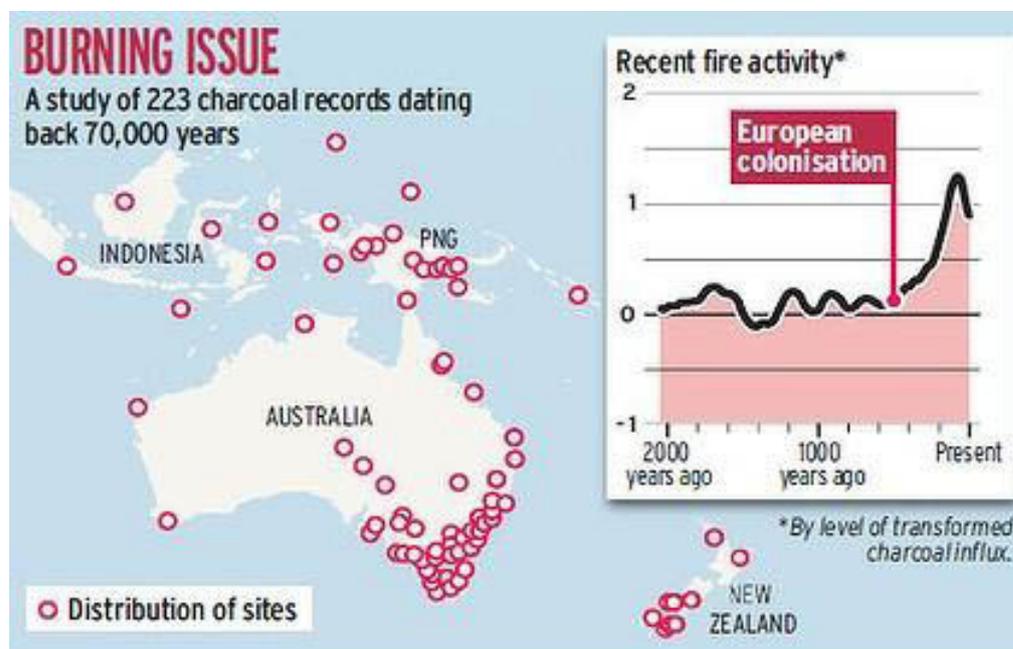
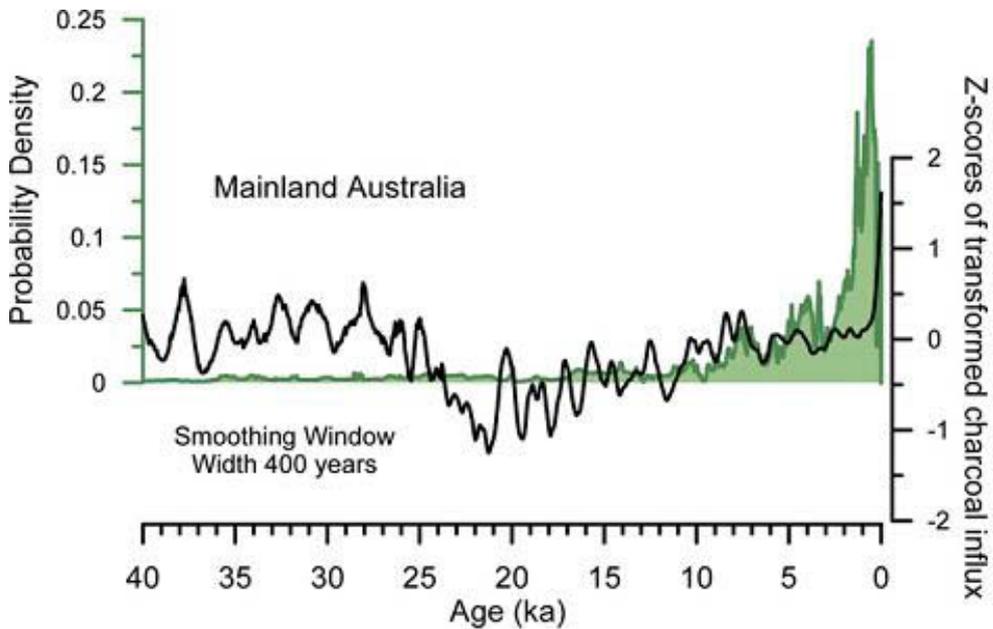
“We took one historic observation, which could have been biased or could have been just a small snapshot in time, and we imagined that back through time for 40,000 or 50,000 years,” he said.

Dr Mooney does not believe the research will change current land management practices in Australia, such as hazard reduction burns, but he adds we need to rid ourselves of the notion that we can control fire.

4 <http://www.abc.net.au/news/2010-12-06/indigenous-burn-control-a-myth-study/2364346>

“After big fires we often get commentators suggesting that we reintroduce some Aboriginal-style fire management and it suggests that we know something about the past,” he said.

“This work shows that fire is much more dynamic in the landscape when it is responding to climate rather than people.”



MAP: [University of New South Wales 2052](#)

3. The Establishment of Cape Liptrap Coastal Park



This area was not cleared because it was too steep and had poor sandy soils. It was mostly crown land and came to the attention of the Land Conservation Council through its Review process in the late 1970's. (Insert ariel pics here)



Land Conservation Council South Gippsland Area District 2 Final Recommendations 1982⁵

Recommendation Coastal Park

Venus Bay - Waratah Bay Coastal Park

'In recommending a coastal park along the study area's western coastline, Council has recognised the recreational use to which this coast is subject and its special values for landscape, nature conservation, and education.....'

At Waratah Bay Township, the hinterland changes from flat agricultural land to an extensive belt of public land with timbered cliffs and a narrow beach. Undulating heaths often cover the ridges above the forested cliffs.

This is one of the most appealing sections of the Victorian coastline. The heaths and forests on the Liptrap ridge and on the steep slopes above the shoreline comprise the only substantial area of native vegetation on Waratah Bay and complement the distant natural landscape of Wilson's Promontory.

This section of the park is floristically rich, containing at least 270 species of flowering plants and ferns, including 27 orchids. The heaths are noteworthy because they occur on Palaeozoic sediments and are also significant because of the variety and abundance of mammals and birds associated with the area.



"Noteworthy species include the white-footed dunnart, swamp antechinus, and the powerful owl..."

Among other species, the tiger quoll has been reported on this section of the coast.

History

5 <http://www.veac.vic.gov.au/reports/366-South-Gippsland-Study-Area-District-2-LCC-.pdf>

The two Walkerville settlements are associated with the lime burning industry that operated there from 1878 to the 1920s. Relics of this industry remain in the park, notably the kilns near Walkerville South and the tramway tracks up the gullies that were once used for hauling firewood to the kilns.

Cape Liptrap (photo right) is fringed with steep rugged cliffs. The Palaeozoic rocks exposed in the cliffs and the adjoining shore platform form one of the most interesting and complex geological sequences in the State. The strata range from metamorphic rocks originating during the Cambrian period to recent sand deposits. Cambrian greenstones in Victoria are often associated with base metal occurrence.



West of Cape Liptrap is Venus Bay, which has further cliffs of Palaeozoic rock and then a stretch of attractive cliffs of Tertiary dune limestone with rock stacks (including Arch Rock) and shore platforms. Beyond Ten Mile Creek the coast changes to a broad beach and backshore dunes covered with marram grass, extending for 23 km to Point Smythe. Access to this section of the park is difficult, with exception of the vicinity of Point Smythe and the two Venus Bay estates.

This stretch of coastline is important for surfing, fishing, geological education, and gemstone fossicking near Cape Liptrap. It also contains many relics of Aboriginal occupation.

The broad intact hinterland of native vegetation (apart from introduced marram grass on the dunes) is important for fauna conservation. Among other species, the tiger quoll has been reported on this section of the coast. The vegetation also forms a corridor for migratory birds.

Recommendation

A3 Venus Bay-Waratah Bay Coastal Park

That the area of 3900 ha shown on the map adjacent to the coast, including offshore rock stacks, be used to:

(a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments

(b) conserve and protect natural ecosystems and features listed below:

- Diverse flora and fauna associated with the heaths and woodlands throughout the park
- Historic relics associated with the lime burning industry at Walkerville
- Rugged cliffs and shore platforms between Walkerville South and Morgan Beach, which provide excellent exposures of a wide range of geological features (accessibility

of these outcrops makes this area one of the most valuable field teaching sites for the study of various aspects of geology)

- The area presented to the Crown by the Boag family and known as the Janet Boag Reserve, which should remain undeveloped
- Fauna associated with the beach and dune complex in Venus Bay
- Archaeological relics associated with Aboriginal occupation of the Venus Bay area

...(c) the management authority zone the park to accommodate the legal recreational activities traditionally associated with the area, such as surfing, fishing, gemstone collecting, camping, walking, and horse-riding.

The Land Conservation Council recognised, identified and accommodated the economic value of the Cape Liptrap Coastal Park from the outset to South Gippsland and Victoria.

3.1 Fuel Reduction Burning

The Synopsis of the Knowledge used in Prescribed Burning in Victoria references Western Australian eucalypts, Douglas Fire forests and introduced Slash Pine plantations in Queensland. The fuel load and fire comparisons were also based on experiments conducted in Western Australian Jarrah forests⁶.

The vegetation and especially the sheltered and damp aspect of the Walkerville section (photo right) of the Cape Liptrap Coastal Park has not been studied as part of any fuel reduction burning research. Current State guidelines, given the research they are based on, do not provide a scientific case for fuel reduction burning or predicting the outcome. That is whether or not a fire would increase or decrease the fuel load or flammability of the Second Creek catchment.



3.2 More recent Management and Fire

CAPE LIPTRAP COASTAL PARK MANAGEMENT PLAN FEBRUARY 2003⁷

- An ecological fire management plan for the park will be developed

There has been an 'Ecological Burn' in the wet heathland in the catchment of Second Creek, Walkerville, a decade or so ago – though details its purpose and result are not readily available. The affect of this burn and more especially the fire breaks associated with it has opened up this heathland to foxes in particular. It has also dried out the

6 http://www.dse.vic.gov.au/_data/assets/pdf_file/0018/101169/Synopsis_p1.pdf

7 http://parkweb.vic.gov.au/_data/assets/pdf_file/0016/313252/Cape-Liptrap-Coastal-Park-Management-Plan.pdf

catchment of Second Creek and slowed the development of a wet forest fern glade.

4. Proposed Walkerville Second Creek burn for March 2013

4.1 Site description

Second Creek catchment starts at the boundary of the Walkerville Estate and the main Tarwin road that follows the Cape Liptrap Ridgeline. A dense wet heath marks the ridgeline both in front of the Walkerville Estate and from the upper catchment of Second Creek, falling from the Tarwin Road as it turns to the south.

Historically this area was forested and provided the timber for both fuel and construction of the lime kilns and associated infrastructure from the 1880's. Heavy logging and a large fire in 1927⁸ left remnant original trees in only the steepest and most inaccessible gullies. Over the last 80-90 years these wet forest have re-established in many gullies and now support extensive glades of Tree Ferns and a population of Lyrebirds. Photos: Middle and bottom.

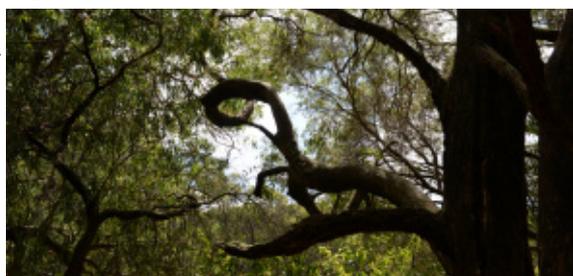
Left unburned it is likely that all the gullies falling off the Cape Liptrap Ridge and that section of this coastal park between Waratah and Walkerville South will, over time, revert to increasingly less flammable wet forest.

The wet heath (photo top right) is on old sand dunes likely from a time of 60-80 metres higher sea level some 12,000 years ago, flooding a vast plain dotted with hills, now islands. The rock platform that characterises the coast from Waratah Township to Cape Liptrap is likely laid down in the sea – but more than 600 million years ago.

The sand dunes formed over that platform and any formations that developed on it to the Cape Liptrap Ridgeline.

One of the things that make this part of Cape Liptrap National Park unique is that

8 Assessment of Ecological Vegetation Classes, condition and significance of vegetation, threats to natural values and recommended management Dr W M Ellis 18 November 2009



there are many small intact bush catchments from Waratah to Walkerville south.

Though on sand and heavily logged from more than a century ago, many of these catchments still contain large trees in their gullies (photos page 12). There is stand of ancient trees, Messmate and Peppermint Gum, in the forest across the road from and to the south of Walkerville Estate which contains a few dozen trees older than 100 years.

The roots of this forest penetrate deep into the sand and, along with the roots of the wet heaths and other vegetation, allow water tables and aquifers to develop. The springs from these provide the flow for Second Creek.

They also provide the water for the fern glades, well developed in other gullies nearby and developing in the Second Creek gully. This wet forest has also developed at the 'back' of Walkerville North Camping Ground. Here these springs fall onto its flats before the sea and support Soft and Rough Tree Ferns, King Ferns and fish bone water fern (photos right). From here they flow through the camping ground and come out on the beach and Waratah Bay. One of the key features of the Second Creek catchment is the termites and fungi that quickly rot any dead fallen timber.

Immediately below Walkerville Estate there is a very steep sandy slope that leads to the beach. Even here there is very little leaf litter and what dead timber there is is rotting. The Springs from this 'perched' wet heathland Melaleuca Swamp flow across the sand along the beach and onto the rock pools – even in dry times. Photos right and below.

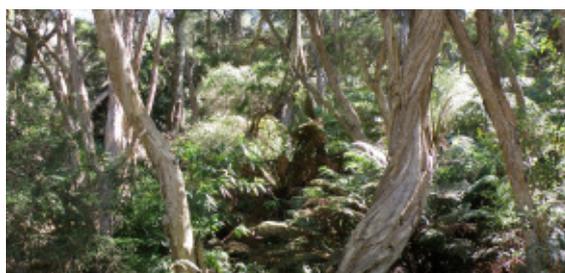


4.2 Aspect and Fire

The Cape Liptrap ridgeline runs north south. In regard to fire, the catchments of Second Creek and adjacent bush catchments are protected from the hot summer northerlies. They are wetter and cooler than other catchments exposed to these winds and at Walkerville South offer additional protection from often cool westerly winds, explaining their popularity for both visitors and recreational fishing.

4.3 Potential sources of fire

Fire runs slowly downhill which offers protection to the Second Creek Catchment both from the road that runs past the Walkerville Estate and turns south along the Cape Liptrap Ridgeline and along its south eastern boundary from



any fires that start in the Walkerville Estate. The Walkerville North Camping Ground is mostly backed by wet forest (photos page 13) and even rainforest species. (See Ellis above). It also has a total ban on campsite fires. The only fire allowed is in a built-in fireplace in a constructed Rotunda for winter fires only. Additionally it has many easily accessible and unlocked fire hoses along its length.

4.4 Resilience to Lightning Strikes

Over the last 80 years lightning has started many fires on nearby Wilson's Promontory. The combination of aspect and the nature of the vegetation has seen no lightning strikes start fires between Waratah Township and Walkerville south – indeed anywhere in the Cape Liptrap Coastal Park.

4.5 Factors to be considered to determine whether burning will make the vegetation of Second Creek and similar catchments more or less flammable

1. The impact of fire the rate a given patch of bush can 'rot' solid timber and leaf litter. That is the rate at which termites, (photo top right) other insects and fungi (photo bottom right) break down solid timber and make it less flammable. Fire both impedes the ability of the bush to breakdown fuel and often increases the fuel load – especially solid timber.



2. Increased flammability of plants after fire – Bracken and other species.

According to Kevin Tolhurst – 'Some evidence exists to show that the structure and composition of forest understoreys in south-eastern Australia have changed in the past century due to frequent, moderate- to high intensity anthropogenic fires. Chesterfield (1984) and Wakefield (1970) both give accounts of fire-resistant-increasers (Purdie 1977a; —1977b) dominating areas burnt frequently and hence totally changing the appearance of the forest understorey from predominantly herbaceous to predominantly shrubby. These forest understoreys are typically less diverse, dense and highly flammable, being dominated by leguminous shrubs, notably *Daviesia* spp., *Acacia* spp., *Pultenaea* spp., Austral Bracken (*Pteridium esculentum* (G.Forster) Cockayne) and Forest Wire-grass (*Tetrarrhena juncea* R.Br.). Repeated low-intensity prescribed burning⁹ '.

3. Wind

Opening up bush with fire can also increase the speed of the wind through it, the drying affect and the heat a fire can generate.

⁹ From Ecological effects of repeated low-intensity fire on the understorey in south-eastern Australia of a mixed eucalypt foothill forest. DSE Research Report No. 58, Kevin G. Tolhurst Forest Science Centre, University of Melbourne, Creswick December 2003

4. Erosion

South Gippsland is from time to time subjected to torrential rain with falls of 8 inches or more over a 24 hour period. Such rainfall after fire can cause catastrophic erosion as it did in Wilson's Promontory National Park after the 2009 fires. The Cape Liptrap Coastal Park consists of vegetated older coastal sand dunes and is particularly vulnerable to erosion after fire.

4.6 Potential Drying out of Bushland from Proposed Planned Fire

The inevitable effect of fire is the drying out of a given landscape through the removal of shading vegetation its opening up to drying winds. The scale of this effect varies with the nature of the vegetation and the severity of the fire.

Vegetation, before it was burned, delivers water through the warmer months via dew forming on its leaves and fronds and falling to the ground especially at dawn. Forest and heathlands, when they are transpiring, cool the air and at various times this leads to the formation of mist and even clouds. Again leaves and stems collect those condensing water droplets and deliver that water to the soil.

Once the water falls to the ground it penetrates the soils along root lines travelling the next non penetrable layer, forming water tables and maintaining aquifers. These aquifers emerge in the catchments of the small creeks that flow through the bushland between Waratah Bay and Walkerville South.

This bush grows on old sand dunes that fall from the Cape Liptrap Ridge. Being sand it has a greater capacity to store water than other geological formations. This water is stored and even in recent dry times it can be seen flowing over the impenetrable rock base onto the beach. It also emerges as springs feeding the small creeks, keeping them flowing between rain events.

The wet coastal vegetation and tree ferns associated with it are growing along the flats where they occur immediately behind the beach and are fed by water from these springs and aquifers. The best examples are along the Walkerville coast fed by some of the aquifers draining vegetation planned to be burned.

Fire will inevitably reduce the vegetation's capacity to deliver water to these aquifers and the flow from them. This drying effect will depend on how extensive the fire is relative to the aquifers/stream catchments

If left unburned the vegetation on the southeast flank of the Cape Liptrap Ridge will likely continue to grow its root mass and its capacity to store water. Tree ferns and other less flammable wet forest plants will continue to increase in size and extent, moving further up through the gullies.

5. Ecological Impacts of Proposed Fire Management for Cape Liptrap Coastal Park

5.1 Fire, Streams and Marine Life

The diverse rockpool fauna of the tidal reefs of Walkerville (photo right) owes much of its productivity and diversity to the intact nature of the bushland catchments that feed onto it. The streams and springs from these catchments not only deliver nutrient but a wide variety of organic food. Plant material, insects and other invertebrate life – even large animals and birds when flow are high - are all food for this coasts marine life including fish of many species and life stages.



Following fires, small streams in particular are often loaded with dead plant material, robbing their oxygen and effectively polluting their water – impacting the coastal reefs they flow over for a time.

5.2 Fire breaks – exposing small mammals and birds to increased predation

The creation of fire breaks through the wet and dry heathlands in the upper catchments of small creeks between Walkerville North and Walkerville South has exposed small mammals and birds to predation. These fire breaks dissect thick wet and dry heath land vegetation and allow access for foxes and feral cats from the fire break, when neither animal can normally easily penetrate this sort of bush. Photos: Right middle and bottom.



The fire breaks themselves expose small mammals and birds to predation as they have to break cover and cross them. They also allow Fallow and Hog Deer (photo: bottom) to penetrate deep into the park more easily as well as providing a point of entry for rabbits that target ground orchid bulbs and a place for weeds to grow.



5.3 Significant birds and animals that could be threatened by Planned Fire between Waratah Township and Walkerville South of Cape Liptrap National Park

Superb Lyrebird - *Menura novaehollandiae* (Source 1 – see below)
Fire is a threat to roosting trees and the extent of wet forest Lyrebirds in the isolated population require.



Powerful Owl – *Ninox strenua*
(Source 1 – see below)

Fire is a threat to the roosting trees with old hollow bearing nesting trees this species requires.

King Quail - *Coturnix chinensis* (Source 1 – see below)

Fire is a threat to this species by reducing cover for nesting, adults and particularly young and exposing them to native and introduced predators.



Long Nosed Bandicoot – *Perameles nasuta* (photo above: Source wildlife camera, Walkerville North Camping Ground) very recently discovered in this part of Cape Liptrap Coastal Park and are vulnerable to fire and predation following fire.

Swamp Rat - *Rattus lutreolus* (Source 2 – see below)

Bush Rat - *Rattus fuscipes* (Source 2 – see below)

Native Swamp Rats and Bush Rats are vulnerable to fire and increased predation following fire.

Swamp Antechinus - *Antechinus minimus* (Source 1 – see below)

Agile Antechinus - *Antechinus agilis* (Source 2 – see below)

White-footed Dunnart - *Sminthopsis leucopus* (Source 1 – see below)

Marsupial Mice are vulnerable to fire and increased predation following fire.

Tiger Quoll – *Dasyurus malucatus* -Endangered (Source 1 – see below)

Tiger Quolls can escape fire, though a Tiger Quoll that fled onto a road was killed recently during a fuel reduction burn at Providence Ponds, East Gippsland.

Ringtailed Possum - *Pseudocheirus peregrinus* (Source 1 – see below)

Ringtail possums use Melaleuca and other twiggy vegetation types to build their nesting drey in and are vulnerable to fire. (Pic. Ringtail drey on Walkerville north Road above camping ground)

Eastern Pigmy Possum - *Cercartetus nanus* (Source 1 – see below)

These small possums are vulnerable to fire and predation with loss of cover after fire.

Sugar Glider – *Petaurus beviceps* (Source 2 – see below)

Sugar gliders are vulnerable to fire and to increased predation following loss of habitat.

Koala - *Phascolarctos cinereus*

Koalas move through and around the Cape Liptrap Coastal Park in search of their preferred food trees and are vulnerable to fire – especially in small eucalypts that characterise the Cape Liptrap Coastal Park. (See Martin on Koala management below)

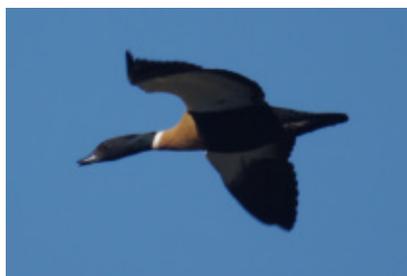
Swamp Wallaby – *Wallabia bicolor* (Source 2 – see below) Pic

Eastern Grey Kangaroo – *Macropus giganteus* (Source 2 – see below)

Mountain Ducks - *Tadorna tadornoides* (also known as Chestnut-breasted Shelduck and Sheldrake). (R. Bugg & R.J.McDonald sightings 2010-2012)

Mountain Ducks nest in old trees and stags that remain in gullies between Walkerville North and Walkerville South that could be lost to fire.

Top right photo; *Mountain duck*.



Southern Emu Wren - *Stipiturus malachurus*

Emu Wrens seem to prefer access to old heathland and are now only seen in the southern end of the park on the ridge line accessed by the most southerly firebreak from the top of Walkerville South road boundary. With weak flight and a preference for habitat that is increasingly rare Southern Emu Wrens are vulnerable to fire.

Bottom right photo; *Emu Wren*.



Sources

1. LCC District South Gippsland District 2 Final Recommendations
2. Mammal Survey Group of Victoria Cape Liptrap Region 1986 -2010

6. Published Fire Management Recommendations for Wildlife

6.1 Koalas

There are koalas in and around the Waratah to Walkerville section of the Cape Liptrap Coastal Park that feed on various species of Eucalypts and will travel considerable distances in search of their favoured food trees such as Manna Gum. A Cinnamon Fungus (*Phytophthora*) outbreak, likely from



unwashed heavy machinery, in the 1970s lead to the death of a number of trees now stags along the Walkerville Road. This is sadly too often attributed to Koalas.

6.2 Roger Martin on Koalas and Fire¹⁰ (an excerpt from Draft Management Plan for the Conservation of Koalas)

The mixed *Eucalyptus* forests and woodlands of Victoria, which contain the most abundant koala populations in Australia, are among the most fire prone regions on Earth. While fire, resulting from lightning strikes or the activities of Aborigines, has always been a feature of these forests, fire frequency has increased markedly since European settlement. Koalas, because they have no way of avoiding a fire, are a particularly fire sensitive species and this increase in fire frequency has had a significant impact on their distribution and abundance in Victoria; Martin (1983) reported that they became locally extinct in some coastal areas of South Gippsland in the early 1900's as a result of frequent burning by local graziers and Lewis (1952) suggested that bushfires were the principal factor in the statewide decline of the koala in the 1920's.

iii) In coastal areas, where the principal koala food species present is the stunted coastal form of Manna Gum *E. v. prioriana*, control burns are likely to cause significant scorching of the canopy, particularly if the understory is dense. Substantial mortality of koalas is likely under these circumstances and animals should be captured and translocated before burns are conducted.

10 Draft Management Plan for the Conservation of Koalas (*Phascolarctos cinereus*) in Victoria, 1989, Roger Martin. Arthur Rhyla Institute for Environmental Research, Technical Report No.99 pp 50-51

6.3 Professor Michael Clarke on the Impact of Burning on Fauna¹¹

Excerpt from transcript From Science Show interview between Robin Williams and Professor Michael Clarke broadcast Saturday 22 December 2012 12.15 pm

Michael Clarke: I had been studying a population of crescent honeyeaters which lived at Wilson's Promontory. I had colour-marked individuals, and a prescribed burn, escaped, and I returned to a study site where all the animals were now gone, and I felt a profound grief actually. I could not recognise a site I had spent seven years and had mapped on a 20-metre grid and I didn't know where I was standing on that grid, and it was silent except for a few tree creepers calling.

Robyn Williams: Michael Clarke. No, not that one. He is Professor of Zoology at Latrobe University, and he's been studying what happens to animals during the fires we shall get in a long hot Australian summer. Did you expect the fire to reach that zone?

Michael Clarke: Yes, I did. There was extraordinary weather and the fire took off and was most unexpected, but the conditions were horrific, and what was meant to be about a 40-hectare burn burnt about 6,000. Really regrettable, a really tough situation, but as a biologist it made me then question why were we prescribe burning, what do we know about fire, or what the impact of fire on fauna?

Robyn Williams: It's quite surprising sometimes to see out of that kind of holocaust animals emerging as if somehow they have survived.

Michael Clarke: Absolute surprises. So, to watch crimson rosellas flocking to a burnt piece of forest, grab a messmate seed cap and throw their heads back and scoff the seeds like they were taking shots. They were completely onto this food source that had been made available via the fire.

Robyn Williams: How do they know?

Michael Clarke: That's a really good question. It's a rare event, it's fairly catastrophic and those who survive are obviously those with certain attributes. I don't know, to be perfectly frank, but it is astonishing watching what will recover. How do the tree creepers, who are now in the forest, a few weeks after the fire, eating cooked insects in amongst the bark fissures know that this is okay? Other birds are decimated.

11 <http://www.abc.net.au/radionational/programs/scienceshow/the-impact-of-fire-on-fauna/4441224>

7. Making Botany and Fire Management Accountable

Since the mid 1970's there has been pressure from botanists to burn heathlands and especially coastal tea-tree, kunzea etc. The basis of this push, increasingly successful, has been to 'increase bio-diversity'. When asked what happened before Europeans botanists almost invariably cite Aboriginal use of fire – though almost never with local references in South Gippsland or Tasmania. The assumption they often make is that increasing biodiversity increases the food available for Aboriginal people. Botanists are rarely familiar with mammals, let alone reptiles, amphibians, insects, birds, marine or freshwater aquatic systems. Burning for 'increased biodiversity' or food availability for Aboriginal peoples in the past is too often a 'call' they are not qualified to make.

The fact that many species of plants regenerate after fire means they can survive fire – not necessarily that they need fire to survive. In modern Australia where there have been more plants, birds and animals introduced deliberately than any other continent. Just opening up the bush by burning it – especially in smaller areas – can make these areas vulnerable invasion by weeds, feral animals and birds. Additionally such fire often subjects the remaining fauna to prolonged predation from native and feral predators.

Similarly the creation of fire breaks, often containing many attractive flowering species, creates corridors and access for predators that can more easily access openings into bush that otherwise has dense more impenetrable natural edges.

Botanical survey results are also too often quite misleading. The number of species of plants detected by botanists is most often in spot surveys for days out of one or two years – rarely over long periods of time. Depending on the history of the site, the impact of feral animals and past fires can determine just what plants they actually encounter – not those that live also live there 'invisibly' out of season, as tiny plants and as seed and bulbs etc. Even when such surveys indicate biodiversity of plants it does not in anyway indicate the structural diversity that plants and animals require to survive, let alone thrive.

A seedling eucalypt compares in no way to a tree of hundreds of year of age. The latter has hollows, fissures and bark that support a wide variety of life. In fact many species of birds, frogs, animals, insects, and other invertebrates are totally reliant on bark and these hollows for their very survival.

After bush has been burned rain delivers loads of burned, scorched and unburned plant material to creeks, streams, swamps and estuaries – often killing much of the life in them as the oxygen is robbed.

Modern botanical surveys do not consider the structure or age of vegetation and when fire is recommended – even lobbied for – and no consideration as to its affects on animals is too common – as are naive claims as to the supposed benefits of 'ecological burns'.

Older vegetation has greater root masses to store water in ground it opens up. It also has a greater leaf area to form dew at dawn on even hot rainless, summer days and transpire moisture cooling the air taking further moisture from warm moist air passing through it. Vegetation in catchments has a significant impact of the streams and rivers that flow from them, on domestic and agricultural water supplies, and on the estuaries and coastal marine life they feed nutrients and organic food to.

Botanists should never be allowed to determine fire management alone. Even broadening the science to include other disciplines may be inadequate. Every forest and patch of bush has a history that can be, in part, scientifically determined – its environmental history. That history can only be adequately determined by working with local communities within and adjacent to the catchments in question and referencing others familiar with these places.

The available streamflow and rainfall data over the history of a given catchment should also be evaluated and monitored. Most often after fire the capacity of the catchment to absorb rain is significantly reduced – especially immediately after fire. This can lead to catastrophic erosion following flooding events (Wilson's Promontory National Park post ecological/fuel reduction burns in 2009 for example). In dry times a reduced catchment capacity to store water in soils and aquifers can significantly reduce the stream flow period and volume after rain.

The Australian environment is now composed of many thousands of often isolated patches of original vegetation of many different ages and often mixed with or dominated by introduced species. There no relationship between the botany of many of these sites and the indigenous mammals, birds, reptiles and frogs they provide refuge and habitat for necessarily. Western barred bandicoots thrive around fenced off farm dams composed entirely of introduced species and feed on indigenous cockchafer beetles that also similarly thrive in environment of introduced pasture species – much to farmers chagrin.

Orchids and many other plants have tiny seeds that can survive even after bushland is cleared for many years, move on the wind, remain stored in old ant colonies etc.

Mammals, birds, reptiles and amphibians exist in miniscule numbers in comparison and are far more vulnerable to local, regional and even total extinction.

With every significant fire more hollows and hollow trees are lost. All the while the remaining bush is getting younger. Eucalypts and other hollow forming tree forming species such as Moonah and Kunzea, etc. must be more than one hundred years of age to form hollows. Under current management less and less bush is allowed to age.

If current practices of burning the bush as recommended by too many botanists, foresters, land managers, even war historians, radio announcers, journalists and other public figures cannot be continued much longer. Dozens of bird and mammal species dependent of these older trees for their very survival may become extinct.

All photos by Lisa Roberts and Bob McDonald,
Cape Liptrap Coastal Park, March 2013

Except:
Emu Wren, Mountain Duck, Lure Bird, Firetail Finch and Koala Photos by Rohan Bugg and
Bob McDonald

Design and layout by Lisa Roberts
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A full colour booklet on Examining and dealing with the impact of Planned Fires in small Parks and Reserves using Cape Liptrap Coastal Park as an example will be published in the near future. This upcoming booklet will include further information and photographs relating to birds, plants and animals provide web access to reference, further information.

If you are interested in purchasing a copy you can email:
eclectic.parrot@bigpond.com

For any comments on letters for proposed burns in South Gippsland contact:
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Pike, Manager, Land & Fire, South Gippsland District, (Geoff.Pike@dse.vic.gov.au) and
Gerard Delaney, RIC, South Gippsland Marine Parks & Reserves, (Gerard.Delaney@parks.vic.gov.au)

Code of Practice for Fire Management on Public Land

From Code of Practice Chapter 3-4
3.2 Planning for Burning Operations

187 Each prescribed burn must be the subject of an approved Burn Plan, prepared in accordance with Appendix B of this Code of Practice.

Appendix B of this Code of Practice.

189 The Department will issue additional or updated directions, standards, prescriptions or guidelines for the planning and execution of prescribed burning operations.

191 Where the Department has determined that on-going monitoring of the outcomes of a particular burn will be undertaken (section 3.6), an appropriate pre- and post-burn survey and survey completion date must be specified in the Burn Plan*.

Appendix B: Prescribed Burn Plans Referring to section 3.2
Burn Plans

514 • any ecological issues including the known or likely presence of very rare, threatened* or fire sensitive species or communities in or near the area to be burned; particular habitats needing protection; sensitive life stages of species; and any known local events such as heavy budding, flowering or seeding of trees or other plants which may influence the timing of the burn.