



AN INTRODUCTION TO

Heathlands in East Gippsland

Ground Parrots on the Marlo Plains



A project by



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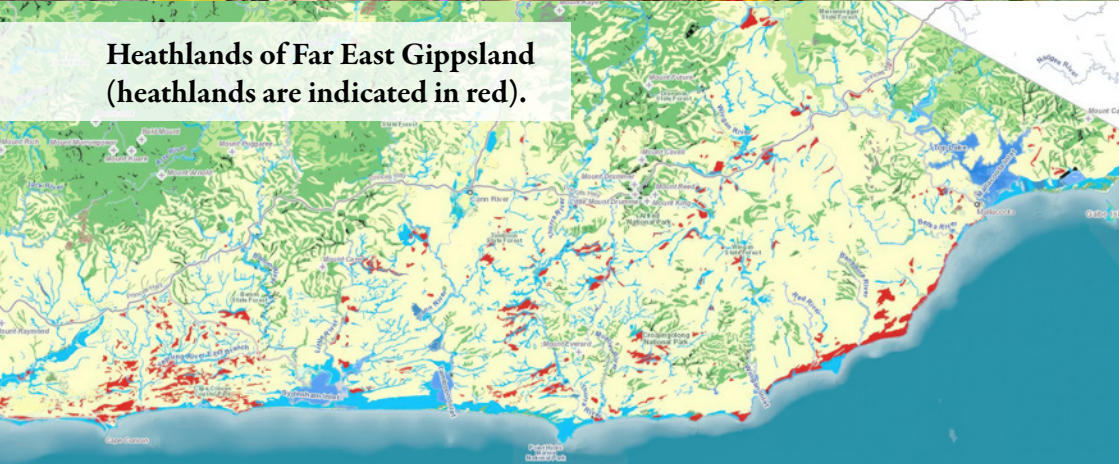
AN INTRODUCTION TO Heathlands

Heathlands are dynamic ecosystems generally devoid of canopy trees and dominated by a variety of dense, low shrubs (1–2 metres tall), with a ground layer of sedges, rushes, shrubs and herbs.

Heathlands occur in a diverse range of climates and exist universally in low-nutrient acidic soils where drainage is usually poor. Despite often occurring in harsh environments, heathlands are floristically diverse and support a wide range of mammals, birds, reptiles, frogs and invertebrates.



**Heathlands of Far East Gippsland
(heathlands are indicated in red).**



AUSTRALIAN HEATHLANDS


Throughout Australia, heathlands are widely distributed geographically, but generally restricted to relatively small patches and are specialised habitats. They are one of the most diverse vegetation types for vascular plants and are divided into two broad categories:

- wet heathlands occur on seasonally waterlogged soils
- dry heathlands occur on soils susceptible to seasonal droughts.

Most Australian heathland species are endemic and many are locally restricted. The coastal heathland community in East Gippsland supports some of the rarest and most restricted species found in East Gippsland.

FLORA AND FAUNA

Heathlands support a rich diversity of plants and animals, many of which only occur in these unique ecosystems.

A close-up photograph of a Southern emu-wren perched on a dried, brown plant stem. The bird has a blue throat and breast, a brown back, and a long, thin tail. The background is a soft, out-of-focus green.

Southern emu-wren.

Animals



Echidna.

Photo by Patrick Tomkins.



Eastern bristlebird.
Photo by Patrick Tomkins.

Heathlands provide habitat and resources for a wide range of fauna. This includes kangaroos, wallabies, wombats, bandicoots, potoroos, echidna, dunnarts, native rats and native mice. Reptiles such as small ground-dwelling skinks, legless lizards, dragons, goannas and snakes are also found in these landscapes.

More than 80 bird species are known to reside in heathlands including some that are heathland specialists, such as the eastern ground parrot, eastern bristlebird and southern emu-wren.

THE ICONIC EASTERN GROUND PARROT AND OTHER LOCAL HEATHLAND INHABITANTS

In Far East Gippsland, the rare eastern ground parrot (*Pezoporus wallicus wallicus*) relies on heathland for food and habitat. Being ground-dwelling and entirely granivorous (seed eating), this species utilises a diversity of heathland plants for feeding, cover and nesting.

East Gippsland was once considered the 'stronghold' for ground parrots in Victoria and have been occasionally reported on private land on the Marlo Plains. Sadly, these birds have become increasingly rare and the catastrophic fires of summer 2019/20 burnt much of their heathland habitat in a single event.

In Victoria, ground parrots are recorded at highest density in heathlands three to fifteen years since fire. Heathlands less than 2–3 years since fire are generally unsuitable for ground parrots. Heathlands exceeding about twenty years also tend not to support ground parrots (Meredith *et al.* 1984). Notably, ground parrots are absent from heathlands where multiple fires have occurred at intervals of less than five years.



Eastern ground parrot.
Photo by Leigh Pieterse.

SOME THREATENED HEATHLAND FAUNA OF EAST GIPPSLAND

- Green and golden bell frog
- Martin's toadlet
- Swamp skink ¹
- Glossy grass skink
- Spotted quail-thrush
- Eastern bristlebird ²
- Eastern ground parrot
- Turquoise parrot ³
- Southern brown bandicoot
- Long-nosed potoroo
- Smoky mouse
- White-footed dunnart



Plants



Heathland in flower, Cape Conran.

Flora species of Australian heathlands include members of the protea (Proteaceae), myrtle (Myrtaceae), legume (Fabaceae) and heath (Ericaceae) family. In Victoria, heathlands support the greatest number of orchid species compared to other ecosystems.

Most of the heathland east of Marlo is wet heathland, with some smaller areas of coastal sand heathland occurring along the coast near Cape Conran, at the mouth of the Yeerung estuary. There is also clay heathland (listed as a vulnerable ecological vegetation class in the East Gippsland Lowlands bioregion) occurring near Mallacoota.



Heathland near Mallacoota.

Wet heathland can be divided into two vegetation communities – the more typical version occurs on areas of poor drainage, extended seasonal water-logging and is usually dominated by grass trees (*Xanthorrhoea resinosa*¹). A drier community occurs in some freer draining soils and varies floristically, with a stronger presence of species such as scrub she-oak (*Allocasuarina paludosa*²), silver banksia (*Banksia marginata*³) and spike wattle (*Acacia oxycedrus*).

Heathlands are generally treeless but occasionally saw banksia and some eucalypts can occur at the margins of sites with more free draining sandy soil. Prickly teatree (*Leptospermum continentale*⁴) and common heath (*Epacris impressa*) are found commonly in many different types of heathlands.



A detailed list of plant communities for each type of heathland in the region is provided at the end of this brochure.

SOME THREATENED HEATHLAND FLORA OF EAST GIPPSLAND

- Erect violet
- Prawn greenhood
- Leafless tongue-orchid
- Mauve-tuft sun-orchid
- Orange-tip finger-orchid³
- Coastal greenhood
- Swamp pelican-orchid
- Slender wire-lily¹
- Wiry stackhousia
- Rush lily²
- Marsh bush-pea
- Variable bossiaea
- Sword bossiaea
- Swamp beard-heath



The flora of Australian heathlands displays high levels of local endemism and heathlands support several vulnerable and threatened plant species.



GROUND PARROTS ON THE MARLO PLAINS

A Far East Victoria Landcare Project

The eastern ground parrot (*Pezoporus wallicus wallicus*) is a rare and enigmatic ground-dwelling species that was once abundant in heathlands of south-eastern Australia. The ground parrot's camouflaged plumage and cryptic nature make observing and studying the species challenging. In recent decades, the ground parrot population has declined dramatically due to increasingly fragmented habitat.

MONITORING PROGRAMS

Far East Victoria Landcare is undertaking ongoing monitoring of ground parrots on the Marlo Plains and beyond to contribute to our understanding of the distribution of this rare and iconic species since the 2019/20 fires and to support land managers (both public and private) to recognise and protect potential ground parrot habitat on their land.

Community members can become involved in long-term studies involving fieldwork such as flora and fauna surveys along monitoring transects. This helps inform best practice land management for maintaining rich biodiversity.



Surveying for ground parrots.

Photo by Michael Drake and Dave Newman (inset).

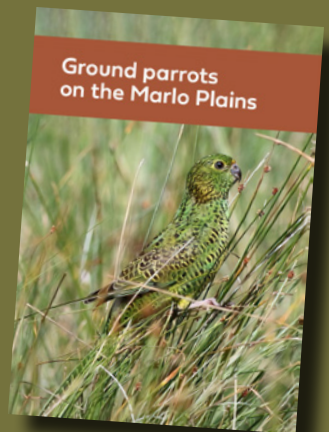


Eastern ground parrot.
Photo by Dave Newman

GROUND PARROTS ON THE MARLO PLAINS

For more information on the ground parrot and how you can get involved in the *Ground Parrots on the Marlo Plains Project*, please contact Far East Victoria Landcare in Orbost.

A printable PDF can be found at: fevl.org.au or pick up a hard copy from the Orbost Landcare office.





Managing land for healthy heathlands

Healthy heathland, six years post fire.

WHY PROTECT HEATHLANDS?

CLIMATE CHANGE

Heathland plants and peat capture and store atmospheric carbon and regulate hydrology within a landscape. With global carbon dioxide levels and associated temperatures rising, the incidence and severity of extreme weather events such as floods, fires and droughts increase.

By protecting and appropriately managing heathlands, these ecosystems can continue to capture and store carbon and absorb excess water and fulfil their critical role in reducing the effects of climate change.

BIODIVERSITY

Heathlands support a rich diversity of plants and animals, many of which only occur within these unique ecosystems. The ongoing protection and effective management of heathlands is critical to the survival of many specialist plant and animals.

FIRE MITIGATION

Well managed heathlands can reduce the risk of catastrophic fire events. As detailed above, the severity and frequency of fire has increased due to the changes in our climate. Fire is critical to the maintenance of heathland structure and composition. Appropriate fire regimes are fundamental in reducing the total fuel loads within an ecosystem therefore reducing the risk of catastrophic fire events.



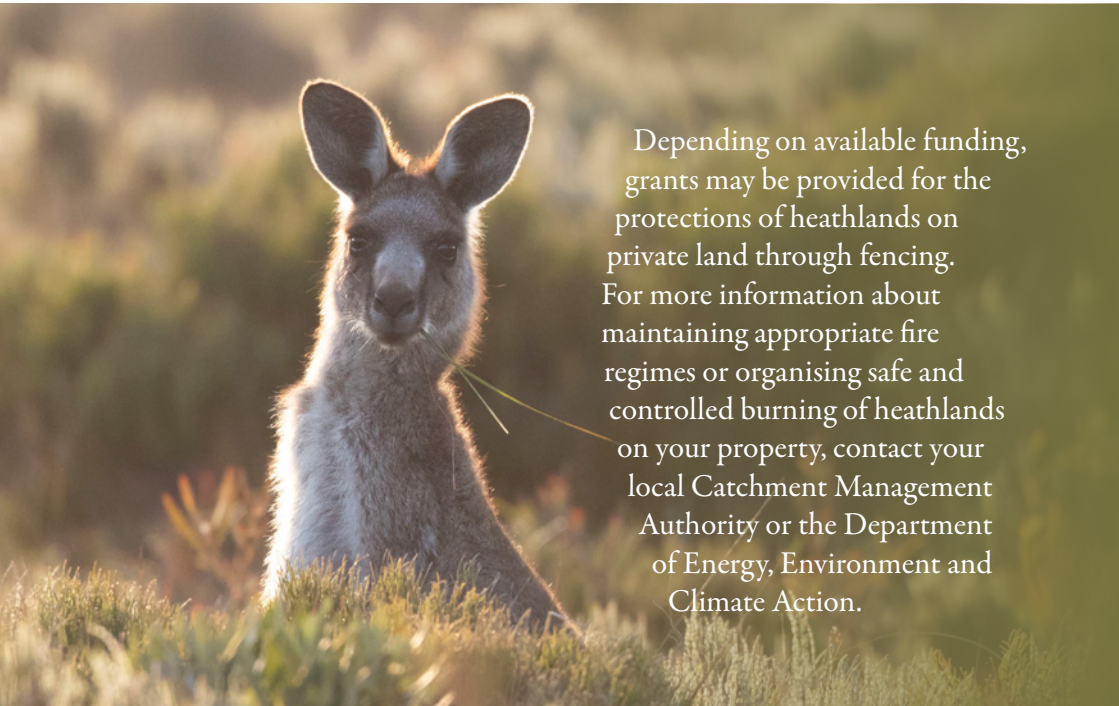
Wet heathland, six months post fire.

EROSION AND WEED CONTROL

Healthy heathlands help stabilise soil and prevent weed invasion on soils that are poor in nutrients and subject to seasonal water-logging. Once heathland is cleared or severely degraded revegetation is virtually impossible, and areas once rich in biodiversity are at risk of weed infestation and erosion.

REDUCED RISK OF PLANT DISEASE

Healthy heathlands have had the opportunity to build up floristically and genetically diverse seed banks, which can be vital to their survival in the event of a plant disease outbreak. However, heathlands are vulnerable to cinnamon fungus. It is therefore important to maintain and appropriately manage heathlands to ensure the continued floristic abundance and diversity.



Depending on available funding, grants may be provided for the protections of heathlands on private land through fencing. For more information about maintaining appropriate fire regimes or organising safe and controlled burning of heathlands on your property, contact your local Catchment Management Authority or the Department of Energy, Environment and Climate Action.

HOW CAN HEATHLANDS BE PROTECTED?

PREVENT CLEARING AND PROTECT AGAINST GRAZING

Land clearing for residential development, grazing and agriculture has seen a substantial fragmentation of heathlands in Victoria. Today, most remnant heathlands are in conservation reserves and national parks but significant areas still remain on private land.

Fencing off areas of remnant heathland on private land can reduce risks of habitat loss and degradation, affecting rare and locally restricted species and plant communities that are unique features of the biodiversity of the region.



Green Cape National Park.



Photo by Kelly Coleman.



Photo by Neil Blatt.

PROTECTION AGAINST ENVIRONMENTAL WEEDS

In general, weeds are not abundant in protected heathlands due to low soil nutrient levels and the dense ground cover. However, invasion of the native coast teatree (*Leptospermum laevigatum* – above left) and coast wattle (*Acacia longifolia* – above right) is becoming an increasing concern for Victorian heathlands. There is evidence that slash and burn techniques can reduce the invasion of this invasive species (see Ellis & Allen 2013). In agricultural areas and along roadsides, weed invasion can be prevented by minimising disturbance and reducing the inflow of nutrients.

REDUCING THE IMPACTS OF PLANT DISEASE

Fungal pathogens, such as cinnamon fungus, are major causes of disease in temperate heathlands and have been found to significantly impact on heathland flora and fauna. Cinnamon fungus can be spread from soil carried on vehicle tracks and tyres, or even on boots. It is also carried in water. Keeping heathlands undisturbed is the best protection against cinnamon fungus.

MONITORING PROGRAMS

Ecological monitoring can provide insights into how the above-mentioned processes are impacting heathland biodiversity and ecosystem health.

Examples of fauna monitoring include:

- **Remote observation** involves monitoring fauna without the need for a person to be present using equipment such as remote cameras and acoustic recorders.
- **Observation methods** require a person to be present to make the observation. Observations can be made of the signs left by animals, such as scats and tracks, or the animals themselves, such as bird counts.



Ground parrot audio automated recording unit.
Photo by Michael Drake.

MAINTAIN APPROPRIATE FIRE REGIMES

Heathlands are naturally fire prone. They will often burn when the adjacent eucalypt forest will not, and under the right conditions will carry a fire even when waterlogged. Fire is the key influence on the structure and diversity of heathland.

Minimum inter-fire periods vary between types of heathlands and depend on a range of factors including time since fire, fuel load and continuity and severity of burning conditions. High frequency burning (less than five years) can substantially change the botanical composition of heathlands.

Heathland biodiversity can also be threatened by fire regimes with long duration between fire events. After 20 to 30 years, heathlands tend to become dominated by an overstorey of tall shrubs and plant diversity declines. This vegetation can be hard to burn under anything less than severe fire conditions, so restoring optimum structure and diversity is difficult and expensive.



**Please contact the
Department of Energy,
Environment and
Climate Action for
assistance with managing
heathlands for fire.**

Saw banksia seedling post-fire
Photo by Kelly Coleman.

Plant diversity after fire

A number of important species making up the diverse shrub layer of heathlands are non-sprouting and rely on seeding to reproduce. These plants are not favoured in wet heathlands because only the most rapidly growing species propagate in abundance after fire and reach maturity prior to canopy closure. Most seeding plants take three years to reach maturity after fire, but some can take up to six years, depending on site quality and post-fire rainfall. Some species are unlikely to produce many seeds in the first season after fire and subsequent seed accumulation varies between species. For many species, it may take years after a fire event before a significant seed bank is accumulated.



10 months post fire
Photo by Kelly Coleman.



2 months post fire
Photo by Kelly Coleman.

Management should incorporate planned fires, fire suppression, limiting the frequency of burns and fire extent, along with a range of post-fire actions such as monitoring programs (Keith *et. al.* 2014).

There have been examples of successful ongoing fire management strategies in heathlands that have historically been exposed to frequent burning. Where these heathlands showed a decline in plant diversity, an abatement in fire frequency has allowed the recovery of a range of shrub populations important to heathland fauna (Keith *et. al.* 2014). Land managers must be responsive to the current state of the ecosystem, and this can be supported by regular updates from ongoing flora and fauna monitoring projects.

EFFECTS OF FIRE REGIMES ON HEATHLAND FLORA AND FAUNA

Most larger shrubs (*Hakea*, *Banksia*, *Leptospermum*, *Allocasuarina* and *Melaleuca*) will be scorched but not killed and will regenerate from rootstock and lignotubers, while others will reproduce from seed either held in the plant after fire or stored in seedbanks in the soil. A great diversity of flowers can be seen in the spring following a summer fire. In a spectacular display, grass trees (*Xanthorrhoea* sp.) flower on mass sending up flower spikes from their bases that attract parrots and honeyeaters. Many species of ground orchids, some rare or threatened in Victoria, also flourish in heathlands after fire.



The floristic diversity of heathlands is generally greatest in the first decade following a fire, over which time changes occur in the vegetation structure. These changes are particularly important to specialist species of heathland fauna that will seek out areas of suitable habitat, determined by fire age, to meet their requirements for food, shelter and breeding.

Fires can cause significant mortality among animals both directly (those unable to escape a fire event) and indirectly (increased predation due to lack of cover). Some species are recorded immediately after fire but are absent soon afterwards.

The rate of post-fire vegetation recovery influences recolonisation of species that depend on certain habitat characteristics.



Firetail finch and silky purple-flag.

Indicative flora


Heathlands east of Marlo fall into three Ecological Vegetation Classes (EVCs), that vary in their floristic and structural composition. The following provides a guide to the plant communities (or habitats) of heathlands in East Gippsland from Cheal *et. al.* (2011).

EVC 8: WET HEATHLAND

Dominant:

Leptospermum continentale (Prickly teatree)

Xanthorrhoea resinosa (Spear grass tree)

Melaleuca squarrosa (Scented paperbark) 



Moderately common associate:

Banksia serrata (Saw banksia)

Allocasuarina paludosa (Scrub sheoak)

Common shrubs:

Epacris impressa (Common heath)

Dillwynia glaberrima (Smooth parrot-pea)

Epacris obtusifolia (Blunt-leaf heath) 

Sprengelia incarnata (Pink swamp-heath)


Comesperma ericinum (Heath milkwort)



Other common species:

Burchardia umbellata (Milkmaids)

Cassytha glabella (Slender dodder-laurel)

Dampiera stricta (Blue dampiera) 

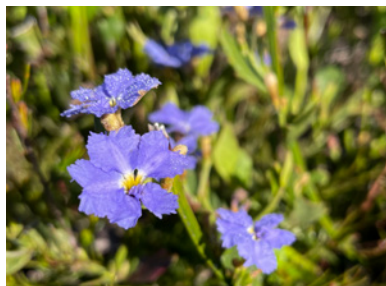
Drosera peltata ssp. *auriculata* (Tall sundew)

Empodisma minus (Spreading rope-rush)

Eurychorda complanata (Flat cord-rush)

Gonocarpus teucrioides (Germander raspwort)

Hypolaena fastigiata (Tassel rope-rush)



EVC 6: COASTAL SAND HEATHLAND



Dominant

- Allocasuarina paludosa* (Scrub sheoak)
- Leptospermum continentale* (Prickly teatree)
- Banksia marginata* (Silver banksia) 📷

Moderately common associate

- Banksia serrata* (Saw banksia)

Common shrubs

- Epacris impressa* (Common heath)
- Pimelea humilis* (Common rice-flower)
- Spyridium cinereum* (Tiny spyridium)
- Gompholobium huegelii* (Common wedge-pea)
- Hibbertia empetrifolia* s.l. (Tangled guinea-flower)
- Dillwynia glaberrima* (Smooth parrot-pea) 📷



Other common species

- Anisopogon avenaceus* (Oat spear-grass)
- Burchardia umbellata* (Milkmaids)
- Cassytha glabella* (Slender dodder-laurel)
- Coronidium scorpioides* (Button everlasting)
- Dampiera stricta* (Blue dampiera)
- Drosera peltata* ssp. *auriculata* (Tall sundew)
- Entolasia marginata* (Bordered panic)
- Gonocarpus teucrioides* (Germander raspwort)
- Hypolaena fastigiata* (Tassel rope-rush)
- Lepidosperma neesii* (Stiff rapier-sedge)
- Lindsaea linearis* (Screw fern)
- Lomandra longifolia* (Spiny-headed mat-rush)
- Opercularia varia* (Variable stinkweed)
- Patersonia sericea* (Silky purple-flag) 📷
- Platysace heterophylla* (Slender platysace)
- Schoenus brevifolius* (Zig-zag bog-sedge)
- Themeda triandra* (Kangaroo grass)
- Xanthosia huegelii* (Heath Xanthosia)



EVC 7: CLAY HEATHLAND

Dominant

Leptospermum continentale (Prickly teatree)

Melaleuca squarrosa (Scented paperbark)

Hakea teretifolia (Dagger hakea)

Xanthorrhoea resinosa (Spear grass tree)

Allocasuarina paludosa (Scrub sheoke)

Moderately common associate

Callistemon citrinus (Crimson bottlebrush)

Hakea decurrens (Bushy needlewood) 📷

Banksia spinulosa (Hairpin banksia)



Scattered trees

Eucalyptus conspicua (Silver swamp stringybark)

Eucalyptus consideniiana (Yertchuk)

Common shrubs

Sprengelia incarnata (Pink swamp-heath) 📷

Sphaerolobium vimineum s.l. (Leafless globe-pea),

includes *Sphaerolobium vimineum* s.s.

and *Sphaerolobium minus*

Epacris obtusifolia (Blunt-leaf heath)

Epacris lanuginosa (Woolly-style heath)

Epacris impressa (Common heath)

Baeckea linifolia (Swamp baeckea)



Other common species

Baumea tetragona (Square twig-sedge)

Burchardia umbellata (Milkmaids)

Cassytha glabella (Slender dodder-laurel)

Comesperma ericinum (Heath milkwort)

Dampiera stricta (Blue dampiera)

Empodisma minus (Spreading rope-rush)




Eurychorda complanata (Flat cord-rush)

Gahnia clarkei (Tall saw-sedge) 📷





Photo by Neville Walsh.

- Gleichenia dicarpa* (Pouched coral-fern)
- Gonocarpus micranthus* (Creeping raspwort)
- Gonocarpus teucrioides* (Germander raspwort),
includes *Gonocarpus teucrioides* s.s
and *Gonocarpus humilis*
- Lepidosperma filiforme* (Common rapier-sedge) 
- Leptocarpus tenax* (Slender twine-rush)
- Lindsaea linearis* (Screw fern)
- Patersonia fragilis* (Short purple-flag)
- Schoenus brevifolius* (Zig-zag bog-sedge) 
- Schoenus lepidosperma* (Slender bog-sedge)
- Selaginella uliginosa* (Swamp selaginella)
- Xanthosia dissecta* s.l. (Cut-leaf xanthosia),
may include *Xanthosia dissecta* s.s.
and *Xanthosia leiophylla*
- Xyris operculata* (Tall yellow-eye) 



Grass tree growth after fire.
Photo by Kelly Coleman.

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Scarlet honeyeater.
Below L-R: Milkmaids, Eastern
ground parrot, Common Correa.



Photo by Dave Newman.

