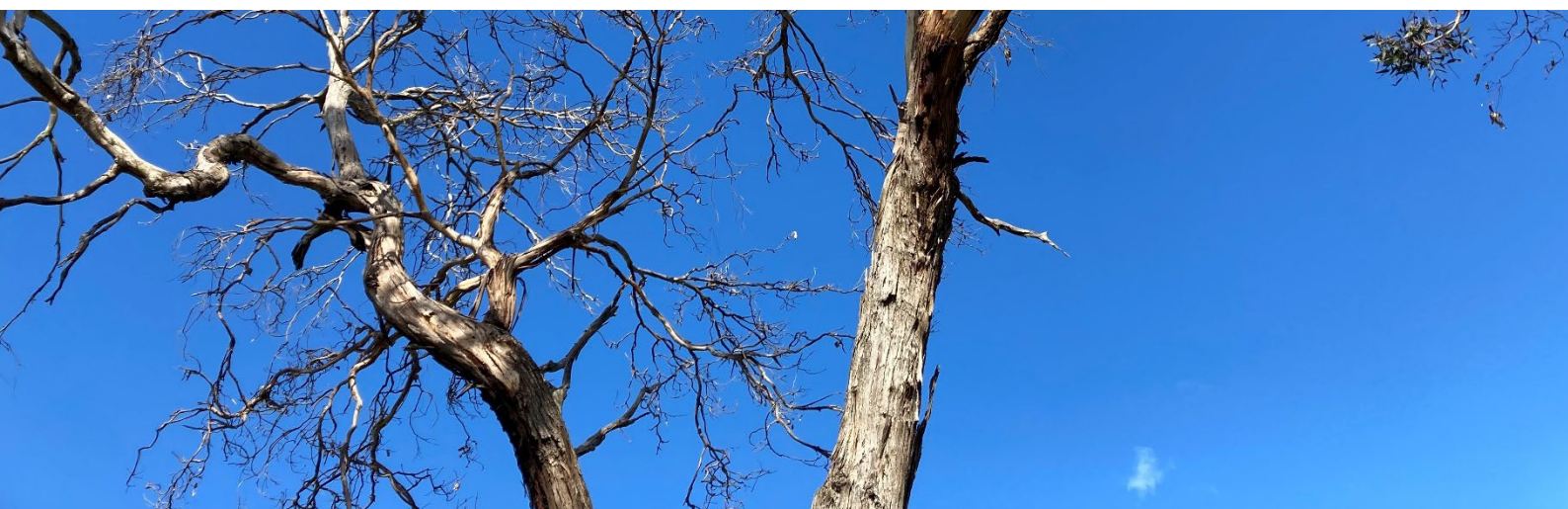




**Are you concerned about
Eucalypt Dieback on Phillip Island?**

**Pilot Survey Program
for Dieback
on Phillip Island**

**Become a citizen scientist with
Phillip Island Landcare Group**





Introduction

For many years our community and members of Phillip Island Landcare group (PILG), have been noticing eucalyptus trees dying back across the Island. Dieback is not isolated to Phillip Island and is happening across Bass Coast and other areas in Victoria. Dieback is a term used to describe the decline and sometimes death of trees in the landscape. This can be due to natural causes, trees reaching the end of their lifespan, or related to ecosystem dysfunction in some way. Exact causes may be complex, interrelated, and vary from site to site.

Historic large scale vegetation clearance across the island has left the remaining indigenous vegetation fragmented and patchy at best, interrupting the natural functions of our ecosystems and leaving vegetation open to many potential stressors. Changed fire regimes, weed invasion, salinity, pathogens (e.g. Phytophthora), fungi, nutrient imbalances, soil acidification, soil compaction, weather, drought, wet, climatic changes, insect and animal attack, either native or introduced, loss of habitat for natural predators including small insectivorous birds, livestock impacts, machinery and chemical damage are all potential factors contributing to dieback on the Island.

To examine dieback on Phillip Island, PILG formed a Dieback sub-committee, comprised of Landcare staff and committee members, botanists, plant pathologists, local farmers, members of the Phillip Island Conservation Society and staff from Phillip Island Nature Parks and Bass Coast Shire Council. We have started to conduct surveys on roadsides and in remnant vegetation patches, and designed this pilot Dieback survey program so more of our community can participate in surveying trees in locations where dieback is occurring. Obtaining more data will allow us to see if any patterns emerge that may point towards possible causes here, and allow us to build a picture of changes occurring over time.

We need your help!

You can become a citizen scientist and participate in surveying trees in dieback areas, using the simple form in this guide that our committee has devised. **Firstly, there is an information, instructions, and tips section, then the two-page survey form.** We encourage you to fill out as much of this as you can. You can carry out this survey for as many trees as you like. We recommend that you resurvey your tree(s) at least every 6 months or each season if you have the capacity, to help us determine any seasonal effects and determine changes over time.

Forms can be returned to us by scanning/photographing and emailing, along with any tree photos to lisa.wangman@basscoastlandcare.org.au (preferred option) or by mail, or dropping the form and photos at the Bass Coast Landcare Network Office, C/O Lisa Wangman, 2-4 Bass School Road, Bass 3991.

Surveying safely

Your properties and local bushland reserves are generally safe places, but please take responsibility for your own safety by:





- Wearing appropriate clothing and closed toe footwear,
- taking someone with you or letting someone know where you are going and when,
- not surveying in windy weather,
- looking out for tree branches, snakes or ants, and avoiding contact with any insects or caterpillars,
- if you are surveying on roadsides, wear high visibility clothing and be aware of traffic movements,
- ensure you have permission to survey on any private land.









Please note that participation is at your own risk, PILG will not be held liable for any incidents arising from participation in this pilot Dieback survey program.



Tree species

This survey is focussed on Phillip Island's Indigenous or Native Eucalypt species, however there may be dieback occurring in other indigenous trees which are also listed on the survey form. The following table outlines some of the spotting characteristics to help you identify our local tree species.

| Species/ Common name | Height | Bark type | Leaves – Juvenile/ Adult | Buds and flowers | Fruit/ seed pods | Photo |
|--|--------|--|---|--|--|---|
| <i>Eucalyptus globulus</i> subsp. <i>globulus</i> Southern Blue Gum | 25-60m | Rough, dark, persistent at base, smooth higher, peeling in strips. | Juv. Large bluish white coating, opposite and stalkless. Ad. 12-30cm hangs vertically, thick glossy dark green. | Large, 4 angled, warty, bluish white coating, usually solitary. Flowers June-Nov. | Larger than 18mm diameter, with 4 ribs and broad thick disk. |  |
| <i>Eucalyptus obliqua</i> Messmate | 15-60m | Fibrous and stringy, persistent to small branches. | Juv. Small, opposite. Ad. 9-16cm asymmetrical and oblique at base, thick glossy dark green. | 7-15 per cluster in axils, club shaped with small cap. Flowers Jan-Mar | Wine glass shaped, 6-9mm across, usually 4 valves enclosed. |  |
| <i>Eucalyptus ovata</i> Swamp Gum | 8-25m | Rough, dark to various heights, sheds ribbons from upper trunk and branches leaving smooth greyish surface | Juv. Broad, almost circular. Ad. Thick, dark green and glossy both sides, 8-14cm x 2-5cm, lance to egg shaped, broadly wavy edges. | 4-8, often 7 per cluster, cap usually conical, base funnel shaped. Flowers Mar-Nov | Usually funnel shaped, flat top 6-8mm wide, 3-4 valves near rim level. |  |
| <i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i> Coastal Manna Gum | 8-16m | Rough bark to small branches, remainder smooth and peeling in ribbons | Juv. Opposite, stalkless, bright green. Ad. 10-20cm long, mid green, narrow, lance shape. | Usually in 3's sometime s 7. Flowers any time, chiefly summer. | Often in 3's, disk raised and convex, 3-4 protruding valves. |  |

| Species/ Common name | Height | Bark type | Leaves – Juvenile/ Adult | Buds and flowers | Fruit/ seed pods | Photo |
|--|------------|---|---|--|---|---|
| <i>Eucalyptus radiata</i> Narrow leaf Peppermint | 12- 45m | Grey brown sub-fibrous, persistent to small branches, finely flaky, not stringy | Juv. Opposite green, narrow, less than 2cm. Ad. Thin 8- 16mm long, grey green, peppermint smell. | Small, club shaped, 8-16 per cluster. Flowers Oct -Jan | Small, pear shaped, disk flat or slightly depressed, 3-4 tiny valves. |  |
| <i>Acacia melanoxylon</i> Blackwood | 6-30m | Bark hard and fissured | Dense dark green foliage 6-14cm L x 10-25mm W, 3-5 veins | Flowers Aug-Oct pale creamy yellow | Seeds in pods, coiled/ twisted, 4- 12cm L x 5- 10mm W |  |
| <i>Acacia mearnsii</i> Black Wattle | 5-15m | Smooth dark bark often exudes gum | Dk green, fern like, bipinnate leaves | Flowers Oct-Dec, pale yellow clusters | Seeds in pods, 6- 15cm L x 5- 9mm W |  |
| <i>Banksia integrifolia</i> Coast banksia | 4- 20mt | Hard grey fissured bark | Leaves in whorls, dark green above white under | Flowers Feb-Jul, spikes yellow | Woody seed cone with valves |  |
| <i>Bursaria spinosa</i> Sweet Bursaria | 1-8m | Has spikes on stems | Clustered, paler green beneath, 8- 40mm L x 3- 15mm W | Flowers Nov-Feb, creamy white in pyramid clusters | Sml brown capsule, thin, dry purse shaped in clusters |  |
| <i>Allocasurina verticillata</i> Drooping Sheoak | 4-10m | Dark grey to brown, hard, fissured | Grey green branchlets 1.2mm thick, mostly drooping | Male plants flowers yellowish brown on branchlet | Cones on female plants 2.5- 5cm x 2- 3cm sharp valves |  |
| <i>Melaleuca ericifolia</i> Swamp Paperbark | 2-9m | Pale papery bark | Leaves alternate, dark green, narrow, 8- 15mm x1mm | Flowers Oct – Nov short creamy spikes | Capsules 3mm dia. on stem in oblong clusters |  |
| <i>Melaleuca lanceolata</i> Moonah | 1-8m | Pale grey, finely fissured, not papery | Leaves alternate, curved, thick, 5- 12mm L x 1- 3mm W | Flowers Summer – Autumn cylindrical creamy spikes | Capsules, globe shape with small hole, clustered on stem |  |

For your survey you will need...

- A GPS-enabled personal device with an embedded camera like a smart-phone or tablet
- These survey instructions and survey form plus a pen or pencil
- A tape measure or rope
- Any protective or high visibility clothing

Taking photographs

Please ensure you have turned on location services on your device, either in your settings, your camera app or privacy settings, depending on the device you are using. This will enable us to get the exact location of your tree from the data embedded in your photograph. Please take a photo of the tree from a distance to see the whole tree, and photos of any damage or pests present, and note the location where your shots were taken for future surveys. Please only submit up to five photos per tree.

Measuring tree circumference and estimating foliage cover

If you can access the tree trunk, measure its circumference using a tape measure, string, or rope by wrapping it around the trunk at 1.3mt above the ground. Measure at the same height, even on leaning trees, each time a measurement is made.

The amount of foliage or canopy cover can be a good indicator of tree health, however normal levels can vary between species. This is estimated by standing under the tree and looking up, noticing how much of the view is made up of sky or leaves. Below is an example of the options on the survey form for your reference.



Some factors affecting tree health

There are many potential factors that can affect tree health. Landscape clearance, leading to ecosystem dysfunction is believed to be the primary cause of dieback. Often plants that were once fully integrated into continuous woodlands, scrub or forest, are now isolated and surrounded by introduced plants, and subject to a range of different conditions. There may also be one or more causes of dieback in any situation, and several factors may act together, increasing stress on trees.

This survey lists options to record many potential factors including:

Mistletoe

Trees may become infested with parasites and diseases as they lose health. While an important part of our ecosystems, parasites such as mistletoe can become prolific when the natural defences of a plant are already reduced.



Beetles, caterpillars, psyllids, leaf miners and other insects

In healthy vegetation, insect numbers are usually controlled by birds and other natural predators or climate. Lack of indigenous understorey vegetation, including prickly plants to shelter small insectivorous birds is a problem across the Island. Healthy plants can defend against insect attack, however large numbers of insects with a lack of predators can be devastating to plants and trees.

Beetles at the larval and adult stage, psyllids, and leaf hoppers feed on eucalypt leaves and can cause substantial damage. Some caterpillar species are capable of completely defoliating eucalypts. If you can determine if any insects are present, please record them on your survey sheet.



Eucalyptus Tortoise Beetle larvae (*Paropsis atomaria*) eating leaves in the Oswin Roberts Reserve carpark.



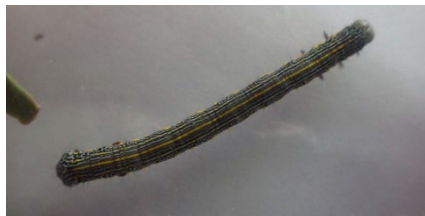
Longicorn beetle (*Phoracantha* sp.) damage in Oswin Roberts Reserve.



Gum-leaf Skeltoniser (*Uraba lugens*), eats the fleshy parts of eucalypt leaves and creates a skeleton or holes.



A Concealer Moth (*Oenochroa* sp.) emerges from pairs or groups of leaves stuck together by the moth.



Chlenias auctaria,
Ventnor Koala Reserve



Woolly bear caterpillar (*Anthelidae* sp.), McFees Rd, Rhyll.



Painted Cup Moth caterpillar (*Doratifera oxleyi*), Oswin Roberts Reserve.

A final note before you begin your survey...

While some dieback issues are very local, most occur at a landscape scale, so working together with neighbours to survey issues relating to dieback is essential to get a better picture of the factors contributing to dieback across Phillip Island. So we can get as many people involved in surveying trees showing dieback on Phillip island, please share the link to this survey at <https://www.phillipislandlandcare.org.au/dieback> Thank you and good Luck in your surveying!

Acknowledgements and References

We acknowledge the Traditional owners of the land on which we work, the Bunurong and Boon Wurrung people, and pay our respects to their Elders, past, present and future.

This guide and survey was produced in March 2023 by Lisa Wangman of the Bass Coast Landcare Network, for the Phillip Island Landcare Group with assistance from Phillip Island Landcare Dieback Sub-Committee members, including: John Eddy, Keith McDougall, Alison Oates, Richie Davie, Mike Cleland, Ian McFee, Jim McFee, Daniel Kalstrom (Phillip Island Nature Parks) and Diana Whittington (Bass Coast Shire Council). This work was supported by a Victorian Government Biodiversity Action Grants program project.

Costermans L., 1981, *Native trees and shrubs of South East Australia*, Australia, New Holland Publishers

Land for wildlife, Platt S., 1999, *Land for Wildlife Notes, Dieback lessons: learning how to manage sustainably (LW0034)*, <https://wildlife.lowecol.com.au/wp-content/uploads/sites/25/Die-Back-Management-LfW-Victoria.pdf>

Goulburn Broken Catchment Management Authority, 2017, *The Tree Storey: 'Dieback or Growback?' Tree health survey field guide*. https://www.gbcma.vic.gov.au/downloads/Biodiversity%20Current%20Projects/FieldGuide_WEB.pdf

Insect and insect effects photos courtesy of Keith McDougal, Plant Photos from Wikimedia Commons.

Pilot Dieback Survey form

Date: ____/____/____

Name: _____ Phone number: _____

Email: _____

Location/property address: _____

Slope/topography: flat gentle slope steep slope top of hill hollow

Aspect: N NE E SE S SW W NW

Recent rainfall: low med high Exposed to wind: low med high

Tree species: *Eucalyptus globulus* subsp. *globulus*, Southern Blue Gum

Eucalyptus obliqua, Messmate *Eucalyptus ovata*, Swamp Gum

Eucalyptus viminalis subsp. *pryoriana*, Coastal Manna Gum,

Eucalyptus radiata, Narrow leaf Peppermint *Acacia melanoxylon*, Blackwood

Acacia mearnsii, Black Wattle *Banksia integrifolia*, Coast Banksia

Bursaria spinosa, Sweet Bursaria *Allocasurina verticillata*, Drooping Sheoak

Melaleuca ericifolia, Swamp Paperbark *Melaleuca lanceolata*, Moonah

not known other, please list if known _____

Tree height estimate: <10m 10-30m >30m

Tree circumference: 0-10 cm 10-30cm 30-60 cm >60 cm

Foliage cover estimate: no leaves 25% 50% 75% all leaves

Dead branches estimate: appears fully healthy, with all structural branches intact,

up to 20% of structural branches appear dead 20-40% of structural branches appear dead

40-60% of structural branches appear dead 60-80% of structural branches appear dead

more than 80% of structural branches appear dead appears completely dead (in last 10 years)

Tree location: isolated paddock tree in a clump of paddock trees revegetation area

remnant woodland or scrub roadside park garden

Vegetation Patch size: urban block single paddock tree <1ha 1-5ha over 5ha

Vegetation Patch shape: linear square triangle irregular streamside

Vegetation Patch width: 5mt 10mt 20mt 30mt or over

Amount of native vegetation in proximity to the site: Within 100m _____% native vegetation occurring,

Within 1 km _____% native vegetation occurring

Surrounding land use: paddocks with cows paddocks with sheep paddock other stock

paddock for hay no stock grain crop horticulture (e.g. grapes, orchard)

revegetation remnant bush urban area other please list: _____

Historic land use: grazing cropping remnant revegetation unknown other: _____

Ground surface under tree: bare soil compacted soil pasture grass fallen leaves/twigs

indigenous grasses and shrubs weeds

Surrounding vegetation: tree fenced from stock access fallen branches remain understory shrubs present grass only weeds only urban garden other: _____

Any associated or surrounding indigenous or native species known? Please list: _____

Weed infestation: none some moderate lots **Pasture grasses present:** yes no

List any known weed species: _____

Mistletoe present: minor moderate severe

Beetles, caterpillars, psyllids, leaf miners, other insects seen: none minor moderate severe

uncertain **List any known species:** _____

Storm or fire damage: broken limbs fallen branches lightning strikes bushfire none

Other tree damage: ringbarking stock camp with manure fencing attachments

other please list: _____

Leaf condition: edges scalloped/eaten skeletonised lumps bumps changes in colouring

other please list: _____

Natural recruitment of seedlings that are less than 30cm in height, growing beyond drip line and within 20m of tree: none less than 10 more than 10

Tree saplings that are up to 3m in height, growing beyond the drip line and within 20m of tree: none

less than 10 more than 10.

How long have you noticed dieback at this location: 10 years 5 years 1 year 6 months

other

Further issues or observations:

Evidence of possum activity or droppings Nesting boxes present Habitat hollows present

Significant flowering events and pollinators please list: _____

Mushrooms growing on trunk Trunk lumps and bumps please list: _____

Other leaf spots or disease please describe: _____

Ivy strangling tree Other weed infestation please list: _____

Cultural heritage significance Inappropriate fencing techniques

Other human intervention please list: _____

Any other issues or comments you would like to share in relation to dieback at your survey site?

Thank you for your time in completing this survey.