Department of Sustainability and Environment

fire – ecological recovery 2009

an overview

Parks VICTORIA

A Victorian Government initiative

Victoria The Place To Be

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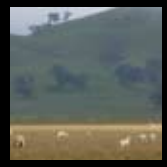
About ecological recovery after fire

This booklet explains:

- What happens to plants, animals and ecosystems after a bushfire in Victoria;
- The immediate and longer-term risks;
- What you can do to assist.

PHOTO: GORDON FRIEND

We live in a fire prone environment dictated by our climate of wet winters and hot dry summers.



Fire is a natural event in most of the wildlife habitats of south-eastern Australia and most species of plants and animals have adaptations that enable them to recover after fire.

After a bushfire, most native vegetation and wildlife will recover.

This recovery will start within weeks and occur over many years.

It is a miraculous process and wonder of nature whereby plants and animals survive above ground bushfire temperatures of >900°C.

Mt Cobbler Dec 2008, burnt Jan 2007

PHOTOS: STEPHEN PLATT

For most native vegetation and wildlife, fires do not destroy, decimate, devastate, and are not a catastrophe.

If they were, our landscapes would be barren.

North of Walhalla (24 September 2007)

PHOTO: ALISON CHURCH

Same location 13 months later (October 2008)

PHOTO: STEPHEN PLATT

North of Walhalla (24 September 2007)

PHOTO: ALISON CHURCH

Same location 13 months later (October 2008)

PHOTOS: STEPHEN PLATT

Wilsons Promontory 26 Jan 2006 (burnt 2005)

PHOTO: STEPHEN PLATT

March 2007, regrowth from 1983 fires (14 yrs)

PHOTO: DAVID CHEAL

Patches of unburnt vegetation assist recovery.

They act as a refuge for native animals and a source of plants.

Wilsons Promontory 7 March 2009 – tree canopy on hillsburnt patchily

Wilsons Promontory October 2009 (same location as above)

PHOTOS: STEPHEN PLATT

Plants that reshoot from underground stems, such as **ferns** and **sedges**, return first after fire.

Mt Stirling, December 2008

PHOTO: STEPHEN PLATT

Wilsons Promontory 7 March 2009

PHOTO: STEPHEN PLATT

Wilsons Promontory October 2009

PHOTO: STEPHEN PLATT

Plants survive with:

- **buds** protected under soil or bark
- **woody capsules**
- **soil-stored seed**
- **underground tubers.**

PHOTOS: STEPHEN PLATT

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Fungi produce ‘mushrooms’ from underground hyphae.

Stonemaker Fungus *Laccocephalum tumulosum*, Marysville 2009, arises from a pseudosclerotium.

PHOTO: STEPHEN PLATT

Bracket fungus, Kinglake

Neolentinus dactyloides, Bunyip

Morel fungus, Bunyip

PHOTOS: STEPHEN PLATT & GORDON FRIEND

Wilsons Promontory, 7 March 2009 – this heathland is adapted to fire and will recover over time

Wilsons Promontory, October 2009

PHOTOS: STEPHEN PLATT

Wilsons Promontory, October 2009 – orchids, arising from underground tubers, flourish in the heathland following fire.

PHOTOS: STEPHEN PLATT

Some rare plants benefit from fire.

Native Parsnip (*Trachymene composita*) – a rare species with a life history geared to bushfire. Not recorded in the area prior to the alpine fires. (Bogong High Plains, March 2005)

PHOTO: ARN TOLSMA

Branched everlasting (*Coronidium adenophorum*) – a fire ephemeral. (Big Desert 2002)

PHOTO: DAVID CHEAL

Animals

Animals survive by **fleeing the fire, by escaping underground, or in unburnt patches;**

and by **eating dead carcasses, seeds, fungi, new shoots, unburnt vegetation...**

Though many individuals may die, **most wildlife species will survive the fires**. They have had to for thousands of years. Some species will thrive in the years ahead as food, shelter and breeding resources return.

Mt Cobbler Dec 2008 (burnt 2007), Flame Robin chicks in hollow near ground level – demonstrating adaptability of species after fire.

PHOTOS: STEPHEN PLATT

Mt Cobbler Dec 2008 (burnt 2007), copperhead snake hunting for flame robin chicks.

PHOTO: STEPHEN PLATT

Remote camera sequence – Big River catchment 2009. Shows a Swamp Wallaby has survived the fire front.

PHOTOS: STEPHEN SMITH & ROWHAN MARSHALL

Wombat burrow and footprints – Wilsons Promontory 7 March 2009

PHOTO: STEPHEN PLATT

Swamp Wallaby with burnt feet – Wilsons Promontory 7 March 2009

PHOTO: STEPHEN PLATT

Fungus – a food source that appears soon after fire – Wilsons Promontory 7 March 2009

PHOTO: STEPHEN PLATT

Though many individual animals will die in a bushfire, **most wildlife populations will recover.**

A vet assesses and treats an injured koala with the help of wildlife carers.

PHOTO: DREW RYAN

Ecosystems

Fires initiate important ecological processes such as flowering (grass trees, orchids) and pollination (insects).

Without fire, many plant communities will eventually decline along with their associated wildlife.

PHOTO: STEPHEN PLATT

Airey's Inlet after Ash Wednesday 1983. Inset – butterfly attracted to Grass Tree (*Xanthorrhoea*) flowers, Kinglake 2009

PHOTOS: STEPHEN PLATT

Different types of vegetation and species can tolerate different fire regimes (fire frequency, intensity, season, extent, type).

Inappropriate fire regimes can put ecosystems and species at risk.

Native grasslands – adapted to burn every 3–5 years

PHOTOS: STEPHEN PLATT

Tall wet ash forests – adapted to burn every 200–500 years.

If unburnt for 500+ years they will be replaced by rainforest.

PHOTO: STEPHEN PLATT

Fires both create and destroy hollows that are important to wildlife.

PHOTO: STEPHEN PLATT, KINGLAKE 2009

Urgent ecological recovery actions

These actions need to occur immediately after the passage of the fire and before surviving species are affected.

Of immediate concern

- **ash & sediment** entering streams following rainfall

Sediment ‘slug’ – Ovens River at Tarrawingee

PHOTO: JUSTIN O’CONNOR

Tributary of Gibbo River – December 2003 showing how silt and rocks have covered in-stream habitat following post-fire erosion.

PHOTO: JAROD LYON

Native fish (Barred Galaxias) – Marysville 2009

There are just 21 populations of this endangered fish worldwide, all living in Victoria's mountain streams.

This species was at risk from ash and sediment, which affects water quality (including oxygen levels) and smothers egg-laying sites.

Over 400 fish from six populations were taken temporarily into captivity until stream health improves.

PHOTO: TARMO RAADIK

Of immediate and ongoing concern

- predation in the open habitats

Foxes put at risk critical weight range mammals, ground dwelling birds and reptiles. Feral cats and wild dogs also prey on surviving wildlife.

PHOTO: STEPHEN PLATT

Of immediate and ongoing concern

- threatened species and ecological communities

Endangered Mountain Pygmy Possum, Mt Hotham 2003 – at risk following fire from loss of food resources and predation by cats and foxes. These add to existing risks, including loss of blanketing snow cover due to a warming climate.

PHOTO: GLEN JOHNSON

Endangered Leadbeater's Possum – most animals in nest boxes at Lake Mountain 2009 perished but four survived. At risk from loss of food resources, loss of hollows for shelter, and predators such as native owls.

PHOTO: STEPHEN SMITH

PHOTO: NEVILLE WALSH

Nationally vulnerable Shiny Nematolepis site, 2009 – at risk from woody debris (inset) and browsing by introduced deer and other herbivores (goats, rabbits, wallabies).

Nationally endangered Buxton Gum site – burnt from sphagnum moss to mineral earth, 2009.

PHOTO: DAVID CHEAL

Endangered Buxton Gum site – September 2009 showing shoots appearing from buds at the base of the plants.

PHOTO: STEPHEN PLATT

Of immediate concern

- obligate seed regenerators, such as the ash eucalypts

Alpine Ash (*Eucalyptus delegatensis*) – an obligate seed regenerator and major commercial timber

Mountain Ash (*Eucalyptus regnans*) – seedlings emerging naturally at Cambarville 2009. At risk are stands that are too young to have produced seed.

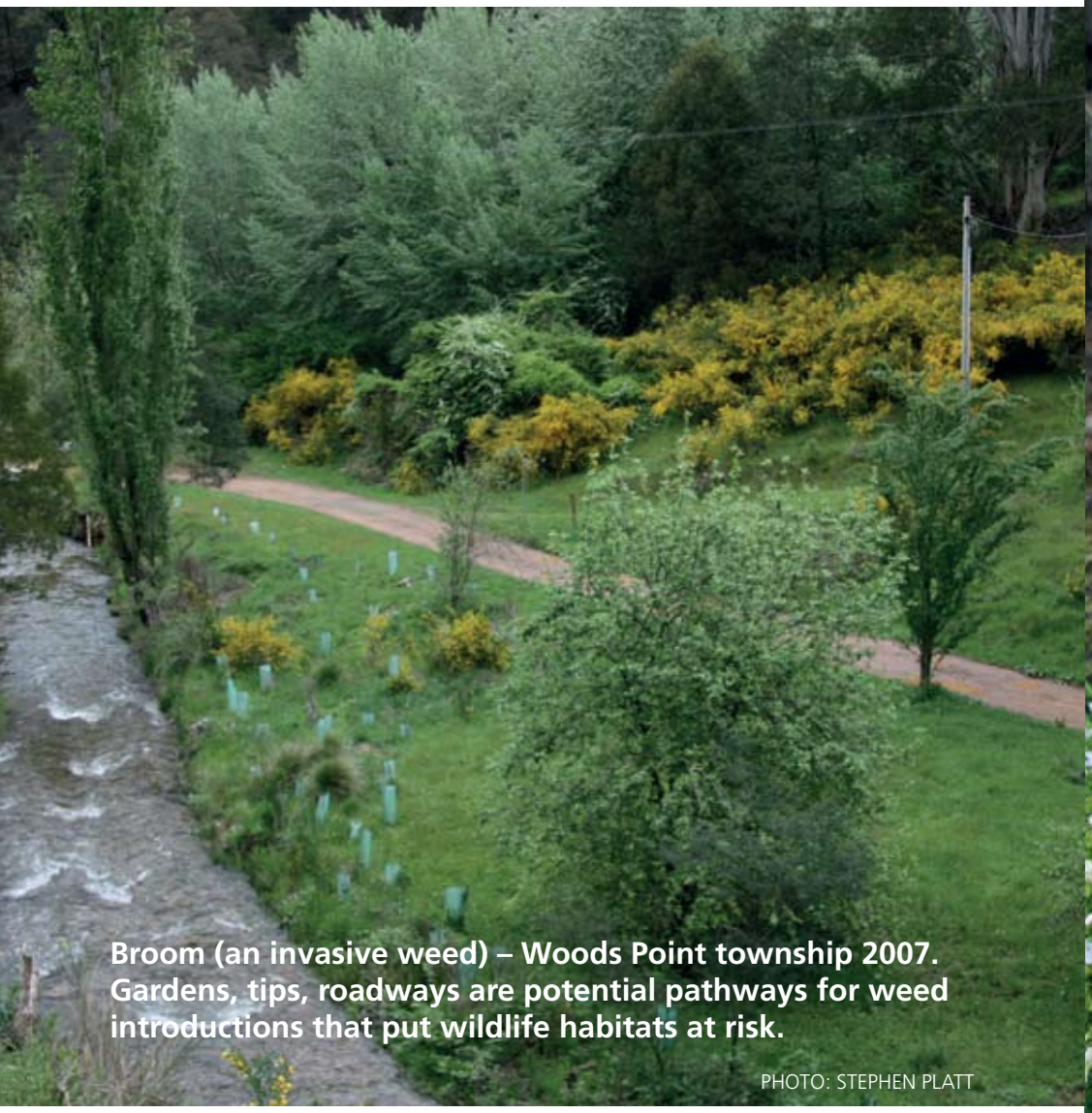
PHOTO: STEPHEN PLATT

Of longer-term concern

These recovery actions need to occur in the months and years ahead of the fire.

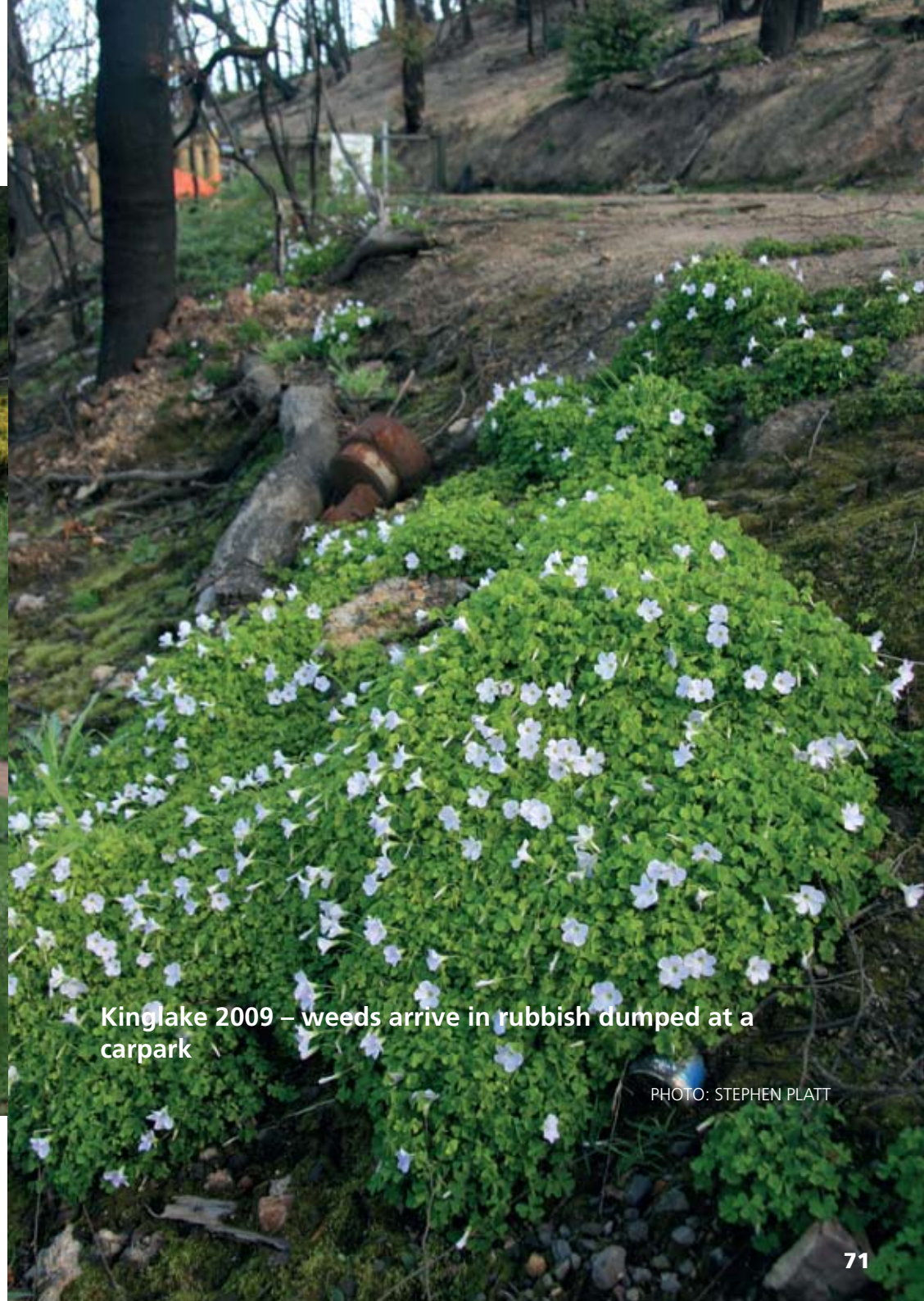
Of concern

- **weed invasion,** especially new and emerging weeds



Broom (an invasive weed) – Woods Point township 2007. Gardens, tips, roadways are potential pathways for weed introductions that put wildlife habitats at risk.

PHOTO: STEPHEN PLATT



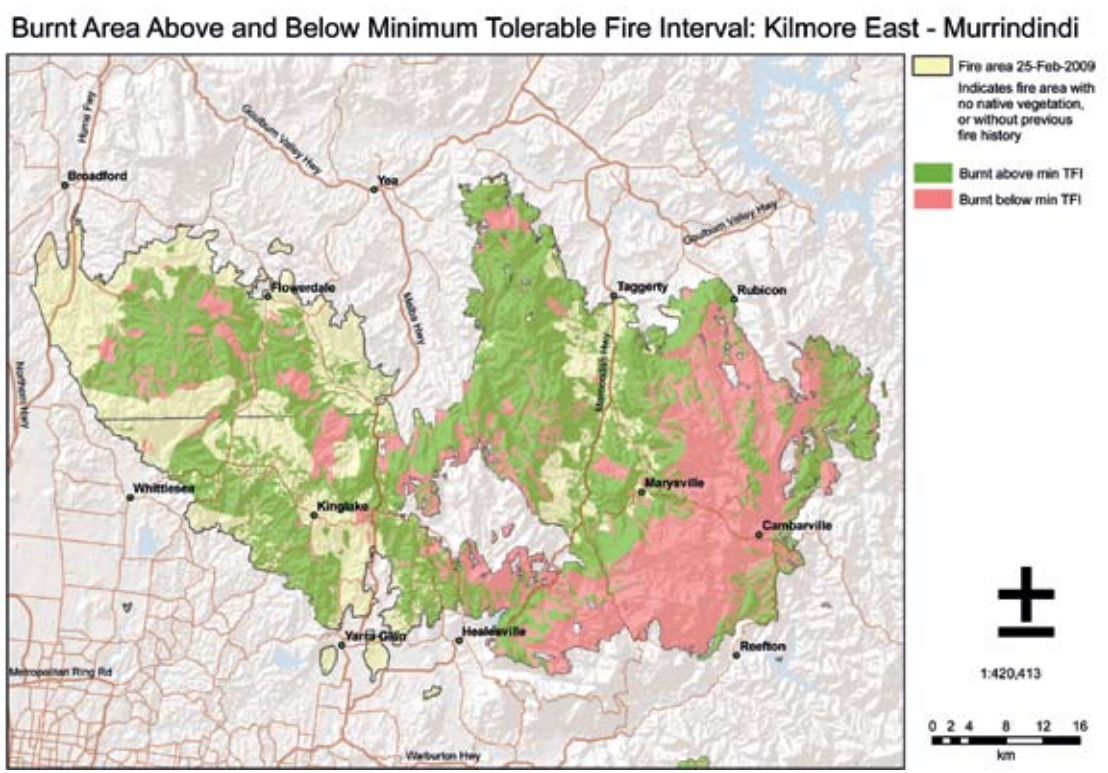
Kinglake 2009 – weeds arrive in rubbish dumped at a carpark

PHOTO: STEPHEN PLATT

Of concern

- **areas reburnt outside their Tolerable Fire Interval** – before first seed set or after senescence

  These areas may fundamentally change in character if the surviving species mix changes.



MAP BY ANDREW BLACKETT

Of concern

- browsing and grazing of regenerating vegetation by rabbits, deer, goats, kangaroos, wallabies, possums etc

Unbrowsed Swamp Gum

Browsed

PHOTOS: STEPHEN PLATT, BUXTON 2009

What you can do to assist ecological recovery:

- Watch as the bush recovers naturally
- Inform the community about ecological recovery
- Surveillance and reporting of new and emerging weeds
- Volunteering for recovery teams

- **Do not** feed wildlife on public land – this can put the bush and wildlife at risk from weeds and disease
- **Do not** replant with tubestock in bushland areas – most areas will recover naturally over time. Introduced plants can upset the delicate natural balance
- **Avoid** soil disturbance – in areas which can be detrimental to plant regeneration, lead to erosion or assist weed invasion
- **Manage your pets** (dogs and cats) so that they do not harm or cause further stress to wildlife

To learn more:

www.dse.vic.gov.au/fireecology

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