

Ecological Fire Management Strategy

Department of Environment and Natural Resources

Purpose

This strategy focuses on fire management for the Southern Brown Bandicoot, identifying a number of issues that should be considered before, during and after fire. Proposed activities that don't meet this strategy's guidelines should be discussed with the Regional Ecologist or the Southern Brown Bandicoot Recovery Team staff.

Species Information

Rating	VULNERABLE – NPW Act 1972, ENDANGERED – EPBC Act 1999.
Identification	This species is roughly half the size of a rabbit, has a distinctive pointed snout, short tail, large rump, and coarse brown and gold flecked coat.
Distribution	Fragmented distribution throughout the Mount Lofty Ranges (MLR), on Kangaroo Island (KI) and in the South-East (SE).
Habitat	<u>MLR & SE:</u> Woodland, forest and heathland, typically with a stringybark dominated overstorey, a very dense shrubby or heathy understorey often with <i>Xanthorrhoea</i> spp. present. Well-drained sandy to sandy loam soils. In modified landscapes in the MLR blackberry infestations also provide habitat. <u>KI:</u> Known to occur in a range of vegetation communities. No soil type across KI defines their habitat.
Populations	Bandicoots are solitary animals but have overlapping home ranges. Population boundaries can be defined by the extent of suitably dense connected habitat. <u>MLR:</u> Four or five metapopulations appear to exist. There is a level of habitat connectivity between habitat patches within a metapopulation but minimal connectivity between metapopulations. <u>KI:</u> It is likely that Dudley Peninsula, south eastern, central and western KI support metapopulations. <u>SE:</u> Three metapopulations appear to exist; Mt Burr / Young, Nangwarry and Caroline. There is some habitat connectivity within land systems, most patches are surrounded by pine plantations. A population is also present in Lower Glenelg River Conservation Park, adjoining the much larger Lower Glenelg National Park in Victoria.
Home Range	Typically 1 to 6 ha, with males having larger home ranges than females.
Dispersal	High juvenile dispersal rates are thought to allow the species to rapidly colonise suitable habitat.
Reproduction	Seasonal breeder (late winter to mid-summer), however in South Australia there is

Southern Brown Bandicoot (*Isodon obesulus obesulus*)



Photo: (left) K. Abley; (right) K. Abley.

some indication that births may be related to rainfall, with wetter areas sustaining year round breeding. One to three young are typically produced per litter, with two to five litters produced annually. Juvenile mortality is likely to be high.

Longevity	Recorded as living for 3.5 to 5 years in the wild.
Diet	Opportunistic omnivores. Diet varies with season. Insects, underground fungi and vegetation matter comprise the bulk of the diet.
Predators	Foxes (<i>Vulpes vulpes</i>), not found on KI, dogs (<i>Canis familiaris</i>) and feral and domestic cats (<i>Felis catus</i>) are known predators of bandicoots.

Fire and Bandicoots

Risks to Bandicoots

Bandicoots have been found to be capable of surviving the immediate impact of low to moderate intensity fires. Indirect impacts stemming from the loss of vegetation cover are likely to have more severe long-term implications for populations.

Bandicoots are highly susceptible to predation when the density of understorey vegetation is reduced and they are particularly vulnerable in the first week following a fire. Bandicoots displaced from their home range will continue to be vulnerable until they establish a level of familiarity with a new area. In the months after a fire the risk of predation will remain high if bandicoots need to venture into, or across, burnt areas to obtain food.

If the entire habitat patch is burnt out in a bushfire localised extinctions may occur, although recolonisation of the habitat is likely if there is sufficient habitat connecting the patch to nearby populations.

Quality of bandicoot habitat may decrease with declines in habitat density or plant diversity. This may occur if habitat is frequently burnt. Habitat quality may also decrease if the density of ground cover vegetation and debris becomes excessively dense. This may occur at some long unburnt sites. Such sites may improve in quality following fire. However high frequency fire may inhibit key habitat features developing and thus affect habitat suitability.



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Fire Management Objectives for Bandicoots

- To minimise the impact of bushfires on bandicoot populations.
- To minimise the impact of fire management activities (including prescribed burns and fire suppression) on the long-term viability of bandicoot populations.
- To ensure that sufficient bandicoot habitat is maintained by implementing appropriate fire regimes across known bandicoot habitat areas.

Strategies for Fire Management in Bandicoot Areas

- Reducing fuel at strategic locations to facilitate bushfire suppression, thereby minimising the risk of a bushfire burning an entire patch of suitable habitat.
- Maintaining more than 80% of the bandicoot habitat within an area of contiguous habitat to be greater than 4 years since last burnt.
- Ensuring majority of high quality bandicoot habitat is assigned to C zones in fire management plans to protect it from impacts associated with frequent fuel management activities.
- Trialling the use of small scale prescribed burns to improve habitat in areas where habitat quality is perceived to have declined.

Actions for Risk Management - Prescribed Burning

Fire Management Planning

Preliminary planning

- Use maps of known bandicoot populations or presumed populations or habitat to assist in fire management planning.
- Include reference to this information in all relevant DENR Response Plans.

Risk assessment

- Prioritise fire management activities to protect key populations and those identified as being at greatest risk from bushfire.

Planning Prescribed Burns

Burnt areas are likely to be occupied by bandicoots more quickly if there are patches of unburnt habitat that provide dense shelter as the surrounding vegetation regenerates. Where large scale burns occur across a bandicoot habitat, aim to achieve levels of patchiness. Juvenile bandicoots are unlikely to survive in post-fire conditions and therefore avoiding the species' breeding season to protect these young is unlikely to confer any major benefits to the species. The season of burning is unlikely to affect bandicoot populations in the long term. Additionally, the species' high reproductive rate will allow rapid recolonisation of areas once the habitat regenerates.

- In C-zones, burns should be conducted under conditions that maximise patchiness (likely to be Spring or late Autumn, depending on soil moisture levels).
- In C-zones, burns should be conducted under conditions that are conducive to rapid regeneration (e.g. critical habitat should not be burnt in severe drought conditions).
- In A and B zones, burns should be conducted to meet fuel reduction objectives but the size and frequency of these burns should ensure that bandicoot populations are not significantly affected.

Size of burn

Based on known bandicoot home range sizes:

- Burns of up to 10 ha are unlikely to have a serious effect on a population unless these represent a large proportion of the habitat patch
- No more than 20% of bandicoot habitat in C-zones within a reserve/group of reserves should be less than 4 years post burn.

Location & frequency of burn

- Burns in bandicoot habitat in C-zones should not be located adjacent to habitat that has been burnt in the last 4 years.
- Where possible, bandicoot habitat in A- and B-zones should not be burnt if the adjacent habitat has been burnt in the last 4 years.
- Bandicoot habitat in C-zones should not be burnt more often than every 15 years.
- 10-20% of long-unburnt habitat (> 20 years post fire) should be retained in C-zones in all reserves/groups of reserves to ensure habitat of different age classes is available to the species.

Actions for Risk Management - Bushfire

During Bushfires

Incident Management

- Technical advisors and experts to be appointed to Incident Management Teams to advise bushfire suppression planning in or near bandicoot habitat.

Protect core local population sites

Bushfire suppression strategy and efforts should aim to protect local bandicoot populations and habitat by:

- preventing entire habitat patches from burning.
- minimising the risk of all habitat patches within a metapopulation burning.
- ensuring bandicoot habitat is considered prior to any back burning operations.
- aiming to retain levels of patchiness rather than blacking out.

After Bushfires

Animal welfare

- Bandicoots are unlikely to be seen following a fire but any seriously injured animals that are located should be euthanased.

Fox control

- A fox control program to protect the remaining bandicoots should be considered and implemented if a bushfire burns a majority of the bandicoot habitat within a habitat patch. Particular consideration is warranted if the population is isolated from other populations and there is suitable unburnt habitat adjacent to the burn site that is considered to be sufficient to sustain displaced bandicoots in the long term.
- Post-fire fox baiting should be intensive (baits replaced weekly) and conducted immediately post fire for at least 2 months to provide protection for bandicoots that are re-establishing new home ranges.

Grazing control

- Grazing control to facilitate rapid regeneration of the habitat for at risk populations should be implemented if regeneration of native vegetation is hampered by excessive kangaroo or rabbit grazing post-fire.

Bushfire risk management

- Widespread bushfires may affect an entire metapopulation, and result in the localised extinction of bandicoots from an area, with minimal chance of future recolonisation.
- If a large proportion of bandicoot habitat within a habitat patch is burnt, the remaining population will be at an increased risk of localised extinction if another bushfire occurs within the next 5 to 10 years. Any prescribed burning should protect unburnt refuges. This should be considered when developing prescribed burning and bushfire risk management strategies.
- If a bushfire burns the entirety of one or more habitat patches, risk management measures should be increased to protect remaining nearby populations and any prescribed burning should be undertaken with extreme caution. If the majority of habitat within a metapopulation is burnt, protection of the remaining population/s within this metapopulation is critical.



Further Information

