Weeds and Pest Animals

Issue: *Weeds often take advantage of post-fire conditions as nutrient-rich ash beds and exposed soils create conditions conducive to weed invasion. Some weeds are dispersed by wind or water, while fleshy-fruited species are often spread by birds and flying foxes. Many feral animal species also boom post-fire, as there is a surplus of carrion for scavengers to eat and reduced protection for prey species from hunters.*

Actions

1. Allow time for land to recover before entering. Vegetation regrowth, even weeds, provide essential cover for fragile soil. This:

-Allows natives to establish

-Protects fragile soil from erosion

-Reduces disturbance for native fauna

2. Focus weed management on adjacent, unburnt areas to minimise transfer of weeds into vulnerable land or waterways

3. Implement feral management strategies including baiting, aerial culling, trapping and fencing. (Try to coordinate feral control with neighbours for best results)

4. Ensure all vehicles and equipment entering your property are clean and free of weeds

5. Tend to perennial grasses and weeds that produce large amounts of seeds first

6. Wait until the site has recovered before attending to woody weeds

7. Allow weeds that have survived the fire by suckering or coppicing (e.g. Lantana, Blackberry) to grow at least knee high before treating with herbicide

8. Cut and paint or spot spray herbicide to weeds to reduce competition with native regrowth, according to label directions

Woody weeds likely to invade after fire:

>Ground Asparagus *(Asparagus aethiopicus)*
>Privet species *(Ligustrum spp.)*
>Blackberry *(Rubus fructicosus aggregate)*
>Lantana *(Lantana camara)*
>Groundsel Bush *(Baccharis halimifolia)*
>Blackberry Nightshade *(Solanum nigrum)*
>Fireweed *(Senecio madagascariensis)*
>Bitou Bush and Boneseed *(Chrysanthemoides monilifera)*
>*Fabaceae* family such as:
-Scotch Broom (*Cytisus scoparius)*
-Gorse (*Ulex europaeus)*

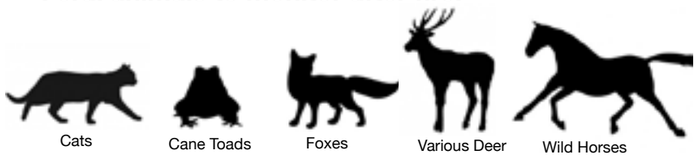
African Lovegrass *(Eragrostis curvula)*

You should first attend to perennial grasses such as African Lovegrass (*Eragrostis curvula)*, Coolatai Grass (*Hyparrhenia hirta*), South African Pigeon Grass (*Setaria sphacelata*), Serrated Tussock (*Nassella trichotoma*), and other species that produce large quantities of seed quickly post-fire. The use of herbicides after fire has been found to be helpful when controlling these four exotic grasses.

Post-fire is also a great time to control or eradicate Lantana (*Lantana camara*). Germinating and resprouting Lantana is vulnerable to herbicide treatment. Unburnt and recovering areas in BMAD (Bell Miner Associated Dieback) susceptible regions and ecosystems will most likely suffer added impacts after fire if Bell Miner birds (*Manorina melanophrys*) move in from burnt areas. You should also look out for invasive vines such as Cats Claw (Dolichandra unguis-cati), as they can become a problem over time. Annual wind-dispersed weeds like Fleabane (*Conyza spp*.) or Ragweed (*Ambrosia spp*.) pose a smaller threat as they will likely be shaded out once a canopy returns in wooded areas. Refer to the Hotspots Fire, Weeds and Native Vegetation report* for more information.

Fleabane *(Conyza spp.)*

Feral animals to monitor after fire:



We acknolwedge the Traditional Owners of Country throughout Australia and recognise their continuting connection to land, waters and culture. We pay our respects to their Elders past, present and emerging and acknowledge their contribution to fire management in the past and into the future.

Resources: *hotspotsfireproject.org.au/ecological-resources; www.naturalresources.sa.gov.au/samurrarydarlingbasin/publications/bushfire-recovery-and-biodiversity; Mortensen, S. (2003), Bushcare after fire, Bushcare Newsletter, Blue Mountains City Council.

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HOTSPOTS FIRE PROJECT

www.hotspotsfireproject.org.au

Managing Land Post-Fire

Managing a landscape post-fire comes with many unique challenges. This fact sheet is designed to give you a brief overview of some of those challenges and actions you can take to mitigate them.

Wildlife

Issue: *While some native species have adaptations that help them survive some fires or exploit post-fire conditions, most are impacted by fire in some way. For those that do survive, there is likely to be limited food, water and shelter available. Many species also face additional pressure from factors such as land-clearing and climate change, and so are especially vulnerable at these times. Recovery actions should focus on threatened species first, as these are the most vulnerable.*

Injured Wildlife

If you can, safely take injured animals to your nearest vet.

Call your local wildlife carer to let them know which vet you have taken the animal to.

Do not approach injured snakes, flying-foxes, large macropods, raptors or monitors as these must be rescued by trained specialists.

Wildlife Rescue: www.wires.org.au/ or www.nwc.org.au/resources/injured-wildlife-find-your-nearest-rescue-group/

Actions

1. Put out water for surviving wildlife.

-Leave out multiple shallow bowls of different depths

-Provide sticks for smaller animals to climb out on and stones/ pebbles for insects to land on

-Place near vegetation to provide shelter from feral species

-Regularly refill with fresh water

2. Provide shelter from predators for small animals by leaving fallen logs on the ground.

3. Put out food - by feeding wildlife you are making a commitment to support them at least during the initial period of stress and deprivation. Keep pets inside while feeding wildlife.

Insectivorous birds, mammals and lizards: Small - meal worms and good quality dry dog food (must be offered with water to prevent dehydration). Be careful of attracting predators. Large - very lean beef/ kangaroo mince.

Seed/grain eating birds: Good quality budgie seed/ small parrot mix. No sunflower seeds or bread. Careful of spreading weeds in native areas.

Possums: starchy veg and fruit (sweet potato, pumpkin, corn, apples, oranges, watermelon and herbs). No bread.

Kangaroos, wallabies, wombats: kangaroo pellets, lucerne chaff, horse pellets. No 'brassica' veg (i.e.. kale, cabbage, broccoli, bok choy etc.)

4. Make your pool wildlife safe.

-Drape something over the edge of your pool so animals can climb out

-Check your pool regularly, including in the skimmer box

5. Put up nest boxes and insect hotels to replace lost hollows and trees. If an arborist is available, chain-saw hollows could be investigated.

Please ensure that you only carry out the suggested activities if conditions are safe to do so. Post-fire landscapes come with many hazards including tree fall, unstable ground and exposure to contaminates. Please proceed with caution.

Resources: https://www.sgaonline.org.au/insect-hotels/; https://perfectpets.com.au/best-pet-blog/post/what-you-should-feed-wildlife-during-drought-and-bushfires; www.wires.org.au/wildlife-info/wildlife-factsheets/bushfire-factsheet; www.naturalresources.sa.gov.au/samurrarydarlingbasin/publications/bushfire-recovery-and-biodiversity.

Monitoring

Issue: *Monitoring the response of plants and animals post-fire allows you to better understand how your land is recovering. The insights you gain from monitoring can then be use in adaptive management, which allows you to make informed decisions about where to invest your time and resources.*

Actions

1. **Write a monitoring plan** for your property*
2. **Map** where the fire affected your property
3. **Record data** regularly
4. **Set up photo points** in critical areas
5. **Place camera traps** and acoustic recorders around your property (if you have the resources)
6. **Use adaptive management** to influence your management decisions
7. **Write and update** your Hotspots Property Fire Management Plan^

Types of monitoring include:

> Photo points - photos taken from the same location and compared over time e.g. 3, 6 or 12 months

> Vegetation plot monitoring

> Weed monitoring

> Visual assessment of vegetation, habitats, scats

> Motion sensing camera traps

> Fauna surveys (this can include spotlighting and pit-fall traps or a survey by ecologists, but ethical approval is needed to carry out these methods)

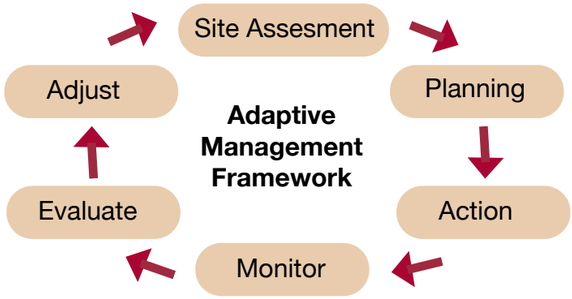
Point A immediately after fire

Point A 11 months after fire

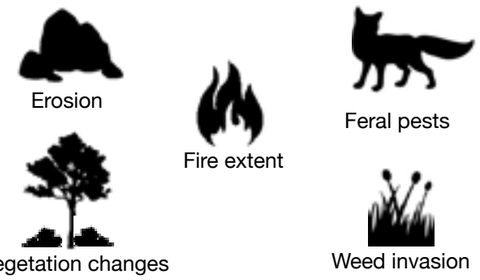
Above is an example of photo point monitoring. Photo point monitoring allows you to record changes in the landscape and compare land management techniques over time.

A dingo seen by a camera trap

A motion sensing camera is an effective way of recording the species on your property. A camera trap can be left in position for weeks at a time, capturing an image only when something moves. This can be a useful tool when measuring feral animals as well as rare native species.



Things to monitor include:



Resources: * The Hotspots *Ecological Site Assessment & Monitoring of Bush Fire Managment Landholder Guide* explains this in more detail. ^The Hotspots Workbook 1 takes you through the steps of creating a Property Fire Management Plan. These resources can be accessed at hotspotsfireproject.org.au/ecological-resources

Water and Erosion

Issue: *After the initial damage of fire, there are many secondary effects that can cause harm to your property. Thick layers of ash can make soil hydrophobic and a loss of vegetation often exposes topsoil to erosion, with many flow-on effects for water and soil quality. Freshwater systems can take between 5-20 years to fully recover from fire effects, therefore minimising erosion into water ways is crucial.*

Actions

1. **Use Coir logs and erect silt fences** around waterways to capture sediments
2. **Plant native trees** and shrubs to stabilise water banks and slopes
3. **Create log terraces** (or leave fallen trees) to prevent large organic matter entering waterways and prevent erosion
4. **Use straw and wood mulch** for large scale erosion control. Be careful of spreading weeds in native areas, local plant matter such as acacia thatch should be used where possible.
5. **Minimise the use of vehicles** and livestock on bare ground
6. **Restrict livestock, feral animals** and in some cases native animals from recovering areas.

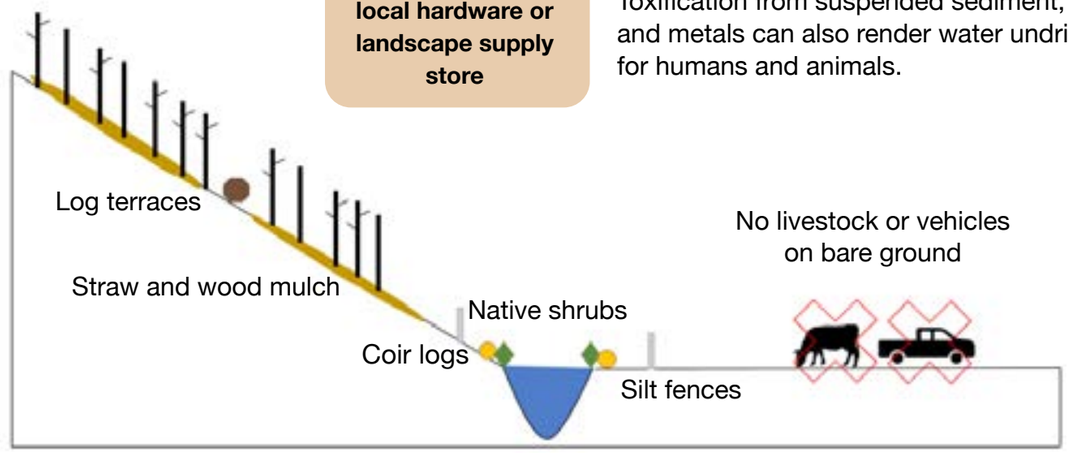
Coir logs can be purchased from your local hardware or landscape supply store

Erosion damage in a creek bed

Soil and other debris are often washed into waterways during the first big rainfall events after a fire. This can cause damage to water quality as well as creek structures.

An algal bloom in a dam

Water quality can be impacted by large amounts of organic matter and sediment being washed into waterways. A loss of vegetation can also increase water temperatures, this temperature increase plus the added organic matter can cause deoxygenation of the water, as microbes use up oxygen (algal bloom) causing many aquatic animals to suffocate (fish kills). Toxification from suspended sediment, nutrients and metals can also render water undrinkable for humans and animals.



Resources: Robichaud, P.R. and Ashmun, L.E. (2012) Tools to aid post-wildlife assessment and erosion-mitigation treatment decisions, *International Journal of Wildland Fire*; www.waterquality.gov.au/sites/default/files/documets/impacts-bushfires.pdf; www.agric.wa.gov.au/water-management/contaminated-farm-dams; Government of South Australia (2015), *Bushfire recovery and your property,* Natural Resources Adelaide and Mt Lofty Ranges; www.waterquality.gov.au/issues/bushfires.

Timeline

Fire event	1 day	1 week	1 week	1 month	3 months	1 year
	Put out water and shelter for wildlife	Take actions to prevent soil erosion	Establish monitoring programs	Implement weed management actions	Use monitoring program to assess actions	Maintain a Property Fire Management Plan and implement actions regularly