Fire management for biodiversity

The most important aspect of fire management is understanding how species, populations and communities respond to fire regimes.

Different plants and animals have different tolerances to fire regimes because of their biology. Where inappropriate fire regimes occur regularly across a landscape, there's a high chance of that certain species will disappear from the area.

Fire management for biodiversity conservation is all about minimising the risk of extinctions resulting from inappropriate fire regimes. When we determine guidelines, the species most sensitive to changes in fire frequency, intensity, season and extent are used to define the minimum (or maximum) fire regime. These species are called Key Fire Response Species. Vital to this whole process is the understanding of the shelter, food, and breeding/re-colonisation requirements of those species.

The steps to determine ecologically appropriate fire regimes

When determining guidelines for ecologically appropriate fire regimes, DEWNR use the following steps:

- Identify the objectives for the area.
- Compile lists of flora and fauna in the community and highlight those that are significant.
- Identify species (both flora and fauna) vulnerable to changes in fire regime (Key Fire Response Species).
- Assess the impact on the Key Fire Response species of any fire regime.
- Specify appropriate minimum/maximum fire intervals, fire intensity, range of the season and fire extent based on the Key Fire Response species.
- Review Key Fire Response Species as any new information becomes available.

These guidelines are used to define a window of acceptable fire regime (in particular, fire intervals) that ensures the conservation of existing plant and animal species.

Fire and biodiversity

Fire – a natural part of our landscape

For more information on this topic contact the Fire Management Officer in your Region.

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Berri	8595	2111
Clare	8841	3400
Kingscote	8553	4444
Mt Gambier	8735	1177
Port Lincoln	8688	3111

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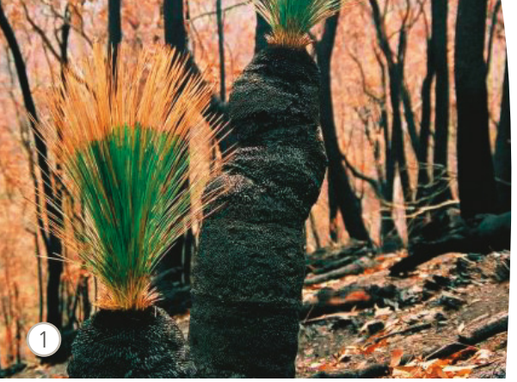

Fire - a natural part of our landscape

Fire has played an integral part in the ecology of the Australian landscape for millions of years.

Over the last 40 000 years Aboriginal people are thought to have used fire to manage the landscape, and since European settlement, fire has been used for land clearing, agriculture and forestry.

In a given area, soil type, rainfall and fire regime are very significant in shaping ecology. Fire regime is defined as the frequency, intensity, season and extent of fire. It is therefore important for reserve and land managers to know how fire behaves and the way plants and animals respond to fire regimes.

While fires can cause death of some individual plants and animals, it is also responsible for stimulating the regeneration and renewal of habitat for others.

Examples:

① + ② Grasstrees are stimulated to flower and seed following fire.

③ + ④ Banksia ornata release seed from cones following fire.

Silky mice mainly occur in heath land where plants produce seed throughout the year. Two to three years following fire creates a habitat ideal for year round seed availability, ideal for the Silky Mouse (pictures five and six).

South Australia's special conditions

Since July 2001, 378 bushfires have burnt over 834 000 hectares in South Australia's Reserves. These fires start when three essential ingredients occur: fuel; warm, dry weather; and an ignition source.

Native vegetation found in reserves and on private property makes ideal fuel. Many Australian trees and shrubs have highly flammable oils in their leaves, and drop significant amounts of bark and leaves which accumulate on the ground. Southern South Australia's Mediterranean climate of wet winters and warm dry summers produces rapid growth conditions in winter, followed by dry summers - ideal for fire.

Lightning strikes from dry thunderstorms ignite most of the naturally occurring fires. However, arson in parks and accidental fires in agricultural areas are still significant sources of bushfires. Even in the semi-arid parts of the State, the climate is hot and dry for much of the time, broken by the sporadic heavy rain.

How fire shapes biodiversity

While bushfires can cause damage to homes and infrastructure in settled areas, we can use fire to our advantage - to shape the biodiversity of parks and reserves - with careful study, planning and management.

Different fire regimes are required for different areas because the interval between fires affects the growth cycle of plants and animals. Species, such as Desert Banksia, may not survive if fires are too frequent, as the plants require between 7 to 15 years to reach maturity and set sufficient seed. If this occurs, Desert Banksia will be replaced by another species that has adapted to frequent fires, such as Tea-Tree (Leptospermum spp.).

Infrequent fires can disadvantage plants that need fire to assist regeneration, such as heath species. Long periods without fire or short fire intervals can both lead to declines in biodiversity.

Are our animals safe?

Just like plants, animals have fire survival techniques. Most mobile animals like birds, kangaroos and wallabies can move out of burning areas to safety in unburnt areas.

Wombats and echidnas can survive fire by sheltering in burrows or logs as the fire passes. Reptiles and amphibians take refuge underground, while possums and other arboreal mammals move from tree to tree ahead of low intensity fires, or seek safety in the high crowns and hollows of trees. Most insects are well adapted to survive fire under bark, litter and soil or by flying.

Animals re-colonise from unburnt areas when the habitat has become suitable again. Fire management plans ensure that prescribed burning activities maintain habitats for plant and animal species.

Using fire as a tool for biodiversity and conservation

Any program implementing ecological fire regimes must:

- Focus fire management on the conservation of populations (rather than individual animals) across a landscape with the goal of avoiding local extinctions.
- Use vital attributes to identify groups of species most susceptible to inappropriate fire regimes.
- Develop Ecological Fire Management Guidelines from gathered life history or vital attribute knowledge.
- Apply a range of intensities, frequencies, seasons and scales of burning to optimise the conservation of biodiversity.
- Monitor fire management results and use these to determine future action.