



## Bushfire impacts and threatened ecological communities

### About threatened ecological communities

As at February 2020, there are 84 ecological communities listed as threatened under the national *Environment Protection and Biodiversity Conservation Act 1999*. They represent many of Australia's most threatened ecosystems.

Ecological communities are groups of native plants, animals and other organisms that naturally occur together and interact in a common habitat. Some are rare and localised communities of wildlife, and others have a broader range. They are often defined by their habitat type or vegetation structure (e.g. as types of grassland, woodland, rainforest or wetland). Each plant or animal species depends on other species within the ecological community to survive.

The purpose of national listing of ecological communities is to identify and conserve those plant and animal communities, and associated ecosystem functions, that are most at risk of being lost, and are in most need of recovery. There are usually multiple threats to ecological communities, typically a combination of land clearing, weeds, feral animals, climate impacts such as prolonged drought, and changed natural water and fire cycles.

A notable threat for many ecological communities is when fire regimes change and fires are more intense and/or more frequent.

### Ecological communities in bushfire affected areas

Determining the areas burnt is just the first step in understanding the potential impacts of bushfires on ecological communities.

Some areas may have now been burnt too many times in recent decades for the ecological communities to recover without assistance (e.g. heathland or peat swamp communities). In some places it may be the largest or healthiest remaining patches that have burnt, compounding the overall impact on the ecological community.

Fires can vary in intensity and patchiness across the landscape and within a burn area. Fire may affect one or more vegetation layers (e.g. a crown fire versus a light understorey burn).

Some habitat types (e.g. rainforests) are more vulnerable to fire than others, and different species within the same ecological community may vary in their vulnerability. For example, many eucalypts and other plants may recover or even benefit from a fire if it is not too intense, while fire-sensitive plants such as sphagnum moss, many rainforest species or orchids that grow on trees may be severely impacted by fire, including low intensity fires. Recovery of some species or community features can be extremely slow. For example, large, old trees that play a critical structural and functional role (e.g. providing tree hollows, nutrient cycling, hydrological regimes, providing microclimates and protecting other species from weather extremes) may be lost and can take decades to centuries to recover.

In addition, even when the dominant native vegetation of an ecological community recovers, populations of animal species may have been severely depleted or lost. This in turn will affect the recovery and long-term health of the broader ecosystem which relies on these animals for functions such as soil turnover, pollination, spore and seed dispersal.

Fires can amplify pressure from other threats, for example by accelerating the invasion of weeds, or worsening the impacts from introduced animals, in ways that prevent native species from recovering as well as they once did.

Some of our most threatened ecological communities are already struggling with a range of threats, and recent widespread fires have put them at further risk of degradation through loss of biodiversity and ecosystem function. These include some of the more remote, intact, highest condition and/or connected wildlife refuges.

## Fire recovery in ecological communities

It is important to assess and monitor impacts to threatened ecological communities after fires and consider how governments, scientists, land managers and local communities can continue working together to help them survive, recover and become more resilient to fire.

In terms of post-fire restoration efforts, key immediate priorities may include supporting fauna (including through controlling introduced predators); weed, erosion and sedimentation control; and minimising grazing pressure on recovering vegetation, followed by assisted revegetation in key areas if needed.

### Supporting fauna

Following a fire, surviving fauna may be deprived of food, clean water, and shelter from weather extremes and predators. Controlling introduced predators and supplementing missing resources (e.g. by providing artificial nestboxes or shelter sites, or creating new hollows, and providing food and water) until the natural systems recover is likely to help maintain animal populations within ecological communities.

Apart from moving hazards to humans, avoid removing burnt or fallen timber, as this provides a vital refuge for wildlife post fire, and important habitat long-term. Post fire debris is also important for retaining nutrients and water in drought and fire affected landscapes.

### Reducing weeds

Many major weeds such as invasive grasses, blackberries, bitou bush and lantana will quickly

thrive and worsen in the weeks and years following fire, impeding the recovery of native plants, altering animal habitat and invading surrounding natural and agricultural areas.

If weeds are not managed comprehensively and repeatedly post-fire (both immediately and then followed up for several years) they are likely to spread further into core natural areas and further degrade ecosystems.

Many existing weeds are most prolific along waterways, tracks and bushland edges and many of these areas are more easily accessed post-fire. Thus, fires provide an opportunity to hit weeds hard, which could lead to a lasting improvement in key areas.

### Minimising erosion

Exposed soils post-fire are susceptible to wind and water erosion, especially following heavy rain. It is important to consider soil loss and manage run-off of ash, debris and fire retardant where it will detrimentally impact waterways, wetlands and threatened aquatic species and communities, particularly those already impacted by drought. Minimising soil disturbance, protecting regrowth and active management of erosion (e.g. installing silt fences, seed-free hay bales) can be beneficial in many badly burnt areas.

### Reducing grazing and trampling pressure

Prompt replacement of burnt fencing to prevent access to native vegetation by stock or feral animals will help protect regenerating plants and wetlands. Control of feral grazers such as rabbits/goats/pigs/deer/horses will help reduce trampling and grazing pressure on regenerating plants and wetlands. Exclosure fencing around rare plant species, or carefully managed supplementary feeding of native grazers in some circumstances, can also reduce pressure on regenerating plants in key areas.

### Other management

There are also other management needs and opportunities to improve recovery of threatened ecological communities post fire, such as protecting important unburnt areas (refuges) from further fire and other threats. Long-term management of appropriate fire regimes is also important and a priority for threatened ecological communities wherever it is practical.