Manypeaks
rising from the ashes

Several important populations of threatened plants and animals—including Gilbert's potoroo, the most threatened mammal in Australia—live in isolated bushland areas along the South Coast region. When a scorching fire at Mount Manypeaks Nature Reserve killed many threatened noisy scrub-birds and western whipbirds—and burnt large areas of their habitat—the tragedy also provided scientists with the chance to find out more about the fire protection needs of the region's threatened plants and animals.

by Sarah Comer and Allan Burbidge

In today's fragmented landscapes, conserving biodiversity presents many challenges. From the inherent complexities of managing isolated populations of plants and animals to managing processes and threats such as fire and introduced animals, land managers and scientists are constantly working to achieve real biodiversity outcomes, to ensure the long-term conservation of Western Australia's unique plants and animals.

This is an ongoing learning process. For example, for many years, noisy scrub-bird habitat had been managed on the basis of excluding fire from such areas, since scrub-birds prefer long-unburnt vegetation. The success of this policy was such that, in combination with a translocation program, it allowed the population size to exceed all expectations. In recent years, however, large wildfires on the south coast have forced managers and scientists to reconsider the strategy of total fire exclusion.

Special needs

Fire regimes that are inappropriate for a specific species may ultimately lead to its loss. Some animals require special food or shelter that is only found in long-unburnt vegetation, some rely on seeds produced by early post-fire colonising plants, and some require

structurally simple vegetation that is often seen in the years following a fire. Plants also have varied requirements, in both fire intervals and fire intensities, with many needing more than 10 years between fires to flower and set seed. Management of natural areas is thus, by necessity, a delicate balancing act to ensure different species with sometimes conflicting requirements are able to persist.

Staff from the Department of Environment and Conservation's South Coast region, Fire Management Services and Science Division have been working with recovery teams and community groups to provide the best outcomes for a suite of threatened plants and animals found in the Two Peoples Bay–Mount Manypeaks area. They include the Gilbert's potoroo, noisy scrub-bird, western ground parrot, western bristlebird, western whipbird and Australasian bittern. Threatened plants in the area include granite banksia (*Banksia verticillata*), mountain paper-heath (*Sphenotoma drummondii*) and Manypeaks rush (*Chordifex arbortivus*). Species that are uncommon, but not listed as threatened, include a trapdoor spider known only from moist habitats on the south coast.

The noisy scrub-bird has had the longest running recovery program of any of these species. The population of scrub-birds on Manypeaks was established following translocations in 1983 and 1985. By 1994, this area supported more scrub-birds than the source population, at Mount Gardner in Two Peoples Bay Nature Reserve. The strategy was to establish distinct subpopulations of this threatened bird, and thus minimise the risk of losing the entire population in a single wildfire.

The scrub-bird program also stimulated much more work in the Albany area, resulting in increased knowledge of other threatened species. To make decisions on managing habitat for these species, fire managers have had to come to grips with the special requirements of each species (see box on page 53) and needed to determine exactly where they occur. It is important to know when two or more of these species occur in close proximity, so that no species suffers because of management for the special requirements of another. Wildfire, however, can upset the best laid plans.

Unfriendly fire

In 2000, a wildfire burnt through most of the Angove Water Reserve and into Two Peoples Bay Nature Reserve, affecting about 6500 hectares of habitat used by several threatened species. Its impact on scrub-birds was not severe. The scrub-bird population had been surveyed just months before the fire.

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Main Mount Manypeaks three months after the fire. Kingias have flowered and sedges are resprouting, providing food for quokkas and other grazing animals.
Photo – Sarah Comer

Left Quokkas have been seen regularly since the wildfire, having survived in small refuge areas. They are now benefiting from the resprouting and germinating vegetation.
Photo – Babs and Bert Wells/DEC

Right The population of the western heath subspecies of the western whipbird was impacted severely by the fire.
Photo – Babs and Bert Wells/DEC

Below Staff from the WA Museum and DEC survey the southern slopes of Mount Manypeaks in the months after the fire.
Photo – Anne Cochrane

It was monitored again in 2001, and the recovery team estimated that less than 10 per cent of the total scrub-bird population had been lost in the wildfire. Quokkas, ringtail possums, bristlebirds and whipbirds had not recently been surveyed in the burnt area so it was impossible to determine the effect of fire on these species in any detail. While there was no impact on the only population of Gilbert's potoroo, the wildfire highlighted Mount Gardner's vulnerability to wildfire. It also highlighted the value of the noisy scrub-bird translocation program.

This fire provided the impetus for more extensive work on some of the other threatened birds and, in 2001, the Albany Management Zone was surveyed to provide a complete picture of population sizes of whipbirds and bristlebirds in the area.

Different species, different needs

Most, if not all, of the threatened vertebrates on the south coast are negatively impacted by extensive intense wildfires. Most of these species have limited dispersal abilities, so cannot escape such fires and are slow to recolonise afterwards. Although the western ground parrot is quite mobile, it suffers from extensive fires because its habitat is fragmented and restricted in area, so high-intensity fires can have a negative impact on local populations.

On the other hand, low-intensity fires are not much of a problem for the tree-dwelling ringtail possum, provided enough of the canopy is left intact to provide shelter sites and food. Such fires may even benefit possums, as they can promote the growth of young leaves on jarrah saplings, a particularly important food source for ringtail possums. However, even low-intensity fires trickling through the undergrowth can be bad news for semi-flightless noisy scrub-birds, which rely on a dense layer of leaf litter in which to find their food—litter invertebrates. In some places, fires like this are not a problem for western bristlebirds, as they can escape and move to a nearby unburnt area, provided it has similar vegetation structure. Some more common birds, such as robins, can even benefit from cool fires because they open up the vegetation structure and make it easier for these birds to use their 'perch and pounce' methods of finding food.

Like many other animals, quokkas suffer from intense fires. However, much of the area burnt during the recent fire on Manypeaks was at low intensity, and the mosaic of fire intensities left numerous refuge areas. Regeneration of vegetation following the fire has provided ideal conditions for quokkas, and the population has been expanding rapidly. The effects of fire on Gilbert's potoroos are much less clear. They have only survived at Two Peoples Bay in an area that has not been burnt for a very long time, suggesting that they are highly fire sensitive. However, even if the fungi that make up more than 90 per cent of the potoroo diet are more abundant following cool, patchy burns, the potoroo's requirement for dense shelter may not see this species benefit directly from fire. Much more research is needed to understand the complexity of the relationships between fungus-feeding mammals, their food supplies and fire.

Inappropriate fire can also be a problem for some invertebrates, such as the trapdoor spider (*Moggridgea* sp.) that was found on Manypeaks following the fire. These Gondwanan relictual spiders have shallow burrows around six millimetres deep in mossy creekbanks. These shallow burrows don't afford much protection against the intense heat of a wildfire, and individuals may be literally cooked in their burrows. Intense fire results in erosion and collapse of creekbanks through loss of vegetation, and the post-fire accumulation of litter and vigorous regeneration often makes these banks unsuitable for burrows.

The mountain paper-heath is an endangered species found on Mount Manypeaks, in Stirling Range National Park and in a small population near Walpole. It grows in shallow soils in steep rocky areas that afford it some protection from fire. Its seed is stored in the soil, and the plant is killed by fire. The juvenile period, or time to first flowering, is not known. The granite banksia is also restricted to relatively fire-free sites, often associated with granite outcrops. It is killed by fire, but extremely old populations may require fire to stimulate seedling recruitment. If threatened animals, or other fire-sensitive plants, occur in the vicinity, careful management of regeneration burns is required.

If these threatened species occur in the same area, management can be challenging, and has to be conducted at a very fine scale.

Above One of the noisy scrub-birds captured recently to translocate to Porongurup National Park.
Photo – Alan Danks

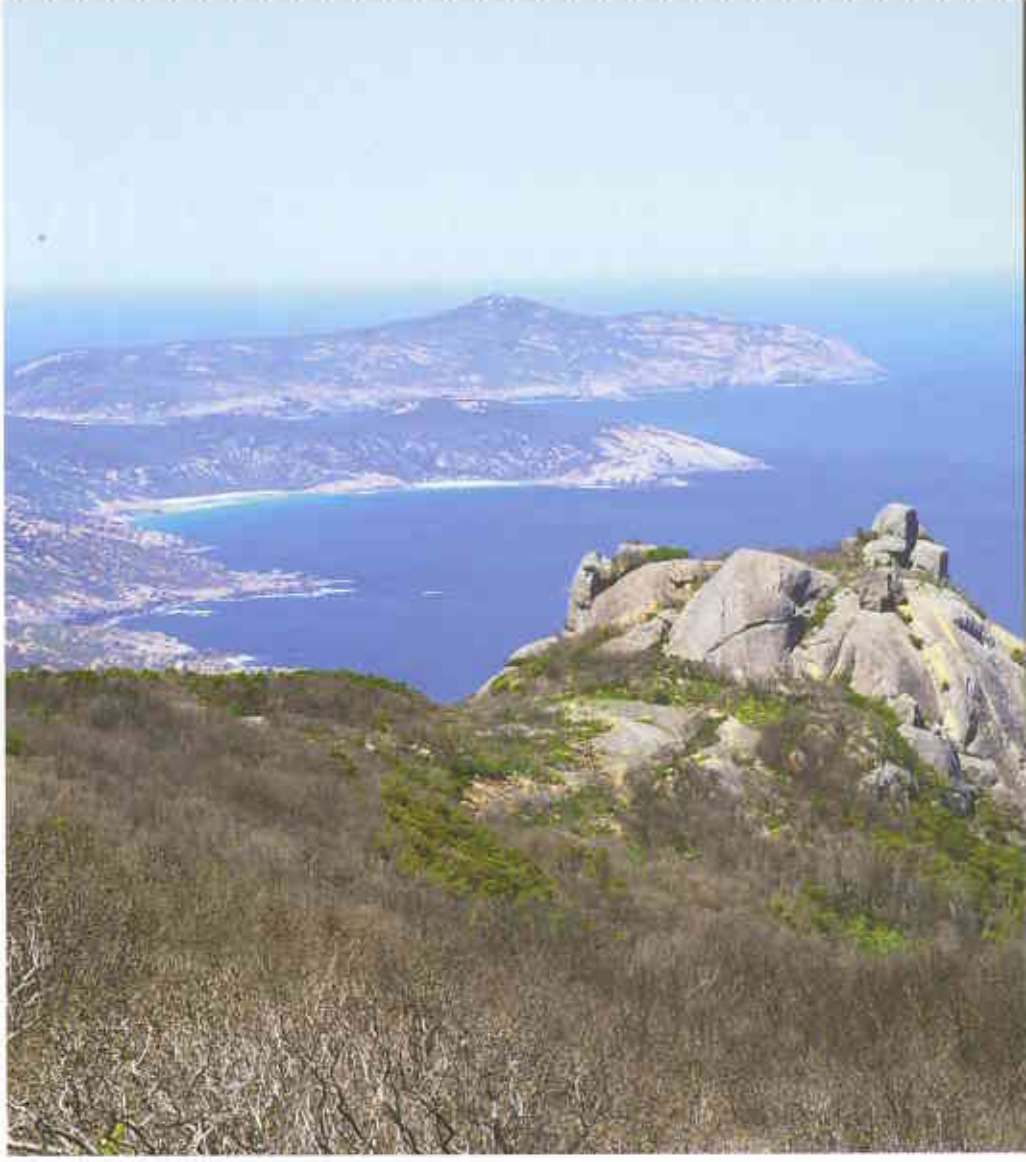
Left Basing water bombers in Albany has provided an opportunity to fight fires in otherwise inaccessible areas.

Below left Regenerating vegetation on Falls Gully on the northern slopes of Mount Manypeaks. It will be many years before it reaches maturity.
Photos – Sarah Comer

This improved our knowledge base, but still left the hard decisions. A discussion paper, written in 2003, put forward ideas on the fire management of the Two Peoples Bay –Manypeaks area. People with fire expertise and those with detailed knowledge of the area's plants and animals subsequently participated in a workshop in Albany. The workshop examined the inherent problems of fire management in the area, and suggested some long-term solutions. After they had been endorsed and supported by recovery teams, the first of a number of prescription burns was planned for the area in 2004.

Mosaic for Manypeaks

The idea was to reduce the risk of large-scale wildfires by creating a mosaic of fire ages. At Mount Manypeaks, however, a single cell of around 4500 hectares had extensive areas containing very old fuel loads—and access was restricted to the perimeter of the cell due to the dense vegetation and lack



Right In some places the wildfire was very patchy, as on the ridge of Mount Manypeaks looking towards Bald Island. *Photo – Sarah Comer*

of internal tracks so—the use of fire in this area was highly risky, except under the most favourable conditions. To begin constructing a mosaic of fuel ages in the Manypeaks cell it was planned to aerially ignite very small areas under moist conditions. Before this plan could be executed, however, a lightning storm struck in December 2004.

A local fisherman reported a thin column of smoke on the southern slopes of Mount Manypeaks on 31 December. Crews—including water bombers, which had been based at Albany since 2004—were immediately mobilised to fight the fire but, despite their best efforts, the entire 4500-hectare block was burnt to some degree. This single area was home to more than half of the world's noisy scrub-birds and more than 30 per cent of the western heath subspecies of the western whipbird.

Project Phoenix

Because of the unique opportunity to study post-fire recovery of Mount Manypeaks, 'Project Phoenix' was established. It began in early 2005 and will survey populations of threatened birds, study their recolonisation of the Manypeaks area and increase monitoring of other wildlife in the area. It will also increase fox baiting and implement cat control in the area; improve fire access and plan for future wildfire control at Manypeaks; and increase understanding of the impact of wildfire on noisy scrub-bird habitat.

In 2005, an enthusiastic team of volunteers and CALM staff (CALM has since been incorporated into the new Department of Environment and Conservation) conducted post-fire baseline surveys of noisy scrub-birds, western whipbirds and western bristlebirds. Populations of all three species had been severely impacted by the wildfire, in particular, those of noisy scrub-birds and western whipbirds. In fact, almost all of the noisy scrub-birds in the 427 territories counted in the Manypeaks area in 2001—estimated to be about 1000 scrub-birds—had perished.

The loss—through this one event—of 4500 hectares of optimal scrub-bird habitat, in addition to approximately 4000 hectares of habitat burnt in other wildfires since 2001, means that only around 4500 hectares of optimal scrub-bird habitat now remain in the Albany area. Again, this demonstrated the value of the scrub-bird translocation program. It also reinforced the belief that the main objective is to ensure long-term persistence of all threatened species—a policy of fire exclusion might maximise numbers of individuals of a given species at some points in time, but is not necessarily the optimum strategy in the longer term, especially when it creates a situation where wildfire is almost impossible to manage, thereby putting the animals living in such areas at risk.

Challenges for the future include developing strategies that maintain suitable habitat for the assemblage of plants and animals—threatened and non-threatened—that occur in this and other areas with similar biological diversity. On Mount Manypeaks there is now an opportunity to establish a managed fire regime that minimises the risk of extensive fires affecting the entire mountain area. Increasing our understanding of fire behaviour—and the habitat requirements of these unique species—will help managers to use fire to help conserve this highly valuable conservation area.

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