Wildfires

LIVING WITH THE THREAT

Each summer, firefighters from the Department of Conservation and Land Management (CALM) attend 300 or so wildfires in the forested south-west of Western Australia. Fire researcher Lachlan McCaw looks at two case studies to demonstrate the effectiveness of a technique that is being used to protect life, property and the environment.

BY LACHLAN McCAW

The south-west of Western Australia has a Mediterranean climate with regular hot, dry and windy weather during the summer months. This results in conditions ideal for the start and spread of intense forest fires. These wildfires are caused by lightning, industrial and domestic accidents, and escapes from various types of burning-off. Regrettably, a large number of wildfires are also deliberately lit, often during severe weather and in locations designed to create difficulties for firefighters.

Fire is no stranger to the forests of the South West. The Aborigines regarded it as an integral part of the landscape and regularly used it as a tool to assist their hunting and food gathering. It was also used to 'clean up' the dead wood and litter, to encourage regrowth of vegetation and to flush animals from cover. Such fires, together with those ignited by summer lightning storms, fashioned the landscape over thousands of years before the arrival of European settlers. Plant and animal communities in the South West have evolved in the presence of fire and have developed adaptive traits that enable them to survive and prosper under a range of fire regimes.

However, where once vast forests and woodlands stretched untouched across the South West, today there is a mosaic of farms, forests, towns and settlements. In some places the landscape has been so fragmented that entire species are restricted to a handful of small reserves. Additionally, there are water catchments, timber supplies, national parks and conservation areas to protect. All these valuable assets - and human lives - could be threatened if summer wildfires were allowed to spread unchecked.

BUSH HIDEAWAYS

The past few decades have witnessed a rapid expansion of residential developments in the hills of the Darling Range, east of Perth. Improved transport and communications, greater leisure time and growing environmental awareness among the community have led many people to escape the bustle of the city in favour of outlying suburbs. There, they can enjoy the tranquillity of the bush and be close enough to the city to share most of its advantages. Homes in these suburbs are often set among dense forest, perched on steep rocky hillsides or tucked away at the end of narrow winding roads.

The undoubted attractions of living among the forest must, however, be tempered by considerations of the threat posed by wildfire. In several Australian states, tragic loss of life has occurred regularly at the urban-bushland interface where the forests and residential areas meet. Who could forget the dramatic television footage of the 1983 Ash Wednesday fires in Victoria and South Australia? Seventy-five people perished in these fires while property costs totalled many millions of dollars, and the environmental impact may never be fully measured.

Unfortunately, some residents remain unaware of this threat, while others are reluctant to take the steps

Hundreds of homes built within forest settings were burnt by the 1983 Ash Wednesday fires in south-east Australia.
Photo - Wade Hughes/Lochman Transparencies

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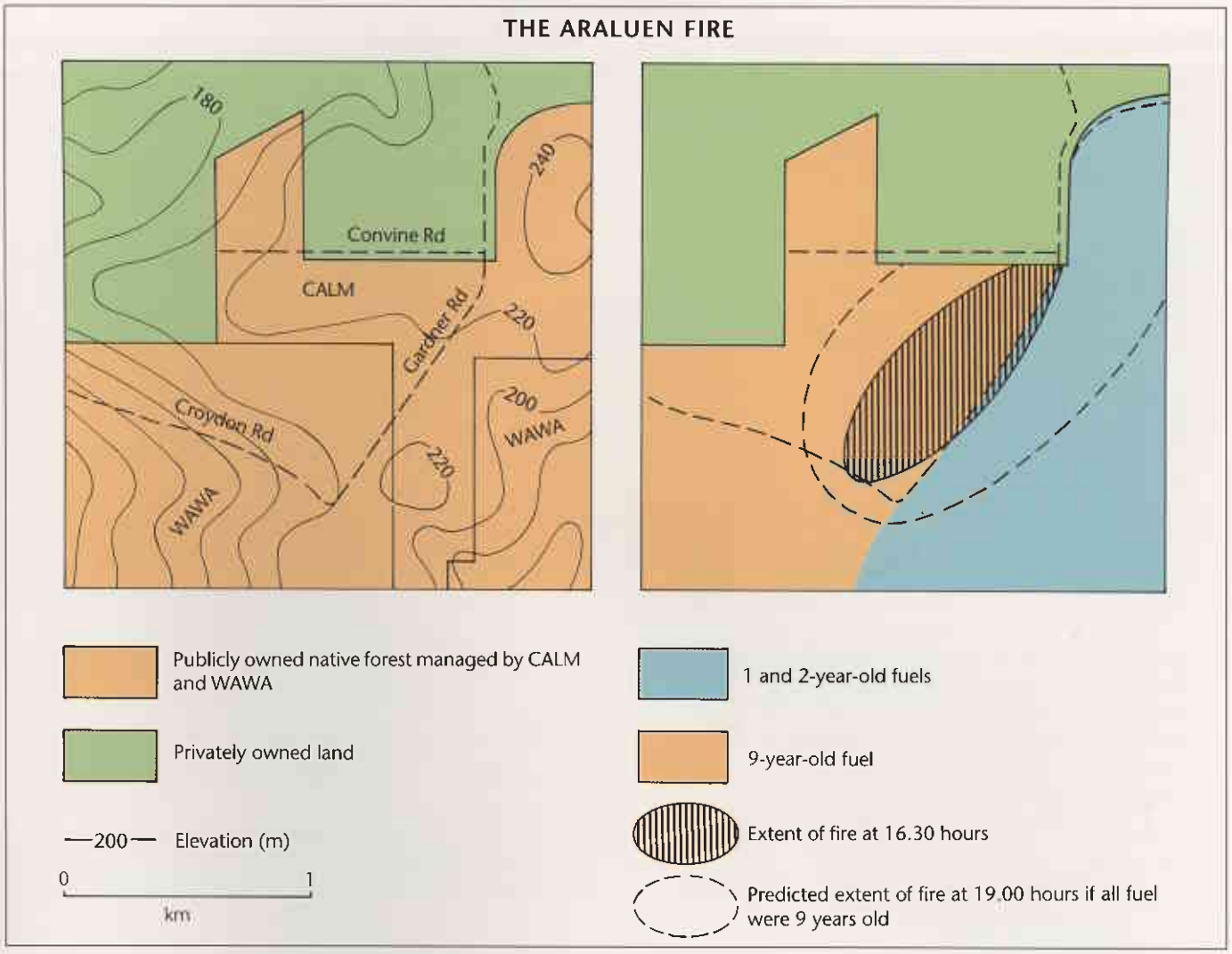
Main: **Kings Park fire, January 1989.**
Photo - Carolyn Thomson
Inset: **A bush hideaway within the Perth hills area prone to damage by bush fires.**
Photo - Rick Sneeuwjagt

Right: **Planned burns, like this slow moving fire, reduce flammable fuels and assist fire crews to control wildfires.**
Photo - Lachlan McCaw

Far right: **Intense fires burning in long-unburnt vegetation are almost impossible to suppress.**
Photo - Neil Burrows



necessary to protect their families and homes, especially if this requires some modification of the local environment.

More people are now living in parts of the Perth hills near CALM-managed forests and parks. The Department's fire managers take this into account when planning fire protection programs for the bush adjoining these residential areas.

TAMING THE FIRES

Fire protection on CALM-managed lands is based on two complementary systems - suppression and fuel reduction. The first involves the maintenance of an efficient and effective fire suppression system in areas where the risk of fire is high. These include areas of high environmental value and those where there are community assets.

The second uses fire to reduce the amount of flammable material by prior burning within strategic zones of the forest. This fuel reduction burning aims to limit the intensity of wildfires, thereby reducing the difficulty of fire suppression and the likely damage to areas at risk.

Fuel reduction burning has been widely used in Western Australian forests since the early 1960s. The practice was spurred on by the recommendations of a Royal Commission established to inquire into the disastrous 1961 wildfires, which destroyed the township of Dwellingup and burnt huge tracts of forest and farmland in the South West. Before this time, the use of fire had been deliberately excluded from much of State forest for more than 30 years.

Over a period of five years, about eight tonnes of flammable litter and scrub accumulates on each hectare of jarrah forest. Under average summer weather, fires burning in such fuels can generally be attacked directly by firefighters equipped with water tankers and machinery. However, where heavier fuel loads exist, suppression is far more difficult as direct attack is generally too dangerous. Such fires are more intense and there is a greater likelihood they will spread into the crowns of the trees. When this occurs, burning bark and leaves, known as firebrands, can be thrown many kilometres ahead of the flame front to create new fires. But recently fuel-reduced areas provide effective defensive positions from which wildfires may be fought - improving the chances of success and lessening the risks to firefighters.

Firefighters in CALM have cause to remember several wildfires near Perth during the summer of 1992-93. Two of these fires illustrate the role that fuel reduction burning can play in reducing damage.

ARSON AT ARALUEN

On the afternoon of 8 January 1993, an arsonist set alight bush in the Canning River valley, just east of the famous Araluen recreation area and botanic gardens. The weather was typical of Perth in midsummer - high temperature, low humidity, a brisk south-westerly breeze and with no significant rain for more than a month.

Firefighters were quickly on the scene, after the fire was sighted by a CALM spotter aircraft. But it had developed rapidly, and crossed Croydon

Road (see map). It raced up a slope in jarrah forest, which had not been burnt for nine years and had accumulated fuel levels of around 14 tonnes per hectare. This explosive combination of weather and fuels meant the fire was already too intense for a direct attack, and it continued to spread rapidly for the next two hours.

However, to the east of the fire, across Gardner Road, lay State forest that had been fuel-reduced 18 months earlier by a low-intensity burn. Not only were the fuel loads in this area quite light (less than six tonnes per hectare), but the shrub layer was considerably shorter and less dense than in the adjoining nine-year-old fuels - factors which lessen fire intensity.

At around 4.30 pm, the head of the fire jumped Gardner Road. Firebrands ignited numerous spot fires in the 18-month-old fuels but, despite strengthening winds and continued high temperatures, the fire failed to regain its momentum. At the same time, firefighters contained the flank of the fire, along Convine Road, preventing it from spreading to the dry private property pastures on the north side of the road.

Firefighters were then able to turn their attention to securing the western edge of the fire, which had continued to spread steadily in the nine-year-old fuels towards nearby Araluen. By now, the fire on the eastern side of Gardner Road was burning quietly in the recently fuel-reduced area, and only minimal work was required to prevent its further spread.

Without this low-fuel forest, the fire would have been far more difficult and dangerous to control, and it is likely it would have spread quickly north-east towards the Brookton Highway, threatening an orchard and a number of dwellings in its path.

ORANGE GROVE FIREBUG

Two weeks later, recently fuel-reduced State forest again played a key part in limiting the spread of an intense wildfire on the Darling Scarp. Around midday on 25 January, a series of fires was deliberately lit in tinder-dry scrub and pasture fuels in the Orange Grove area near Gosnells. With air temperatures in the high 30s and winds from the west, the fire spread rapidly up steep slopes, burning fiercely through the shrub and woodland. The rugged, inaccessible terrain and adverse weather precluded a direct attack on the fire.

Fortunately, the State forest that lay directly in the path of the fire had been fuel-reduced in the spring of 1992 as part of CALM's aerial burning program. Only a short distance into the six-month-old fuels, the intensity of the head of the fire dropped dramatically, allowing firefighters to contain the flames. If the fuels had been more than five years old the area of forest burnt by the resulting high intensity wildfire would have been much larger, and may have ultimately threatened homes in the suburbs of Bickley and Lesmurdie to the north.

PEOPLE COME FIRST

Clearly, fuel reduction burning is important in limiting the threat wildfires pose to life, property, community assets and areas of high environmental value.

Although the community as a whole accepts the need for measures to minimise the social and environmental costs of uncontrolled fires, there is often some debate about how this can best be achieved. Preventative programs, run by the fire services to educate the public about the danger of wildfires, play an important part. Furthermore CALM, as manager of much of the remaining bushland around Perth, is constantly refining its techniques. An extensive fire research program, in conjunction with measures such as fuel-age mapping, off-season training, fuel-reduction burning and liaison with other agencies, aims to minimise the devastating effects of the fires that are so much a part of the Australian summer.

PROTECTING YOUR HOME FROM WILDFIRE

Individual home-owners can do much to reduce the threat to their property from wildfire. Reducing fuel loads near a house by mowing, slashing or removing flammable litter and shrubs will greatly increase the chances of it surviving a wildfire. Fallen leaves and twigs should be cleaned from roof gutters each year before the onset of the fire season, and the roof should be inspected to ensure that there are no gaps where burning embers could enter. Flammable materials such as petrol should be stored in a properly constructed garden shed well away from the house.

People building new homes in fire-prone areas should carefully consider the siting, design and choice of materials for their house. Desirable features include brick or masonry walls, enclosed eaves and under floor areas.

Advice on bushfire safety is available from the Bush Fires Board, local government offices and CALM district offices.

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Wildfires are synonymous with Western Australian summers, but what can be done to lessen the threat to life and property? Lachlan McCaw discusses the problem on page 49.

Daisies belong to the Asteraceae family, one of the world's largest families of flowering plants. Suzanne Curry presents some of them in 'Delightful Daisies' on page 41.

LANDSCOPE

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Aborigines have eked out a living in the harsh Western Desert region for thousands of years. Their intimate knowledge of the desert is helping scientists learn more about its plants and animals. See 'Digging Sticks and Desert Dwellers' on page 10.

'Rainforests and Bats', on page 34, tells the story of the recent LANDSCOPE *Expedition to the Mitchell Plateau.*

Can images from space help locate desert mammals? See 'From Buckshot to Breakaways' on page 23.

FEATURES

REGULARS

SPECIALS

COVER

Cape Barren geese live on the islands and rocks of the Archipelago of Recherche. A few years ago their numbers appeared very low and their survival was in doubt. However, a recent survey of the islands has brought good news with a marked increase in the bird's population.

The illustration is by Philippa Nikulinsky.

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