

Close to home:

fire

management

around the Perth metropolitan area

Western Australia's Swan Coastal Plain, the Darling Scarp and the hills surrounding the metropolitan area support important ecological communities of plants and animals and up to 75 per cent of WA's population. These areas are also the busiest for the Department of Environment and Conservation's fire crews and pose unique challenges for fire management.

By Leigh Sage, Mike Cantelo,
Kevin Pollock and Roger Armstrong



Fire is an environmental factor, which together with climate, landform and soils, has operated over millions of years to shape the biodiversity of Australia. Bushfires in the ecosystems of Western Australia's Swan Coastal Plain are not new but the implications for people are profound. This area, which stretches from Jurien Bay in the north to Bunbury in the south and east to the Darling Scarp, covers many land uses and tenures which, combined with continuing urban sprawl and the impact of climate change, are increasing the risk of bushfires having devastating effects on the metropolitan area.

The Department of Environment and Conservation (DEC) is responsible for fire management and wildfire suppression on the lands it manages outside the metropolitan fire district. Responsibility for lands within the metropolitan fire district rests with the Fire and Emergency Services Authority (FESA). DEC's fire management work is often carried out in association with FESA, the Forest Products Commission, volunteer fire crews and other emergency services. DEC fire crews combat several hundred blazes in the south-west during the summer bushfire season and spend the rest of the year preparing through prescribed burning, strategic planning, training, equipment maintenance, firebreak upgrades and water point construction. DEC also assists in combating wildfires on private property and other unallocated Crown land in a combined approach with local bushfire brigades, shires and FESA.

Fighting fires around the metropolitan area

The Swan Coastal Plain, the Darling Scarp and the hills surrounding the Perth metropolitan area support a large variety of vegetation types from coastal dunes and sandplains to banksia, eucalypt woodlands, tall forests and wetlands. This area has been extensively cleared as Perth's population has grown. Within this urban precinct a number of areas are set aside for conservation as national and regional parks, nature reserves and State forest. These unique ecosystems, and the precious plant and animal populations they contain, can present challenges to fire managers as



Opposite page

Main Fire suppression in the Perth hills.
Photo – Leigh Sage

Above Smoke engulfed Perth skies during the Perth hills fires of 2005.
Photo – Emma Rose

they are often interspersed among assets such as houses, farms and industry.

The warmer temperatures and decreased rainfall of the past decade have rapidly reduced water tables, in turn causing many of the wetlands on the Swan Coastal Plain to completely dry out over summer. This has resulted in the peat layers of wetlands burning in wildfires—layers which would have otherwise been inundated and therefore protected from fire in the past. Peat fires are very difficult to suppress and often only extinguish after heavy winter rains. Other environmental factors that need to be considered in fire management in this area of high biodiversity include the protection of threatened flora, threatened ecological communities and native animals as well as preventing the spread of dieback disease.

The concentration of people and valuable assets such housing, power lines, transport corridors, tree plantations and biodiversity values such as wetlands requires that all wildfires be detected quickly and responded to rapidly. A rapid and aggressive initial attack is undertaken using fire trucks and earth-moving machinery, supported by fixed-wing aerial water bombers and Helitaks to put out fires and keep them as small as possible.

One of the assets often under threat on the Swan Coastal Plain is the pine plantation north of Perth. This

plantation covers 25,000 hectares from Gnangarra in the south to Yanchep in the north, and is subject to a large concentration of bushfires, with the majority deliberately lit. Very high fuel loads due to needle bed accumulation and harvesting in the plantation and the high susceptibility of pine trees to being killed by fire means that fires in the area can have devastating impacts. On days of extreme bushfire danger, DEC fire crews and machinery are strategically positioned throughout the plantation so fires can be reached quickly to minimise their size and impact.

Plan of attack

Wildfires in the plantation and other areas of the Swan Coastal Plain, the Darling Scarp and the hills surrounding Perth, are aggressively attacked by DEC fire crews on the ground, supported from the air by water bombers. The bombers provide an essential and effective initial attack in fighting wildfires in the relatively flat, low terrain, particularly in the heathlands along the coast and open banksia-dominated woodlands inland.

Able to carry more than 3200 litres of water, the bombers aid in dampening the fire ahead of crews and machinery. They are also vital in protecting high value assets, such as houses. While the bombers do not put the fire out, they provide the ground crews with extra time by slowing its rate of spread. They can also begin work on the fire while ground crews are on their way. The pilots receive direction from crews on the ground and in the air about where to drop their water loads to aid in their effectiveness.

DEC has a large fleet of fire trucks, purpose equipped four-wheel drive vehicles, heavy earth-moving machinery, communications equipment and supporting aircraft at its disposal to fight and manage wildfires in its 'Swan Region' management area and other parts of the south-west. DEC also has a network of spotter towers and surveillance aircraft, which operate throughout the bushfire season to detect fires. Spotter aircraft operate out of Dwellingup and cover the entire northern jarrah forest area from Bindoon to Dwellingup. Four towers are used in the outer Perth area at Pinjar, Walyunga, Caraban and Bickley

with the latter two only operational on extreme fire days. Depending on seasonal conditions, the towers are manned from October to May each year. In the event of a fire, spotters at the towers take bearings to accurately fix a fire's location and give an indication of its behaviour and size. Fire crews and water bombers can then be quickly and effectively activated.

DEC has a large force of permanent and seasonal firefighters who hone their summer bushfire skills during autumn and spring prescribed burning. DEC also draws on the experience and skills of its other staff from areas such as communications, information technology and mapping during large and complicated 'campaign' fires such as the Perth hills and Yanchep National Park fires of January 2005 and the fire in January 2007 that threatened the towns of Dwellingup, Pinjarra and Waroona. It is not uncommon for several hundred people to be involved in managing a campaign fire. Many people are not directly involved in fighting the flames but provide essential support to those who are. In recognition of their expertise and experience, DEC fire crews and managers also take

part in regular deployments to fires in the USA and the eastern states of Australia. In 2006 a contingent from DEC helped with fires in the USA and also assisted with the extreme Victorian fires of 2006–2007.

Putting out the flames is only the first part of the role of the crews at a fire. Mopping up or 'blacking out' to make a wildfire area safe for the public to return can take several days and is particularly important in areas with high population and recreational values, such as around the metropolitan area. Public roads and walk trails are often closed for several days while experienced fire crews check the entire length of the fire and mark trees that are at risk of falling or dropping limbs or have fires in them that need to be extinguished with water. The track or road is only re-opened to public traffic when this task has been completed. Yanchep National Park, located

Below left Water bombers play a vital role in protecting assets.

Below DEC has a large force of permanent and seasonal firefighters. Photos – Leigh Sage





55 kilometres north of Perth, was closed for more than a week after a wildfire in January 2005 burnt through more than half of the park. Many large tuart trees (*Eucalyptus gomphocephala*) had their trunks burnt almost all the way through and posed a risk to park staff and visitors. It was during this fire that a DEC national park ranger was seriously injured by a falling branch from a tuart tree. Fire crews and park staff worked for several days to re-open walk trails, tourist caves and roads through the park after the fire had been contained and mopped up.

Post-wildfire rehabilitation, including revegetation of constructed fire breaks, weed control and repairing fences, is also carried out after major wildfire events. This work is essential in areas that contain environmentally sensitive sites such as wetlands or lakes that would otherwise take many years to recover.

Preparing

A major factor in wildfire suppression is preparing for the season ahead. Prescribed burning plays a crucial role in protecting the community from large wildfires and our native forests and woodlands from the impacts of intense wildfires. Prescribed burning reduces the amount of 'fuel' or combustible material including leaf litter and pine needles and consequently reduces the intensity of wildfires. Areas burnt by prescribed burning also provide low-fuel buffers that slow the rate of spread. DEC undertakes a prescribed burning

program of around 200,000 hectares each year in native vegetation and in plantations in the south-west.

Extreme summer wildfires can often result in high plant mortality. However, mild intensity prescribed burns will result in litter and debris being burnt away with little crown or canopy scorch or death. Burning in the many different vegetation types often requires a different approach each time. The banksia-dominated woodlands of the Swan Coastal Plain tend to burn faster because wind moves easily through the lower tree canopy. Fires in this ecosystem tend to result in a high death rate of plants.

Prescribed burning in DEC's Swan Region is often completed by fire crews who light the bush by hand. However, aircraft are sometimes used if burning is carried out over a large area. Aerial ignition is used primarily in the Perth hills where the vegetation is dominated by jarrah forest and where road access is limited.

DEC also undertakes prescribed burning in plantations in conjunction with the Forest Products Commission. This involves burning off pine tops remaining after harvesting and the pine needle bed every few years, during the wetter months when the ground moisture is higher, so the burn is mild and the pine trees are not affected.

With the aim of protecting life and property, as well as maintaining biodiversity, DEC fire crews face daily challenges. In highly populated areas such as the Swan Coastal Plain, the

Above left A view of Perth from one of the State's spotter towers.

Photo – Owen Donovan

Above Post-fire recovery is an important role of fire crews.

Photo – Leigh Sage

Darling Scarp and the hills surrounding the Perth metropolitan area crews face additional challenges because of urbanisation and the continued expansion of Perth's population. Away from the metropolitan area they have the task of tackling large wildfires in remote areas. Every major fire presents an opportunity to demonstrate and continue to develop skills and expertise in firefighting.



Leigh Sage is the Department of Environment and Conservation's Swan Coastal District Fire Operations Officer. He can be contacted on 9405 0709 or by email (leigh.sage@dec.wa.gov.au).

Mike Cantelo is DEC's Swan Coastal District Fire Coordinator based in Wanneroo.

Kevin Pollock is DEC's Perth Hills District Fire Coordinator based in Mundaring.

Roger Armstrong is DEC's Senior Fire Planning Officer with Fire Management Services based in Bunbury.

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Illustration Gooitzen van der Meer.
Cartography Promaco Geodraft
Marketing Cathy Birch
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