BRYANDRA:

a united fight for fauna

Located in Western Australia's Wheatbelt region, Dryandra Woodland provides a haven for a diverse range of native species, including some of Western Australia's most endangered native animals – woylies and numbats. These species have endured significant ups and downs for decades, and goverment departments, landholders and community groups have been working to give them the best chance at survival.

by Karla Forrest, Tony Friend and Peter Lacey

A shaft of light pierces a stand of wandoo trees as Parks and Wildlife Service staff make their way through Dryandra Woodland to check the traps they set out the afternoon before. As they come upon the next trap, set beside a *Gastrolobium* thicket, they see the telltale yellowish-brown fur and a long tail with a black brush at its end. It's a woylie (*Bettongia penicillata*); the fourth they've found that morning and one of an estimated 8000 to 9000 now living in the woodland.

After they take a DNA sample and record its size, age and gender, Parks and Wildlife Service staff release the woylie back into the wild, pleased to be able to record another individual of a species whose population was down to only several hundred four years ago, and satisfied that the multi-dimensional approach to their conservation is showing signs of success.

This cage trapping is part of the department's ongoing monitoring in the area, which staff carry out to keep a watchful eye on the health and size of native species populations.

WILDLIFE STRONGHOLD

Dryandra Woodland is the largest area of remaining natural woodland in the western portion of the department's Wheatbelt Region. Just 160 kilometres south-east of Perth, it is associated with wandoo and powderbark wandoo woodlands, heath and sheoak thickets and brown mallet plantations established between the 1930s and 1950s.

Dryandra Woodland is home to a range of both threatened and common species, including the tammar wallaby (*Notamacropus eugenii*), brush wallaby (*Notamacropus irma*), mardo (*Antechinus flavipes*), brushtail possum (*Trichosurus vulpecula*), red-tailed phascogale (*Phascogale calura*), malleefowl (*Leipoa ocellata*), echidna (*Tachyglossus aculeatus*) and chuditch (*Dasyurus geoffroii*). In addition, it contains a threatened ecological community, the Critically Endangered federally-listed '*Eucalypt woodlands of the Western Australian Wheatbelt*'. For the woylie and numbat (*Myrmecobius fasciatus*) Dryandra Woodland is one of only a handful places in Australia where they still occur.

However, managing this area to protect its precious native inhabitants is made difficult by the fragmentation of the habitat. Dryandra Woodland is made up of one large block that is the primary focus for fauna recovery and 16 other smaller blocks, which total 28,066 hectares, set within a network of agricultural properties.

Previous page
Main Juvenile numbats at Dryandra Woodland.
Photo – Robert McLean
Inset Woylie.
Photo – Ann Storrie

Above Releasing a woylie at Dryandra Woodland.

Left Foxes have had a devastating impact on a number of native species.
Photos – DBCA

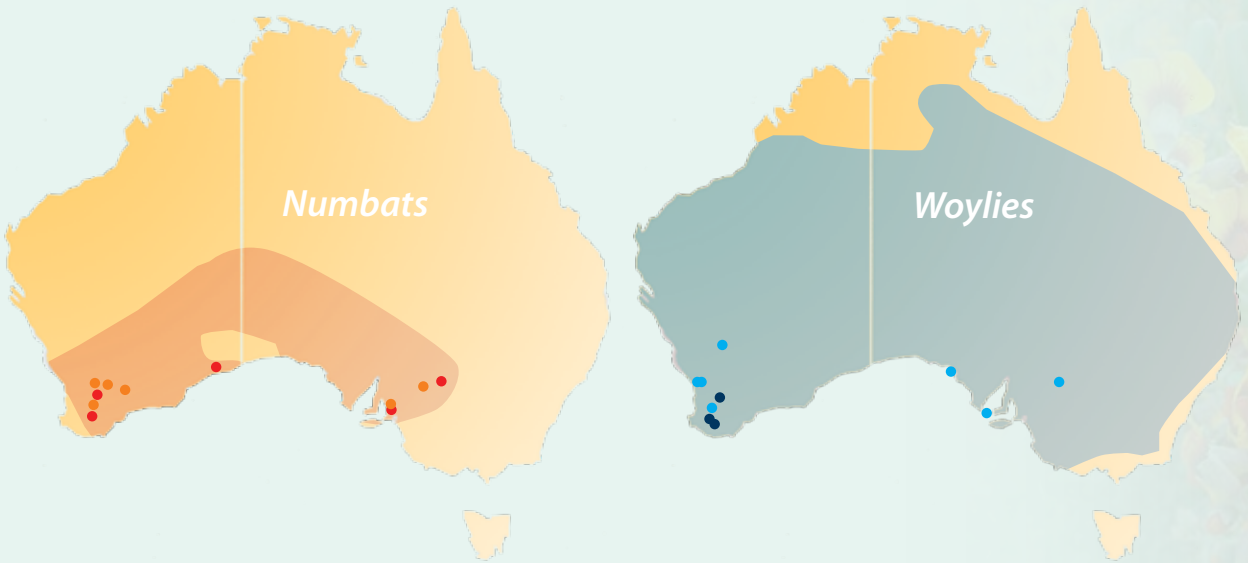
From the early 1900s, parcels of land in this area were snapped up for wheat and sheep farming and stands of the valuable brown mallet on the properties were harvested for the thriving mallet tannin industry. Concerned about the unregulated exploitation of this species, the Western Australian Government set aside as State forest or timber reserves some remaining upland areas less suitable for farming and where natural stands of mallet were found. Approximately one-third of Dryandra Woodland was actually cleared and planted with brown mallet for the tannin industry. After the mallet industry ceased in the late 1950s, the areas that still contained quality wildlife habitat were converted to nature reserves or retained as State forest but managed for conservation. Both natural bushland and mallet plantations in Dryandra became a refuge for many common and threatened species.

Since then, there has been an ongoing push for the area to be afforded greater protection. In 1995, a management plan was developed for the area. This was revised in 2011 and set out the official vision for Dryandra Woodland that continues to guide the management of the area: that it 'continue to be one of the largest and most diverse remnant bushland areas in the Wheatbelt, supporting a range of local flora and fauna species'.

A NEW THREAT

With the arrival of European settlers and farmers to the area came feral cats

Distribution of numbats and woylies



(*Felis catus*). Foxes (*Vulpes vulpes*) and rabbits (*Oryctolagus cuniculus*) arrived a little later, after spreading across the continent from their points of introduction in the east.

These animals had a devastating impact on native populations and foxes predated on many native species, including woylies and numbats.

In 1982, department scientists began a fox baiting trial using '1080' – a chemically synthesised version of a toxin found in native *Gastrolobium* plants, to which native animals have a natural tolerance. Initially, the trial was carried out over a 2000-hectare area in Dryandra Woodland. The rate of numbat sightings was monitored inside and outside the baiting area to measure the effect of fox control on numbat numbers. After three years, numbat numbers had increased six-fold in the baited area, with no change outside it. This was one of the first two studies in Australia to demonstrate the positive effect of fox control on an endangered species.

In 1989, the fox baiting program was expanded to encompass Dryandra's main block. Numbat numbers continued to increase and by 1996, woylie numbers were high enough in Dryandra and other sites for the species to be removed from State, national and international threatened species lists. This was the first time a species was removed from the national threatened species list due to conservation action.

During this time, the then Department of Conservation and Land Management established its *Western Shield* wildlife recovery program, with the aim of controlling introduced predators to protect native animals. Dryandra Woodland was one of the first sites incorporated into this baiting program, which has now expanded to cover 3.8 million hectares of the State with the support of industry partners.

In Dryandra, funding from Western Areas has greatly supported recovery efforts. Unfortunately, however, while the risk of being predated by foxes had been reduced, Dryandra's native species weren't out of the woods just yet.

OUT OF THE FRYING PAN AND INTO THE FIRE

During trapping and observational surveys to monitor the health and size of Dryandra's native animal populations, conservation staff observed a dramatic drop in numbers of woylies and numbats. By 2004 woylies had declined by 90 per cent, and the species was relisted on the State's threatened fauna list. Numbat numbers had begun to decline from their peak in the early 1990s and by 2014 the population got down to as few as 50 individuals.

Between 2006 and 2012, department scientists carried out two research programs to determine the cause of these declines. By closely monitoring radio-collared woylies and numbats and sampling DNA from collars of predated animals, they showed that more than 50 per cent of deaths of both woylies and numbats in Dryandra Woodland were due to feral cat predation, while predation by foxes was minimal. Cat and fox numbers were compared in baited and unbaited

Hear more about the work being done at Dryandra

Scan this QR code or visit Parks and Wildlife Service's '*LANDSCOPE*' playlist on YouTube.

Top *Gastrolobium* plant.
Photo – John Lawson

Above Powderbark occurs widely in the reserve.
Photo – Marie Lochman

areas, and while cats were scarce and foxes common where there was no fox baiting, the opposite was true in Dryandra and other baited areas.

It seemed that the vast reduction in fox numbers meant the top spot in the food chain was up for grabs. Feral cats had been quick to fill the role of primary predator; their good night vision, voracious hunting style and short reproductive cycle meant they were adept and abundant predators of native species.

As part of their work, department scientists had developed a new type of 1080 bait, designed to tempt feral cats, which are notoriously fussy eaters. Named 'Eradicat®', this bait was used in Dryandra Woodland as part of a widescale research trial, before being officially registered for operational use in 2015. During this trial in the main block of Dryandra between 2012 and 2015, feral cat-caused numbat deaths fell from 50 per cent to zero.

That same year, new funding, provided through the Commonwealth Government's National Landcare Program, enabled department staff to expand cat baiting. In addition, Dryandra Woodland was chosen as one of four Western Australian sites (the others were Upper Warren, Kalbarri National Park and the South Coast) to share in $1.7 million to carry out broadscale operational trials of Eradicat®. As part of this work, researchers focused on refining the timing and delivery methods of the baits.

During this time, department staff were also implementing a range of other management activities, and Dryandra was chosen as one of the sites to receive federal funding (South West Threatened Fauna Recovery Project) because of the range of threatened fauna that persisted there and the work that was already being undertaken. This funding was for a range of activities including integrating cat baits into the baiting program, continued fox baiting, shooting and trapping cats, increased monitoring with cage traps and cameras, habitat restoration through the use of fire, translocations of animals into Dryandra to improve genetic diversity and increased community awareness including engaging neighbouring landholders.

BEYOND THE FENCE

Baiting was proving to be very effective, with department staff recording a reduction in feral cat and fox numbers within the reserve. However, data from cameras set up to monitor the reserve's boundaries, and information from GPS collars fitted to feral cats, revealed they continued to come and go from neighbouring properties, showing little regard for tenure boundaries.

It became apparent that baiting on the reserve alone was not enough; without controlling foxes and feral cats beyond the reserve boundaries, they would continue to threaten populations of numbats and woylies within the reserve.

The Farmers for Fauna Project was formed in 2017 as a collaborative partnership between the Peel-Harvey Catchment Council, community group Project Numbat and DBCA's Parks and Wildlife Service. The program capitalised on the enthusiasm of neighbouring

Above Dryandra Woodland is surrounded by farmland.
Photo – Marie Lochman

Top right The Farmers for Fauna Project facilitates community workshops.

Above right Cage traps are used to survey the mammal fauna in the area.
Photos – DBCA

Above A feral cat waiting to ambush its prey.

Above right Chuditch also occur at Dryandra Woodland.
Photos – Jiri Lochman

Inset right Numbats shelter in log hollows.
Photo – Kaitlyn York/DBCA

Below right Woylies have a prehensile tail.
Photo – David Bettini

landholders, who were keen to play a role in the protection of native wildlife, and built on community education work that was already underway as part of the operational Eradicat® program.

As part of the project, Farmers for Fauna held community workshops and events; offered training so farmers could become accredited in the use of 1080 baits on their land; and distributed cage traps and cat food for use in the traps. The program also focused on educating landholders and other community members about responsible cat ownership.

Parks and Wildlife Service staff developed a reference book that contained photos and notes on known feral and domestic cats in the area. They gathered the information for this document, which they call 'the CATalogue', by recording the markings and locations of cats sighted in and around Dryandra Woodland, and assigning each individual cat a number.

The battle against feral cats was further bolstered in July 2019, when feral cats were officially declared pests in Western Australia under the *Biosecurity and Agriculture Management Act 2007*. Notably, the declaration differentiated between 'feral', 'stray' and 'domestic' cats, relating to the degree to which the

Our wonderful Wheatbelt wildlife

As Western Australia's animal emblem, the numbat (*Myrmecobius fasciatus*) is much-loved by locals for its striking looks, with distinctive striped fur, long pointed face and bottlebrush-shaped tail. Once widespread in eucalypt woodlands extending into South Australia and New South Wales, the numbat now only exists naturally in the wild in two places – Dryandra Woodland and the Upper Warren area.

Unlike most marsupials, the numbat is diurnal (active during the day), a schedule dictated by that of its only food source: termites. A single numbat can eat up to 20,000 termites in a day, roughly equal to 10 per cent of its body weight.

Perth Zoo contributes to numbat conservation through a breeding program that provides animals for reintroductions in suitable habitat across WA and interstate. Zoo-bred numbats have also been released into Dryandra to supplement numbers there and help maintain genetic diversity.

The numbat is listed as endangered under both WA's *Biodiversity Conservation Act 2016*, and the Commonwealth's *Environmental Protection and Biodiversity Act 1999*.

Perhaps less-known but no less important, the woylie (*Bettongia penicillata ogilbyi*) is another key focus for researchers and conservation staff at Dryandra. The small, kangaroo-marsupial stands about 30 centimetres tall and weighs about one kilogram. It has a prehensile tail that allows it to carry bark, leaves and grass, which it uses to make nests in dense heath and *Gastrolobium* thickets, living mainly on a diet of underground fungi, bulbs, tubers and seeds.

With a State listing of 'Critically Endangered' and a federal listing of 'Endangered', it is at a higher risk of extinction than the numbat.

In 1996, it became the first-ever animal to be removed from the national threatened species list due to conservation action, before a dramatic population decline across its range prompted its relisting as threatened in 2004 and upgrade to critically endangered in 2014 on the State's threatened species list.

cats are living and reproducing in the wild. Armed with the CATalogue, local shooters were tasked with removing the known feral cats, while department staff became familiar with the area's domestic cats that were owned by landholders. Discussions with landholders were used to promote keeping cats in at night and ensuring they are microchipped, sterilised and registered with the local council.

Local landholders have also helped reduce the number of feral cats in the area; since 2015, farmers have removed hundreds of feral cats from properties near the conservation area.

Local Dryandra farmer Cameron Christensen, whose property neighbours Dryandra Woodland, has been involved in the Farmers for Fauna since its inception and said his involvement in the program was driven by a desire to care for the natural environment.

"I'm a conservationist at heart. I like to see our native animals doing better than good in our environment," he said.

"Foxes and feral cats were causing a huge disturbance to the natural environment, through predation."

Cameron said he has witnessed an increase in native wildlife on and around his farm, which lies just to the east of the Dryandra Woodland main block.

"I'm very proud of what we've been able to achieve so far," he said.

He believes feral cat control is essential for all farmers in the area.

"It is something that all farmers need to do to for disease control, but also to keep the natural environment around your farm healthy."

WHERE TO NEXT

Since 2014, department staff have been carrying out fauna monitoring on the main block of Dryandra Woodland using motion-sensing cameras, and have recently set up additional cameras on some satellite blocks. These surveys help to build a picture of the health and abundance of the animals; cameras detect trends in population size, while cage trapping enables staff to determine how the animals are faring and the population age structure. By getting a more holistic view of the species, significant changes in populations can be detected quickly. Pleasingly, these surveys have revealed an increased presence of wallabies, possums, echidnas and phascogales, and, even more encouragingly, greater numbers of woylies and numbats.

Department staff have also received reports of sightings from nearby farmers and John Lawson, the manager of the Lions Dryandra Woodland Village. Meanwhile, regular *LANDSCOPE* contributor and wildlife photographer Jiri Lochman, who frequently visits Dryandra Woodland to photograph the landscape and its native animal residents, has reported a vast increase in mardos.

While these are encouraging signs, work at Dryandra Woodland must continue at a landscape-scale. For numbers of woylies and numbats to increase, their habitat will need to be protected. In particular, maintaining and increasing thickets of the woylie's preferred *Gastrolobium* habitat, ongoing predator control and translocation programs will need to continue and targeted expansion of suitable new habitat explored.

Recently, additional funding from the Commonwealth Government has been awarded to the Peel-Harvey Catchment Council, which will enable Farmers for Fauna to continue under the Numbat Neighbourhood Project. This extra funding will be used to add value to the work already being done by Parks and Wildlife Service. It will allow for additional baiting, the extension of monitoring surveys within and outside department-managed lands, weed control and ongoing community education.

With a continued emphasis on collaboration, the outlook for these animals, and a variety of other native species that share their special woodland home, is bright.

Above left Echidnas also occur in Dryandra Woodland.
Photo – Sallyanne Cousans

Above Mardo sightings have increased greatly in Dryandra Woodland.
Photo – Jiri Lochman

Karla Forrest is a DBCA communications officer. She can be contacted on (08) 9219 9818 or by email (karla.forrest@dbca.wa.gov.au).
Peter Lacey is a Parks and Wildlife Service conservation coordinator. He can be contacted by email (peter.lacey@dbca.wa.gov.au).
Tony Friend is a DBCA Biodiversity and Conservation Science principal research scientist. He can be contacted by email (tony.friend@dbca.wa.gov.au).