



western shield



Fresh hope for forest dwellers

by Jenna Oliver

Western Australia's northern jarrah forest spans a 250-kilometre belt across the Darling Scarp from north of Toodyay to just south of Collie. It is home to a beautiful, rich and diverse ecosystem, but the variety of treasured native species that call the forest home are under threat.



For many years, the threatened species that live in Western Australia's northern jarrah forest have been given protection under the Department of Biodiversity, Conservation and Attractions' (DBCA) *Western Shield* predator control program, and, more recently in partnership with the Alcoa Foundation. Funding from the partnership provides improved protection for 14 threatened species including the numbat, woylie, chuditch and quokka.

PROBLEM PREDATORS

A major threat to WA's native wildlife is from introduced predators. Similar to other ecosystems on mainland Australia, both foxes and feral cats are established throughout the northern jarrah forest and pose a threat to native species. While

fox management has occurred in the forest since the early 1990s, research has demonstrated that more intensive management of foxes is required to provide long-term protection for the forest's most vulnerable species in a changing environment.

"Looking at previous research conducted in the south-west of the State, it has been found that fox baiting was able to reduce the density of foxes by up to 80 percent compared with non-baited reserves," *Western Shield* Coordinator Ashley Millar said.

Research also suggests that more intensive predator control is needed to maximise the recovery potential for species such as the woylie and numbat.

In 2021, under the partnership with the Alcoa Foundation, the frequency of

aerial fox baiting was increased to six times per year within identified sections of Avon, Perth Hills, Lane Poole and Wellington areas.

To assess the impact of the increased baiting, remote cameras were deployed to monitor fox populations and native fauna populations in areas of the forest with active fox management as well as areas with no fox management.

Fox management has long been a priority in the northern jarrah forest but there is now also a need to focus efforts on integrating management of feral cats.

"Feral cats can have a devastating impact on native fauna including numbats, chuditch and quokka," Dr Michelle Drew, *Western Shield* Zoologist said.

"It is vital for the long-term conservation of these species that we

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Main Northern jarrah (*Eucalyptus marginata*) forest.

Photo – Marie Lochman

Inset left Wambenger or brush-tailed phascogale (*Phascogale tapoatafa*).

Photo – Anne Storrie

Inset right Numbats (*Myrmecobius fasciatus*).

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Above left Chuditch (*Dasyurus geoffroii*).

Photos – David Bettini

Above right Quokka (*Setonix brachyurus*).

Photo – Jiri Lochman

Right Woylie (*Bettongia penicillata*).

Photo – David Bettini



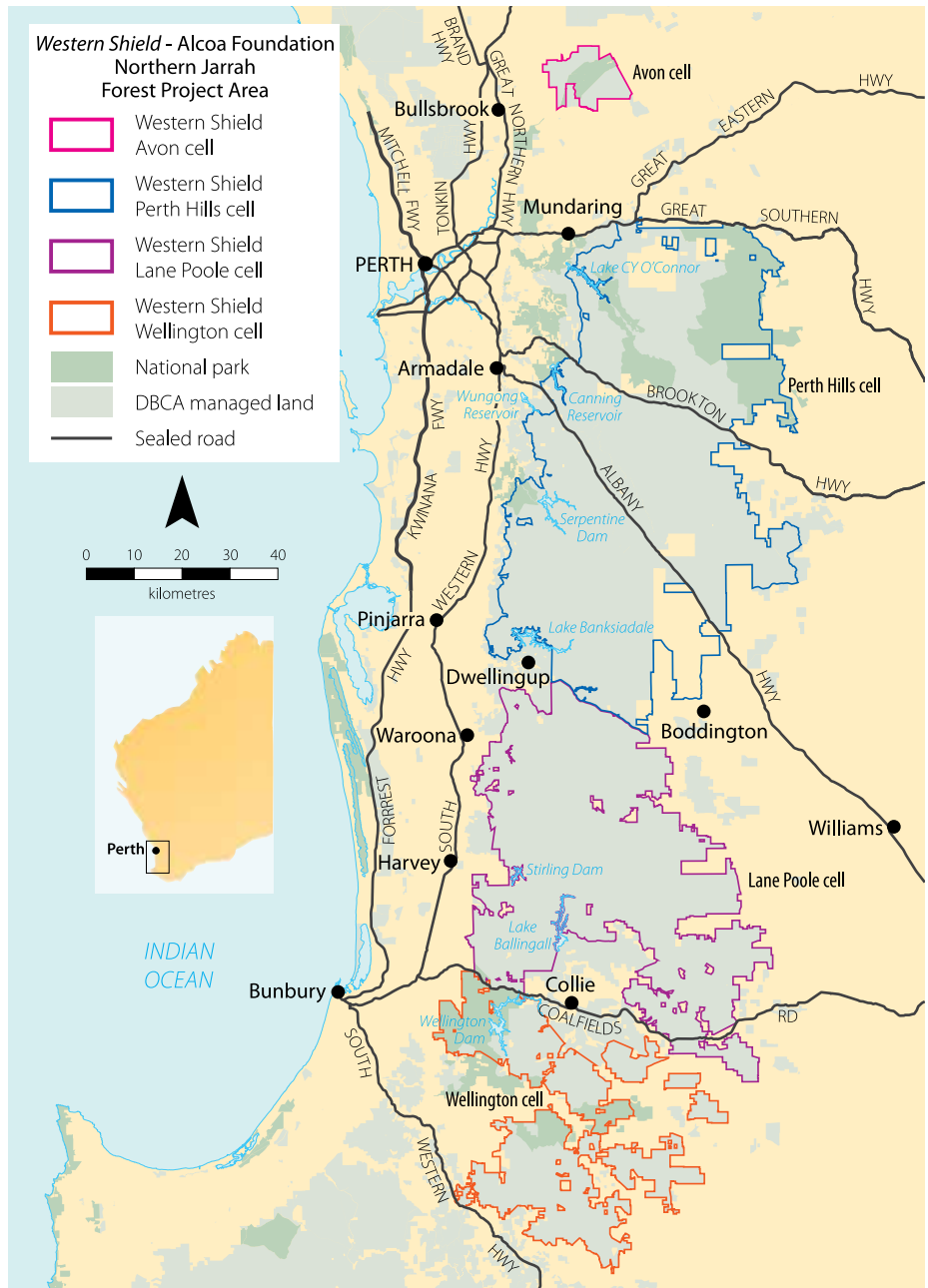


Above Numbat (*Myrmecobius fasciatus*).
Photo – Jiri Lochman

Below Per Christensen with road-kill woylie in 1974.
Photo – Tom Leftwich

begin to actively manage predator-impacted areas across Western Australia.”

As fox numbers decline, there is also the potential for feral cats to become more prevalent in these environments as the top order predator in the ecosystem. In ecology, a phenomenon known as mesopredator release occurs, in which populations of medium-sized predators rapidly increase in ecosystems after the removal of larger, top carnivores.



Dr Per Christensen's legacy

“It was Dr Per Christensen who first advanced the hypothesis that fox predation was the key factor in the decline of many small forest-dwelling animals, for example woylies and numbats. I can still remember reading his seminal presentation to the then WA Wildlife Authority in which he outlined his theory, and demonstrated how it provided a logical explanation for what was going on. Better still, it identified a way forward: once the threatening process was known, its abatement could be tackled.

“I was also fortunate enough to be working at Manjimup in the Forests Department in the 1970s when Dr Christensen moved on from theory to practice, and was able to demonstrate at Perup and at Dryandra, that populations recovered when foxes were eliminated.”

- Roger Underwood, retired forester and LANDSCOPE contributor.

Fifty years ago, Dr Christensen was at the forefront of mammal conservation in Western Australia, and today his legacy continues to influence current *Western Shield* operations including this project in the northern jarrah forest. Look out for a feature on Dr Per Christensen in an upcoming issue of *LANDSCOPE*.



The partnership with the Alcoa Foundation will provide an opportunity for *Western Shield* to trial Eradicat® feral cat bait for the first time in the northern jarrah forest, as part of an integrated approach to managing both foxes and cats.

“In areas where more intensive feral predator management is occurring, including at Dryandra Woodland National Park and Perup in the southern jarrah forest, we are seeing signs of recovery of woylie and numbat populations,” said Ashley.

“Our hope is that we will see a similar response in the northern jarrah forest with the integration of feral cat management on top of fox management activities.”

AN EYE ON THE GROUND

On-ground surveillance using remote cameras allows for visual intelligence to be gathered on threatened wildlife, while also improving knowledge regarding the activity of introduced predators. Importantly, it allows the *Western Shield* team to use this data to adapt and improve management strategies over time.

Predator monitoring has occurred at four sites in the northern jarrah forest in 2022. While image classification is still underway, a number of species sensitive to introduced predators were detected in the Muja State Forest including the critically endangered woylie, vulnerable chuditch, conservation dependent wambenger or brush-tailed phascogale and quenda.

In addition, remote cameras were deployed at two sites with the intent of monitoring for largely arboreal (tree-dwelling) species including the red-tailed

phascogale (kengoor), to provide a more comprehensive understanding of their distribution.

CATCH AND RELEASE

Marking animals with unique tags is another effective way the *Western Shield* zoologists observe how populations of different species are responding to changes in predator pressure. Monitoring was expanded to two new sites in the northern jarrah forest in 2022, increasing the number of actively monitored sites within the forest from 11 sites to 13.

Targeted chuditch trapping was also conducted at four sites in 2022. Individuals were captured at all four sites, and tissue samples for genetic analysis were collected. This work will further existing knowledge of the species’ biology, distribution, and abundance within the northern jarrah forest.

Western Shield zoologists will continue to monitor native fauna to assess mammal population size, distribution and density alongside Aboriginal rangers.

Two Aboriginal trainee rangers from DBCA’s Wellington district were engaged to assist with chuditch monitoring within the Collie State Forest and continue to be involved in a range of monitoring projects, providing opportunities to experience different field-based monitoring approaches.

QUARTER CENTURY OF SUPPORT

Protecting biodiversity in the northern jarrah forest builds on more than 25 years of support for *Western Shield* from Alcoa.

Above Mardo (*Antechinus flavipes*) release.

Below Woylie (*Bettongia penicillata*).
Photos – Peter Nicholas/DBCA

“We appreciate the support of the Alcoa Foundation, which is enabling us to bolster the management of feral predators in the northern jarrah forest and protect WA’s precious and vulnerable native wildlife—such as the quokka and numbat—boosting their chances to thrive in their native environment,” Ashley said.

“Australia has experienced devastating losses of native fauna since European arrival,” Michelle said. “The key driver of these losses has been predation by foxes and feral cats. This is an Australia-wide problem so we can’t manage this alone. Partnerships such as this are giving our native wildlife the protection they need.”



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