Julimar Conservation & Forest Alliance

PROPOSAL:
JULIMAR NATIONAL PARK
Nature's Secret in WA's Wheatbelt

Toodyay Friends of the River 30 Years 1994 - 2024

The Toodyay Historical Society (Inc) Established 1980

Toodyay Naturalists' Club est. 1968

birdlife AUSTRALIA

We acknowledge the traditional owners and custodians of the Julimar State Forest, the Noongar people of the area, and pay our respects to their Elders past and present, and their emerging leaders.

Julimar Conservation & Forest Alliance

Written by the Julimar Conservation and Forest Alliance, April 2025

The Julimar Conservation and Forest Alliance (JCAFA) was established in 2022 by a number of community groups with a common interest in, and appreciation of Julimar State Forest.

Founding member organisations include the Toodyay Friends of the River Inc. (TFOR), Toodyay Historical Society Inc. (THS), Toodyay Naturalists' Club Inc. (TNC) and Birdlife Australia.

Toodyay Friends of the River 30 Years 1994 - 2024

The Toodyay Historical Society (Inc.) Established 1989

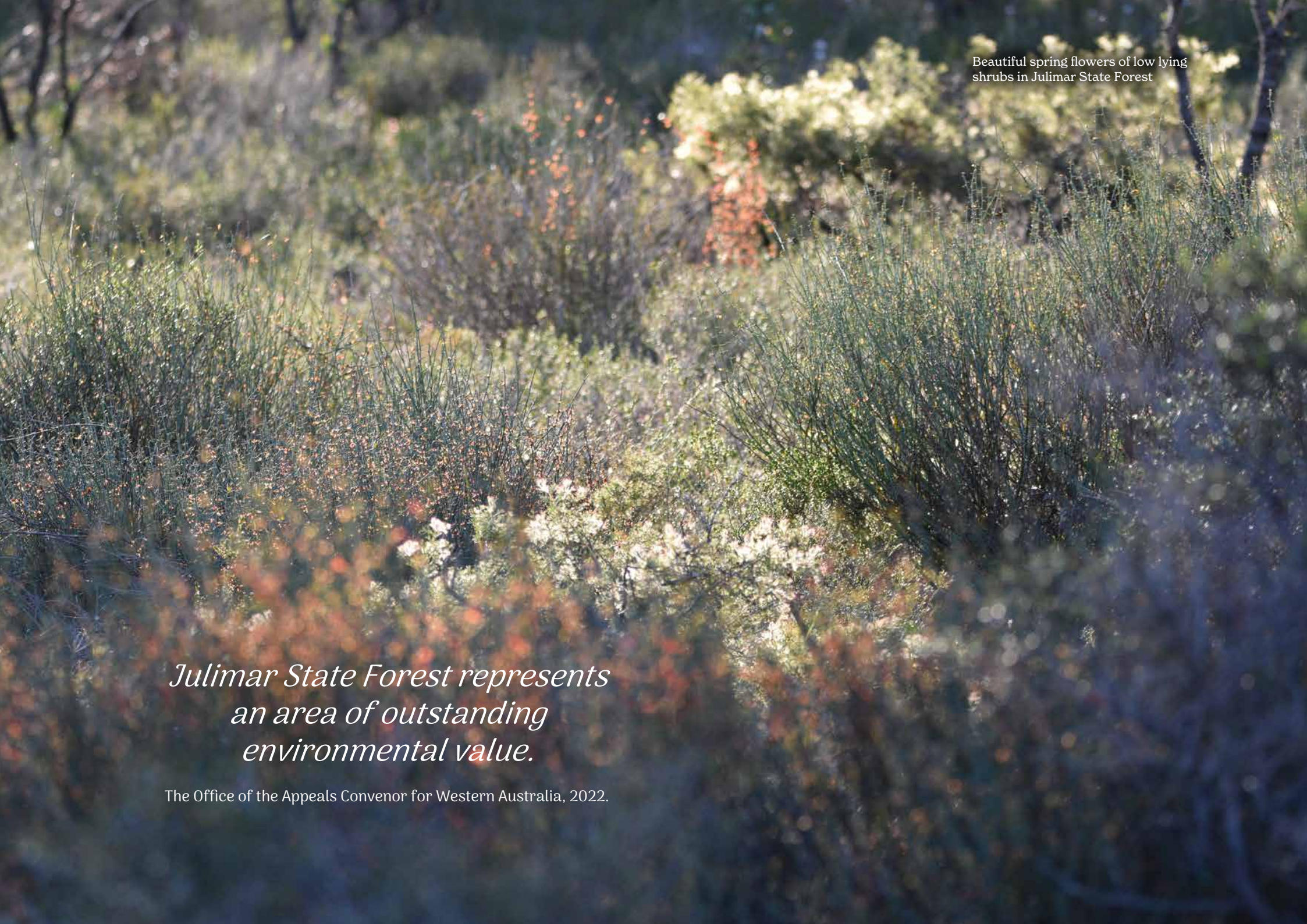
Toodyay Naturalists' Club est. 1968

birdlife AUSTRALIA

Web: julimarcafa.org.au | **Email:** julimarforest@gmail.com

Front cover image: Walkers on Munyerring Springs Rd in Julimar State Forest.
Inside cover image: Aboriginal scarred tree in Julimar State Forest.
Photos by Melissa Adams in Julimar State Forest unless otherwise stated.

Table Of Contents



Beautiful spring flowers of low lying shrubs in Julimar State Forest

Julimar State Forest represents an area of outstanding environmental value.

The Office of the Appeals Convenor for Western Australia, 2022.

Introduction

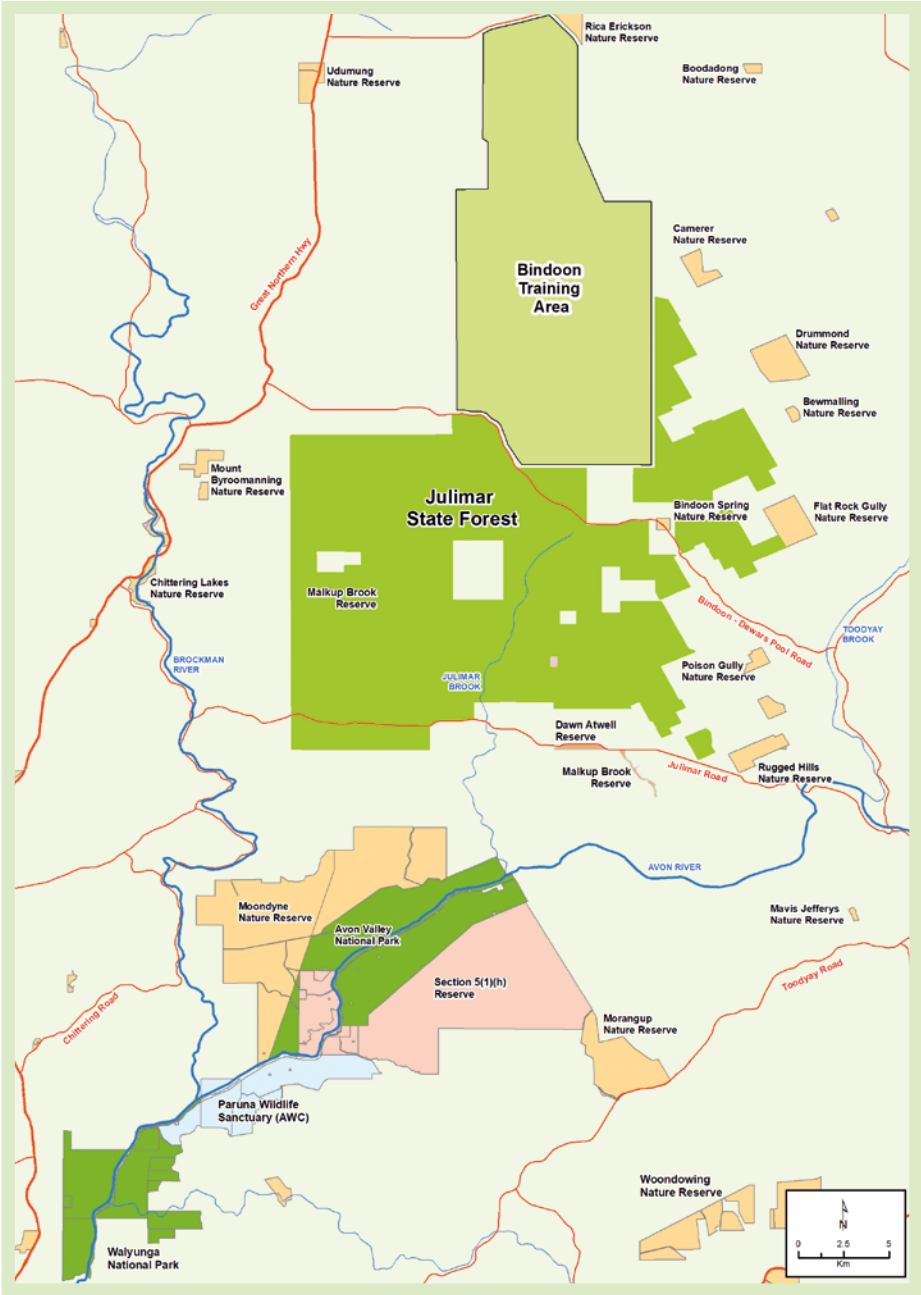
Julimar State Forest has an area of 28,600 ha, approximately 15 times the land area of Rottnest Island. The Forest is situated mainly on the Northern side of Julimar Road in the Shire of Toodyay (Dudja), Western Australia. It is 20 km west of Toodyay and 80 km north-east of the Perth CBD.

Julimar State Forest is formally identified as State Forest 61 (Government Gazette, 1956). The Forest shares common north and eastern boundaries with the Department of Defence owned Bindoon Training Area, which has an area of 20,200 ha giving fauna access to a total area of native vegetation of 48,800 ha.

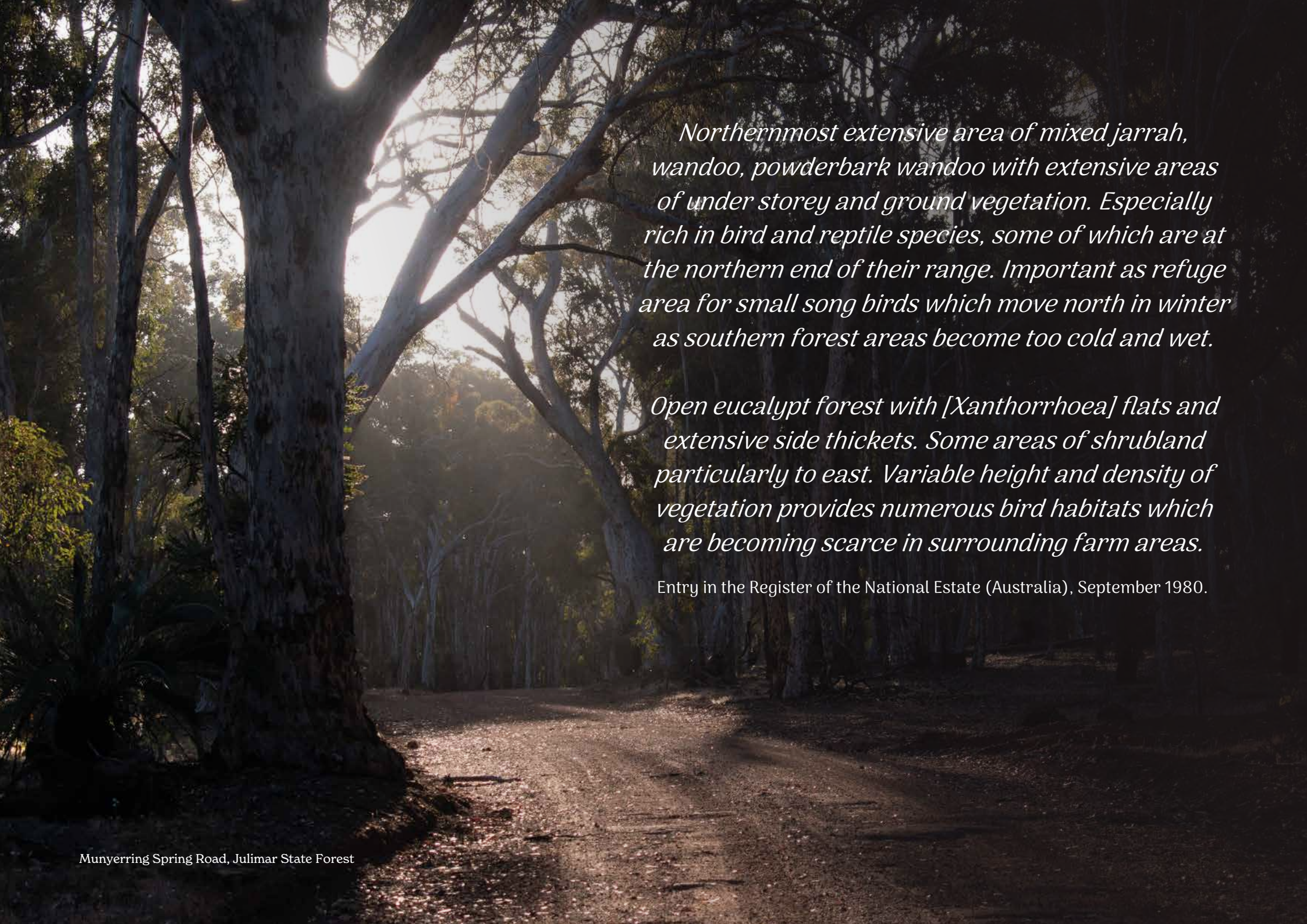
The Forest's southern boundary connects to Moondyne Nature Reserve and the Avon Valley National Park via a 5 km corridor of extensive bushland on private land. This then provides an ecological connection to Paruna Wildlife Sanctuary and Walyunga National Park, on the outskirts of Perth (see Map 2).

The Avon Valley National Park, the Paruna Wildlife Sanctuary and the Walyunga National Park have a combined area of 19,500 ha.

Map 1. Julimar State Forest in relation to Perth, Western Australia.



Map 2. Parks and Reserves providing an important green corridor.



Northernmost extensive area of mixed jarrah, wandoo, powderbark wandoo with extensive areas of under storey and ground vegetation. Especially rich in bird and reptile species, some of which are at the northern end of their range. Important as refuge area for small song birds which move north in winter as southern forest areas become too cold and wet.

Open eucalypt forest with [Xanthorrhoea] flats and extensive side thickets. Some areas of shrubland particularly to east. Variable height and density of vegetation provides numerous bird habitats which are becoming scarce in surrounding farm areas.

Entry in the Register of the National Estate (Australia), September 1980.

Munyerring Spring Road, Julimar State Forest

Executive Summary

We propose that the entire 28,600 hectares of the Julimar State Forest (State Forest 61) be given the protection of National Park status.

Located 20 km west of Toodyay and 80 km northeast of Perth, this area marks the northernmost extent of the Northern Jarrah Forest region in Western Australia.

Julimar State Forest has been recognised by State and National Governments for its conservation value for over 40 years but has never received any formal protection. In 1980, it was added to the Register of the National Estate. In 2000 all major parties in both houses of the WA parliament supported its conservation. The Forest has been listed for Conservation Park Status in two 20-year Regional Forest Agreements between the Commonwealth and State Governments, and is listed for protection in four WA Forest Management Plans.

Mature ecosystems like those found in Julimar State Forest can NOT be replaced in revegetation programs. They are dependent on the existing geodiversity, soil composition and structure, the diversity of fungi, flora and fauna and the resulting forest microclimates. These ecosystems are the visible outcome of complex and evolving interdependencies of thousands of species of organisms living above and below ground level, many of which are yet to be discovered, let alone understood. Once destroyed, these ecosystems cannot be replicated.

National Park status for Julimar State Forest will protect the integrity of a sizeable area of rich biodiversity. The 28,600 ha of the Forest borders with 20,200 ha of Jarrah, Marri and Wandoo woodland which forms the Department of Defence owned Bindoon Training Area, providing fauna with access to 48,800 ha of forest and woodland.

Julimar State Forest provides a vital green corridor between the Bindoon Training Area to the north and the Moondyne Nature Reserve and Avon Valley National Park to the south, via a 5 kilometres corridor of extensive bushland on farmland. The Avon Valley National Park is then connected to the Walyunga National Park on the outskirts of Perth via the Paruna Wildlife Sanctuary, and these 3 protected areas have a combined area of 19,500 ha, thereby bringing the total to 68,300 ha.

Protecting the integrity of significant forests and wildlife corridors such as the Julimar State Forest is crucial due to the threats of climate change. As the climate changes, fauna are adapting by shifting their feeding and breeding grounds; ground dwelling animals can only do this within linked habitats. Julimar State Forest provides an essential part of the south-west corridor from the Bindoon Training area to the Walyunga National Park.

National Park status for Julimar State Forest would protect critical habitat for threatened and Department of Biodiversity, Conservation and Attractions (DBCA) listed species. The Leeuwin Group of scientists consider Jarrah forests such as Julimar State Forest to have the greatest biodiversity of any temperate forests in the world.

Julimar State Forest is a critical habitat for the Carnaby's Black Cockatoo *(Zanda latirostris)*, and has one of the two largest breeding sites for this vulnerable species. The endangered Baudin's Black Cockatoo *(Zanda baudinii)* and the vulnerable Red-tailed Black Cockatoo *(Calyptorhynchus banksii)* are also found in the Forest.

The Forest has several other species of fauna listed for protection, including one of the highest recorded populations of the threatened Chuditch *(Dasyurus geoffroii)*, and one of the few remaining wild populations of the critically endangered Woylie *(Bettongia pencillata).* It has at least 23 species of plants and two species of reptiles that are listed for protection under the Biodiversity Conservation Act 2016 (WA) and the Department of Biodiversity, Conservation and Attractions (DBCA).

...Of particular importance is the value of the area for a number of threatened species, including as one of only a few identified habitats for the critically endangered woylie.

Julimar State Forest is also identified as one of the key habitat areas for chuditch and Carnaby's black cockatoo, and is identified as being in largely excellent condition.

Hon Reece Whitby MLA, Minister for Environment, Climate Action, 19 May 2022.

Carnaby's Black-cockatoos (*Zanda latirostris*) eating the nuts from a marri (*Corymbia calophylla*) tree.

Protecting forests is vital in a time of climate change. Forests are major carbon sinks – above and below ground level. Destroying or even damaging a forest releases stored carbon and removes a key mechanism for storing carbon in the future. Forests moderate weather and have a cooling effect on the surrounding area due to evapotranspiration.

The protection of our forests is of paramount importance to humankind. For Aboriginal people, connection to Country is, and always has been, vital and central to their wellbeing. In an increasingly complex world, connection to Nature for all of us is more important than ever. Access to biodiverse natural environments has demonstrated benefits for our mental, physical and spiritual health and wellbeing. Julimar State Forest's closeness to the Perth Metropolitan Area makes it ideally situated for this purpose. National Park Status would ensure that access for people is managed in ways that are compatible with the conservation agenda.

Designating Julimar State Forest as a National Park would ensure appropriate management planning is undertaken in partnership with the local Noongar community according to procedures outlined in the WA *Forest Management Plan 2024-2033* (Conservation and Parks Commission, 2023). This would include careful consideration of the threats to the Forest and facilitate culturally and ecologically appropriate access and responsible use of the Forest by WA residents and visitors.

Julimar State Forest plays a significant role in enhancing water quality in the brooks and streams which flow through the Forest. Small changes in vegetation cover will significantly change the quality of water flowing from the Forest and into the Swan-Avon River. If the brooks are polluted, the Swan River will be polluted.

Julimar State Forest needs the protections given to National Parks to **conserve the natural environment, protect biodiversity including flora, fauna and ecological communities and to withstand multiple threats** including mining, harsh fire regimes, feral animals, uncontrolled use of off-road vehicles and the potential spread of Jarrah Dieback (*Phytophthora cinnamomi)*

Designating Julimar State Forest as a National Park would contribute to the **national target of conserving 30% of the Northern Jarrah Forests** and increase protection within a globally recognised biodiversity hotspot.

Forests belong to us all. They are not a commodity to be consumed for the benefit of today's population at the expense of tomorrow's. They are a long term investment in the health and welfare of future generations. They are as essential as the air we breathe and the water we drink. And they make a crucial contribution to the quality of that air and water.

Forests are – or should be – forever.

Julimar State Forest urgently needs the Government to deliver on its 40 years of commitments to conserve its biodiversity and protect it for future generations.

Julimar State Forest needs to be designated a National Park.

We destroy plants at our peril.
Neither we nor any other animal can survive without them.

The time has now come for us to cherish our green inheritance, not to pillage it – for without it, we will surely perish.

David Attenborough *'The Private Life of Plants'*, 1995.

Xanthorrhoea species in Julimar State Forest

The Proposal:
Reclassification of Julimar State Forest to National Park

We are proposing that the whole of State Forest 61 (Julimar State Forest), in the Shire of Toodyay, Western Australia, be given the protection of National Park status under the Land Administration Act 1997.

We propose that:

- The entire 28,600 ha of Julimar State Forest (State Forest 61) be declared a National Park and be vested with the Conservation and Parks Commission of WA.
- The newly created National Park be added to the National Reserve System.
- The newly created National Park be jointly managed with Traditional Owners using processes outlined in the Forest Management Plan 2024-2033.
- Comprehensive management planning for the National Park be undertaken in a manner that is inclusive of Traditional Owners, scientists and the community to protect the cultural and ecologically values within the Park.
- The management plan facilitates an appropriate range of uses for the Park by the general public.
- As an interim measure to protect the Forest, all applications for clearing permits and exploration licences within the Julimar State Forest (State Forest 61) be refused.
- When the National Park is created, it should be exempt from mining and all existing mining tenements be terminated and future applications refused.

The Forest provides vital habitat for 140 recorded species of birds, 35 species of mammals, 9 known families of reptiles and 2 families of amphibians.

Chuditch (Western Quoll, *Dasyurus geoffroii*) at Julimar State Forest
by Brad Leue/Australian Wildlife Conservancy

Protecting Julimar State Forest through National Park status

Australia is a party to the International Union for the Conservation of Nature (IUCN) and has recognised its definitions for protected area categories, participated in its conferences, and made a number of subsequent commitments.

The IUCN has 3 key criteria for National Parks:

- **The significance of the place itself:** National Parks are natural or near natural areas set aside to protect the integrity of large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area.

- **The importance of that place to people and the need for people to have access to it:** National Parks provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

- **Expectations on governments concerning the protection of that place:** National Parks are protected areas and governments are expected to ensure they are appropriately managed, that exploitation is excluded and that their use is compatible with their conservation purpose (IUCN, 1970; ANZECC & MCFFA, 1997).

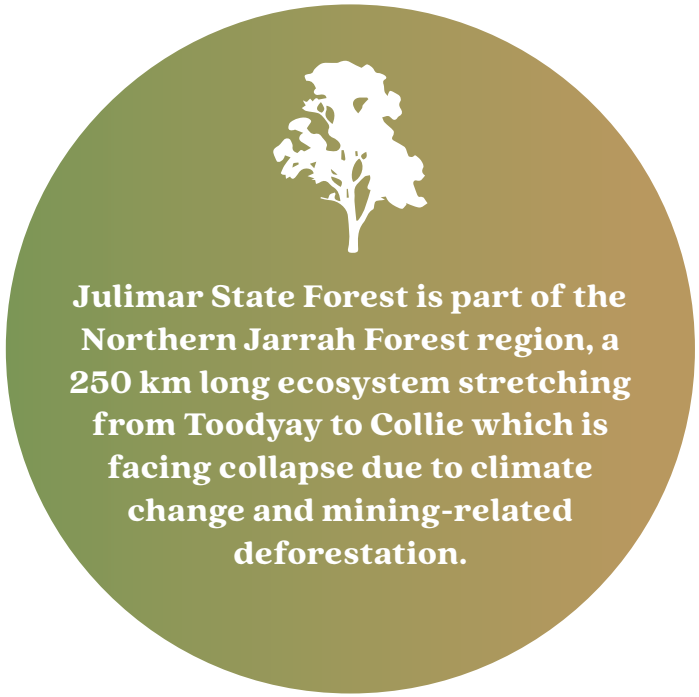
IUCN documents also point out that connection is important: *"Protected and conserved areas also need to be better connected to each other, to allow species to move and ecological processes to function."* (IUCN, 2021, May).

Australia's International Commitments

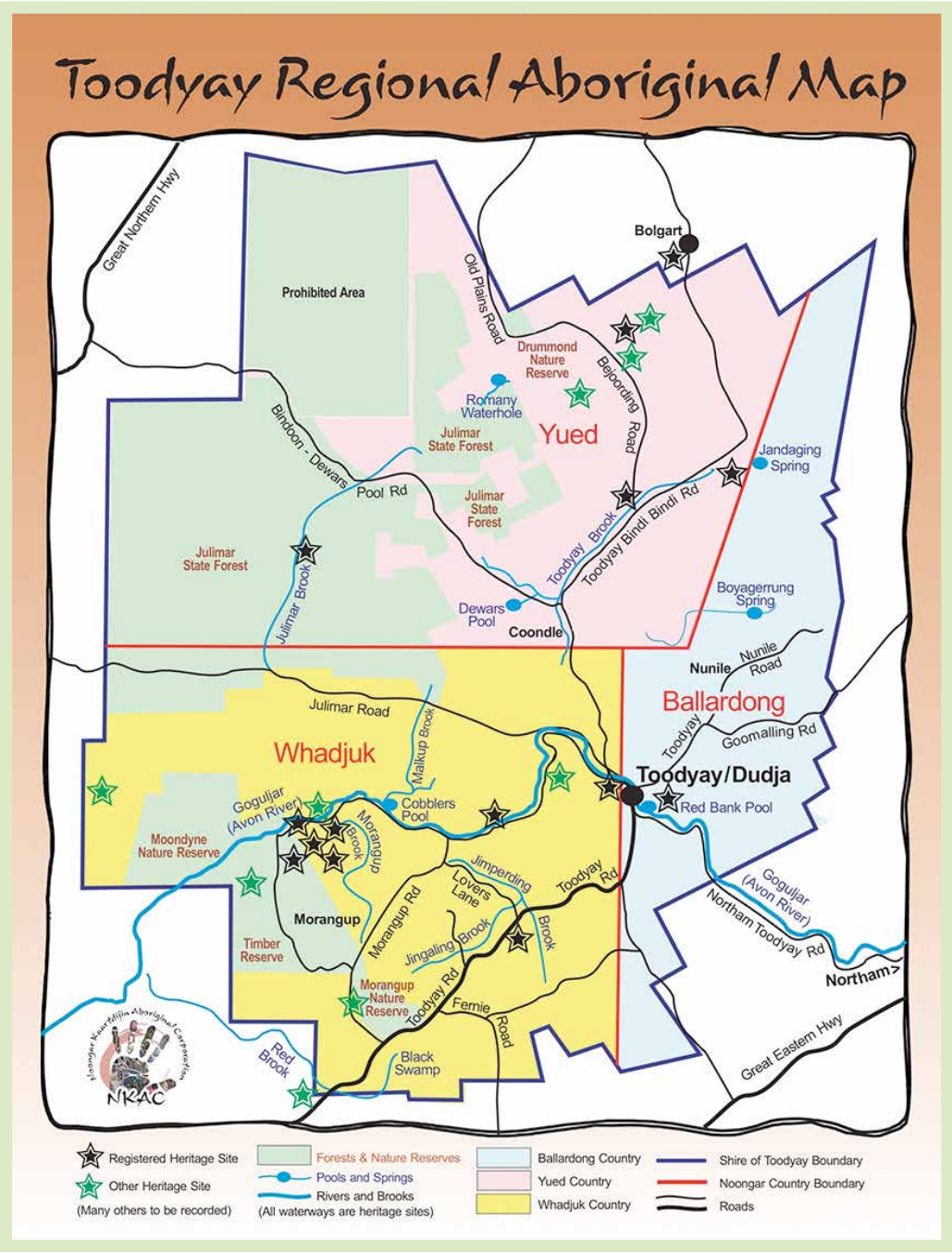
Following on from the IUCN World Conservation Conference in 2021, Australia made a commitment to achieve the IUCN **target of protecting and conserving 30% of its land and 30% of its oceans by 2030**. This commitment was announced by the Minister for the Environment, Tanya Plibersek, in a speech to the National Press Club (Plibersek, 2022).

Protecting and conserving 30% of the land by 2030 is a vitally important commitment. The IUCN pointed out that not any 30% will do, that it has to be the right 30% (IUCN, 2021, August). In the Australian context, this has been interpreted to mean that 30% protection should be applied to each IBRA (Interim Biogeographic Regionalisation of Australia) region.

Making Julimar State Forest a National Park and including it in the National Reserve System would help Australia meet its commitments to the IUCN and under the International Convention on Biological Diversity.



Three Moort (Families) by Sarah Miles - Noongar Artist.
The painting represents the area across Toodyay Valley where three Noongar language groups - Yued, Ballardong, Whadjuk - lived.



Toodyay Regional Aboriginal Map, Noongar Kaatdijin Aboriginal Corporation.

Brief History of Julimar State Forest

Before colonial settlement

The traditional name for the Toodyay area is 'dudja' a word describing the wider area where it is known for its 'mist', especially during the coldest season of Makuru.

'Julimar' is the Noongar word for the thigh bone (djoorla) of a kangaroo (yonga). Djoorla is pronounced 'jaw-la' and this is where the name Julimar ('Jaw-la-ma') likely comes from.

Game, such as yonga, were abundant in this area, making it a productive hunting ground.

The whole area was rich in both mereny (root vegetables, grain and berries) and daatj (flesh foods). Hunting for yonga would have happened using controlled fire. U-shape fire herded animals toward hunters, avoiding large-scale destruction and easier tracking.

Toodyay and the wider valley region is the cultural home to 3 Noongar language groups: Yued, Ballardong and Whadjuk. The Shire of Toodyay is in a unique location with its boundaries being within the lands of these 3 Noongar groups.

Theirs was an oral culture, and there is very little specific information available in written form about the significance of this area to the Noongar People. We do know that the Avon River and its tributaries, including the Julimar and Toodyay Brooks are considered to be sites of cultural significance. Conventional wisdom considers Toodyay to be a traditional meeting place for Yued, Whadjuk and Ballardong peoples.

Use of the Julimar State Forest and surrounding land since colonial settlement

European settlers were attracted to the area by the creeks, loamy soils and open wandoo woodlands. In the early years of the 20th Century, conditional purchase leases were granted for almost half of the area of the current Julimar State Forest.

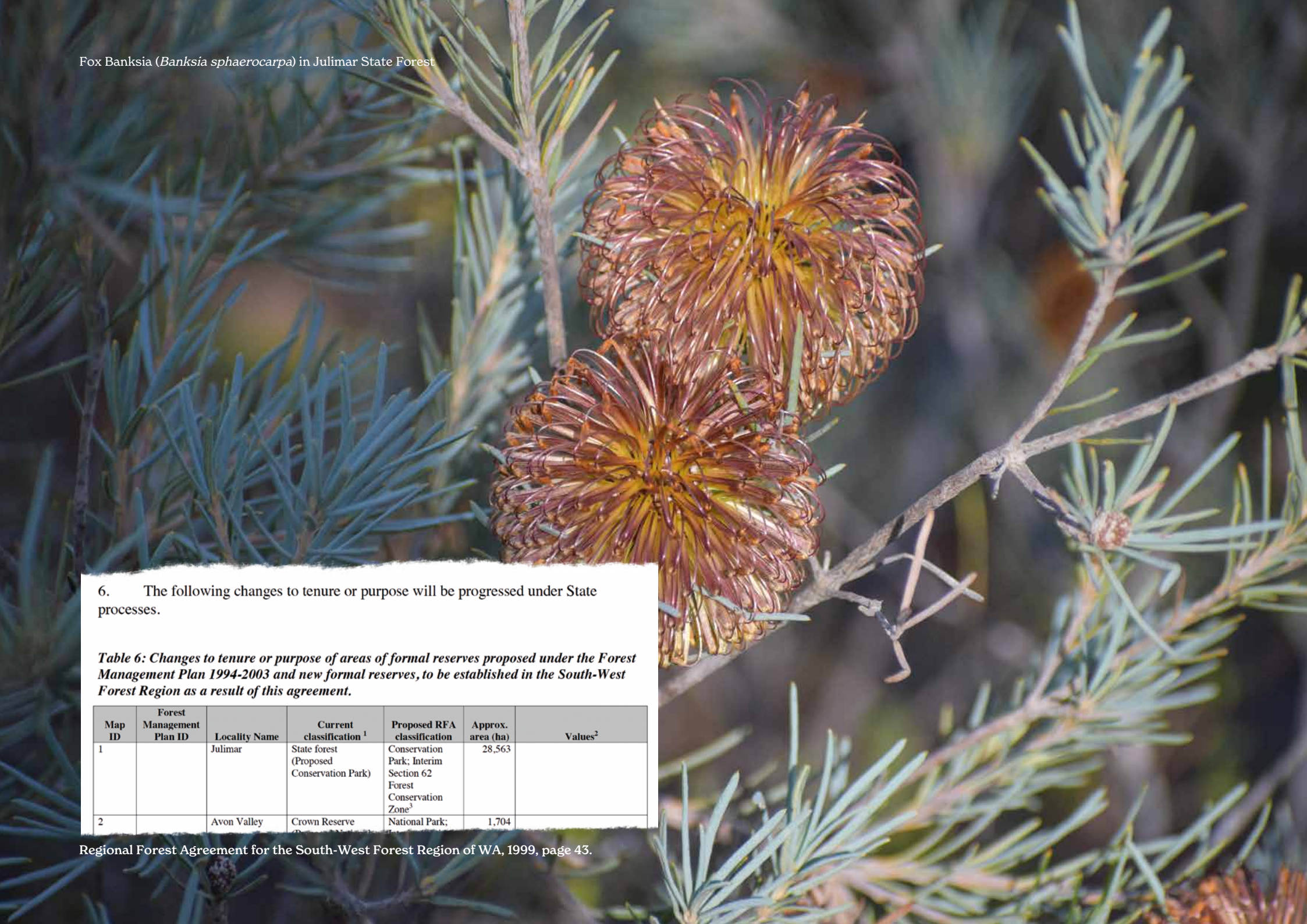
By 1910 local apiarists were carting hives into the Forest and protecting it from high intensity bushfires through a careful regime of regular burning. Local apiarist, Samuel Cook Snr. started writing letters to the Conservator of Forests about preserving the wandoo forest, protesting about the clearing of the forest. "Sam's faith and persistence was significant in retaining the Forest." (Johnson, Revealey & Morris, 2006 p 58).

The Julimar Timber Reserve was declared State Forest No. 61 in 1956. In response to a request from the Toodyay Road, Health and Vermin Board to create a reserve for flora and fauna, the Conservator replied that 'the newly declared State forest would serve that purpose well' (Gaynor, 2008, p6).

Onsite Forestry staff oversaw the logging of marketable timber. Some went to sawmills, some was used for charcoal.

Cook family apiary, from *The Story of Toodyay* by Alf Thomas (1949), p.53

Beehives currently situated in Julimar State Forest.



Fox Banksia (*Banksia sphaerocarpa*) in Julimar State Forest

6. The following changes to tenure or purpose will be progressed under State processes.

Table 6: Changes to tenure or purpose of areas of formal reserves proposed under the Forest Management Plan 1994-2003 and new formal reserves, to be established in the South-West Forest Region as a result of this agreement.

Map ID	Forest Management Plan ID	Locality Name	Current classification [1]	Proposed RFA classification	Approx. area (ha)	Values[2]
1		Julimar	State forest (Proposed Conservation Park)	Conservation Park; Interim Section 62 Forest Conservation Zone[3]	28,563	
2		Avon Valley	Crown Reserve	National Park;	1,704	

Regional Forest Agreement for the South-West Forest Region of WA, 1999, page 43.

1977

In the Forests Department General Working Plan No. 86, 27,798 ha of JSF were included in the list of special priority areas in which conservation of flora, fauna and landscape are the management priority.

1978

Proposed for the natural and cultural heritage register: Register of National Estate

1980

JSF added to the Register of the National Estate

1983

JSF designated 'Julimar Management Priority Area C21' in CALM's System 6 Report with intention to progress it to a 'Regional Park'.

1987

CALM's Northern Forest Region Regional Management Plan 1987-1999, recommended converting 9 state forests into conservation parks. JSF was listed as 1 of the 9.

1992

Official Notification to Toodyay Shire of intention to create 'Julimar Conservation Park'.

1994

JSF is shown as a proposed Conservation Park on Map 1 in the Forest Management Plan 1994-2003, by the Lands and Forests Commission.

1999

JSF was listed as a State forest with a proposed classification of Conservation Park in the first Regional Forest Agreement (1999-2023) between WA and Commonwealth Governments.

2000

In parliament, a motion was passed to create 'Julimar Conservation Park' - conditional on mineral prospectivity being resolved.

CALM erected signage, to support this.

2003

The Conservation Commission of WA proposed that JSF be reclassified from State Forest to Conservation Park, with the interim classification of Forest Conservation Area.

2006

CALM's *Landscope* article written on the use and merits of 'Julimar Conservation Park'.

2013

The Conservation Commission of WA includes JSF in its table of Reserve Proposals, recommending Conservation Park status with Interim status as Forest Conservation Area.

2019

Only 5 of 265 (2%) recommendations for land category change in the Forest Management Plan 2014–2023 were implemented.

The Deed of Variation in Relation to the Regional Forest Agreement for the South-west Forest Region of WA includes JSF in 4 tables citing 'Interim Section 62 Forest Conservation Zone' status.

2022

Conservation Park status with Interim status as Forest Conservation Area indicated in Draft Forest Management Plan 2024-2033

2023

The Conservation and Parks Commission again include JSF in its table of Reserve Proposals, recommending Conservation Park status with Interim status as Forest Conservation Area.

Unfulfilled commitments

Over the last 40 years, governments have made a series of commitments and proposals in relation to the Julimar State Forest, but none of these has been met. These include commitments in 4 WA Forest Management Plans and 2 Regional Forest Agreements between the WA Government and the Commonwealth Government. They are summarised in this timeline.

Since at least 2004, there has been a commitment to manage Julimar State Forest as if it had the promised status, however there is minimal evidence of active management apart from its inclusion in the Western Shield program, which has resulted in limited baiting for foxes.

Map 3. IBRA Regions. Julimar State Forest lies within the transitional zone where three IBRA regions meet: the Jarrah Forest, the Avon Wheatbelt, and the Dandaragon Plateaux.

Biodiversity Significance of Julimar State Forest

Julimar State Forest is predominantly a Jarrah forest. Jarrah forests are noted for their biodiversity. The Leeuwin Group of Scientists recently described Jarrah forests as “the most biodiverse temperate forest on earth” (Leeuwin Group, 2023).

The Forest also contains sizeable areas of Marri and Wandoo Woodland. The north-eastern parts of the Forest are considered to be a part of the ‘Eucalypt Woodlands of the Western Australian Wheatbelt’: a nationally protected ecological community (Department of Environment and Energy, 2016).

Proximity to the Swan Coastal Plain allows species such as the Carnaby’s Black Cockatoo to access alternative feeding grounds for part of the year.

Julimar State Forest is in the transition zone between 3 IBRA regions: the Jarrah Forest, the Avon Wheatbelt and the Dandaragon Plateaux. This leads to an even more diverse array of flora and fauna (Knowles, 2011). Ecotones – the transition zones between different ecosystems – are renowned for the diversity of flora and fauna existing there. This applies at the macro and micro levels.

Forests are vital habitats for both vertebrate and invertebrate animals, as they provide them with food, shelter, and other resources. Forests also support complex ecological interactions among different animal groups, such as predation, herbivory, pollination, seed dispersal, and decomposition. These interactions contribute to the maintenance of forest biodiversity and ecosystem functioning.

Locally collected information including comprehensive, systematic and long-term surveys undertaken by members of Birdlife Australia (their records for Julimar State Forest go back to the 1950s) and the Toodyay Bioblitz of 2015 (Wheatbelt NRM, 2015) have been a primary source of data for this section on biodiversity. These have been augmented by publicly available reports and data from WA databases.

The origins of Julimar State Forest’s biodiversity is in its geodiversity

The biodiversity of the Forest has its foundations in its long and varied landscape evolutionary history. The Australian continent has been evolving for over 4 billion years. The 3.5 billion-year-old metaquartzite samples found in the Toodyay area are significantly older than the surrounding landscape, which includes hill and debris slopes (up to 35 million years old) and ferricretes (10 to 7.5 million years old).

As a result of the magnitude of the time scale of this pre-history, the Julimar State Forest contains a complex system of contemporary interdependent landform systems, which gives rise to the hugely diverse vegetation and habitats we see present today. These include: Ferricrete Uplands; Hill Slopes and Debris Slopes; discrete areas of Swamps and Wetlands; Riparian Zones surrounding ephemeral brooks; and discrete areas of Rock Outcrops

The Forest retains the imprint of this history, and deserves recognition in its own right as a bio-geological monument.

Environmental Earth Scientist, Doug Blandford, examining a piece of Migmatitic gneiss from the Julimar State Forest

The truth is that we need invertebrates but they don't need us.
If human beings were to disappear tomorrow, the world would go on
with little change... But if invertebrates were to disappear,
I doubt that the human species could last more than a few months.

Edward O. Wilson, *The Little Things That Run the World (The Importance and Conservation of Invertebrates),* 1987

Native Megachile bee approaching the flowers of the Painted Featherflower (*Verticordia picta*).

Wandoo *(Eucalyptus wandoo).*
Photo by Melissa Adams

Red-headed mouse spider *(Missulena occatoria).*
Photo by Wayne Clarke.

Yellow China Orchid *(Cyanicula ixioides subsp. ixioides).*
Photo by Jacquie Lucas.

Recognised Vegetation Complexes and Known Flora

Julimar State Forest has been mapped in the National Vegetation Inventory System (NVIS) as having 5 main vegetation complexes (Department of Primary Industries and Regional Development, 2022).

The 5 main vegetation complexes are all tree-dominated. At least 7 species/subspecies of Eucalypts are present in the Forest. These are:

- Marri *(Corymbia calophylla)*
- Powderbark Wandoo *(Eucalyptus accedens)*
- Wandoo *(Eucalyptus wandoo)*
- Forest Mallee *(Eucalyptus aspersa)*
- Jarrah *(Eucalyptus marginata subsp. marginata)*
- Blue-leaved Jarrah *(Eucalyptus marginata subsp thalassica)*
- Flooded Gum *(Eucalyptus rudis)*

Combining data from the Naturemap search (DBCA_Ref_42-0622NM), from the WA Museum and from on ground data collection, well over 500 native species of plants have been identified. These come from 60 families and 191 genera. Organisms from the Kingdom Fungus are not included in these numbers.

Four endangered, 1 vulnerable, and 22 priority species of Flora are known to exist in Julimar State Forest. Over 30 orchids from 14 genera have been found by one botanist exploring the Forest in the last 20 years and large areas of the Forest remain to be covered.

Invertebrates

Forests provide a haven for invertebrate fauna.

Invertebrate records from the Julimar State Forest Area are encouraging. The presence of Trap-jaw Ants *(Complex Odontomachus ruficeps)* in Julimar State Forest is one of their more important finds, because they are, de facto, an indication of the presence of minute soft bodied insects. One species of butterfly is in the process of being named Neulucia julimar, thanks to fieldwork by Research Associates of the WA Museum.

A detailed survey of macro-invertebrates, reptiles and amphibians was undertaken for the Malkup Brook Reserve, which is only 2 km from the Forest. Of the invertebrate species collected, 24 % were predators. So the predator/prey ratio was 1:3, which is considered a healthy ratio according to ecological principles (Knowles, 2011).

The fact that insect populations and species numbers are in serious decline worldwide seems irrefutable. Australian research into insect decline concludes that “at least in temperate areas, the changes are probably widespread and far more severe than previously realised” (Braby et al, 2023); and this is just for insects. Loss in other taxon of invertebrates is less well researched and understood, but likely to be at least as problematic.

A Woylie *(Bettongia pencillata)*
Stock photo.

Protected areas, recovery efforts and better management of pressures can help to secure our most threatened species.

Murphy & van Leeuwen, *Australia State of the environment*, 2021.

Gould's Wattled Bat *(Chalinolobus gouldii)*
Photo by Phil Lewis.

Black-gloved wallaby *(Macropus irma).*
Photo by Melissa Adams.

Western Shriketit *(Falcunculus leucogaster).*
Photo by Phil Lewis.

Birds

Birdlife Australia considers the Julimar/Bindoon area to be an Important Bird Area (IBA) for bird conservation. In other words, it is considered to be one of 74 locations in WA of 'global significance for bird conservation'. "Australia's 314 Important Bird Areas (IBAs) are among Earth's most exceptional places for birds and are priority sites for bird conservation." (Dutson, Garnett & Cole, 2009, p2).

A total of 140 species have been recorded in this area by Birdlife Australia members. These include 12 of the 18 species that are Endemic to WA. Eight species of raptors live in the forest all year and 3 other species have been recorded in the vicinity of the Forest. The Forest's proximity to the Swan Coastal Plain is advantageous for the many species which move between the Forest and the Plain on a seasonal basis.

Julimar State Forest is host to threatened, specially protected and DBCA listed species, including:

Baudin's Black Cockatoo *(Zanda baudinii)*	Endangered
Carnaby's Black Cockatoo *(Zanda latirostris)*	Endangered
Red-tailed Black-Cockatoo *(Calyptorhynchus banksii naso)*	Vulnerable
Peregrine Falcon *(Falco peregrinus)*	Species otherwise in need of protection
Australian Masked Owl *(Tyto novaehollandiae)*	Priority 3

Mammals

Australia has lost 38 species of native mammals since colonisation, around 87% of which are found nowhere else; this is the worst mammal extinction record in the world (Ritchie, 2022, Kanowski 2023). Increasing the protection of the Julimar State Forest will play a crucial role in arresting this alarming decline, given the number of threatened and vulnerable species found there.

The Julimar State Forest and Bindoon Training Area Complex has been home to 40 species of mammals, including 8 species of bat. Three species are now presumed to be extinct. Seven species had not been sighted until recently, and there are unconfirmed sightings of hopping mice. The Forest is also used for Chuditch relocation programs within WA and interstate, providing animals for re-wilding programs and genetic diversity enhancement.

In 2023/24, sensor cameras were placed in different locations within Julimar State Forest. So far, the Threatened and Priority species recorded include:

Woylie *(Bettongia pencillata)*	Critically endangered
Chuditch *(Dasyurus geoffroii)*	Vulnerable
Brush-tailed phascogale *(Phascogale tapoata)*	Conservation dependant
Quenda *(Isoodon obesulus)*	Priority 4
Western brush wallaby/ Black-gloved wallaby *(Macropus irma)*	Priority 4
Tammar wallaby *(Macropus eugenii)*	Priority 4

A South-western Carpet Python *(Morelia imbricata)* wrapped around a very large trunk of a Wandoo. Photo by Greg Warburton.

Gould's monitor lizard *(Varanus gouldii)*
Photo by Melissa Adams.

Western Spotted Frog (Heleioporus albopunctatus)
Photo by Sharon Richards.

Woylie *(Bettongia pencillata)*, trail cam footage shot in Julimar State Forest.

Their survival in the Forest will depend upon the efficacy of feral animal control. Foxes and cats are very effective predators of mammals, and pigs deplete the food sources of some species, particularly the Woylie.

The vulnerable Chuditch *(Dasyurus geoffroii)* and critically endangered Woylie *(Bettongia pencillata)* were caught on camera in Julimar State Forest on several occasions in the second half of 2023. This is a 'good news' story for conservation initiatives in WA. Both species have been the focus of intervention activities since at least the early 1990s.

Reptiles and Amphibians

Herpetofauna (amphibians and reptiles) are found in every 'nook and cranny' in the Forest, including tree hollows, under the bark of live and dead standing trees and in fallen logs; in low vegetation and shrubbery; in abandoned burrows and termite mounds; in the leaf litter, in sandy areas and banks; in moist areas near creeks, under rocks and in deep cracks in dry soil.

Food sources include: live animals – birds, small mammals, insects, other reptiles and amphibia and even snakes; carrion; the eggs of birds, reptiles and termites; insect and termite larvae and pupae; vegetable matter – flowers, fruit, leaves and debris – and as one source put it for Bobtails *(Tiliqua rugosa)* 'anything that can be swallowed'!

There are 9 known families of reptiles and 2 families of amphibians in the Forest. Data compiled from the WA Museum, local confirmed sightings, and the 2015 Bioblitz correlates well with the Naturamap data to give around 34 genera and 60 species of Herpetofauna.

There is one Priority Species in the Forest: the P4 Darling Range South-west Ctenotus (*Ctenotus delli).*

Forest Resilience

The natural balance of Julimar State Forest is threatened by size reduction, fragmentation and the arrival of pathogens and feral animals. Its resilience is dependent on a multitude of factors which interact in a complex and ever evolving ways. These include:

- geological features and soil diversity
- size and links to other areas of forest and natural vegetation
- species and ecological community diversity
- water movement
- microclimates within the Forest

Because of its size, the Forest can provide many of its own ecosystem services: food, habitat, protection, pollination and seed dispersal, nutrient cycling and some protection from the extremes of climate.

The vegetation within the Forest is very diverse, ranging from open woodlands to dense thickets of undergrowth. This diversity and the inter-relationships it supports are very important. Thick, sometimes spiny, vegetation provides refuge to critical weight mammals (35g - 5500g) which are very vulnerable to predation.

One such mammal is the critically endangered Woylie (*Bettongia penicillate ogilbyi)*, a bioturbator that digs and turns over soil in its never-ending search for fungi, tubers, bulbs, seeds and other vegetative products such as resin. The process of bioturbation is very important for soil health and contributes to forest resilience.

The Forest contributes to the conservation of vulnerable species such as the Black-gloved Wallaby, Woylie and Chuditch.

Water is at the core of our planet's biodiversity and helps to create a sustainable future

International Water Management Institute

One of the many brooks that are found in Julimar State Forest (near Munyerring Spring Road).

Catchment Significance

Julimar State Forest is well served by a network of ephemeral brooks. These provide very localised conditions which have influenced the development of the current flora and fauna in particular areas of the Forest, contributing to the biodiversity.

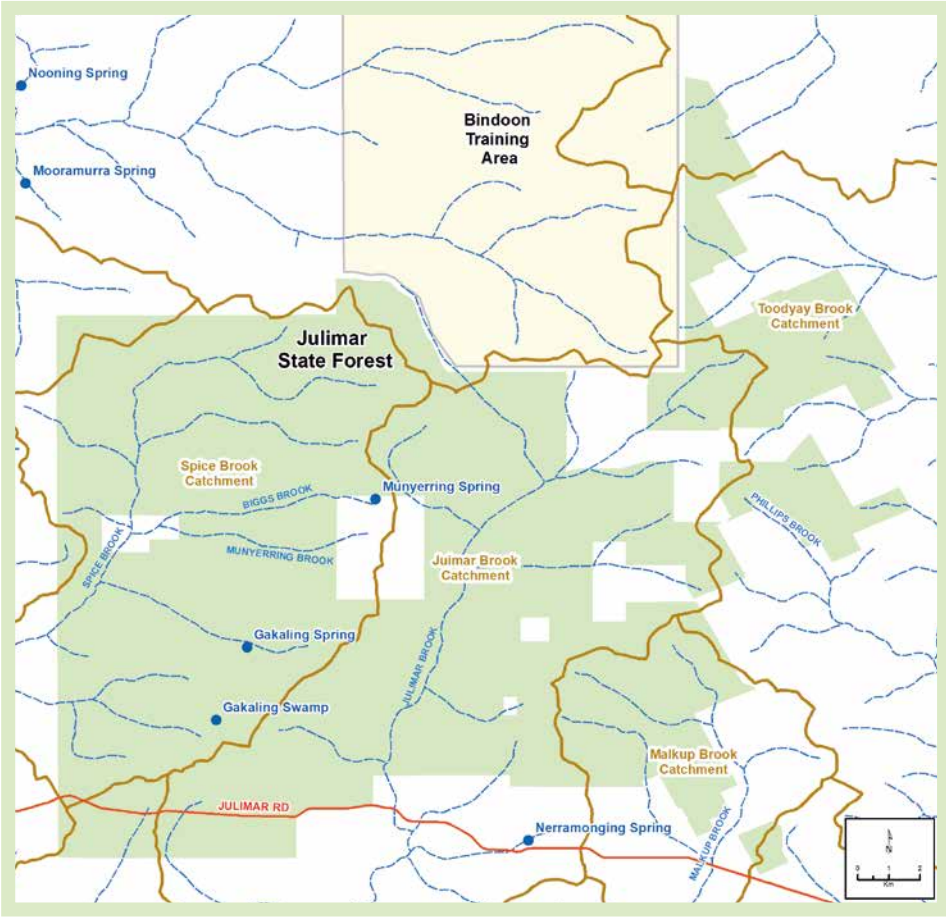
Almost entirely, the brooks flowing within the Forest originate there or from neighbouring areas of natural vegetation, so that the water in the brooks does not contain pesticides (including insecticides, herbicides and fungicides) or artificial fertilisers. This is particularly important for arthropods, amphibians and for the soil biome close to the brooks. It is another factor contributing to the biodiversity in the Forest.

The Julimar State Forest is part of the catchment of the Swan-Avon River, via a network of ephemeral brooks and tributaries. To the west, the Spice, Biggs and Munyerring Brooks drain into the Brockman River. In the central and most of the eastern part of the forest, the Julimar and Malkup Brooks drain directly into the Avon River. In the very eastern part the brooks drain into the Toodyay Brook and thence into the Avon.

The Brockman River joins the Avon River around 8 km before the Avon changes its name to become Perth's iconic Swan River, the Derbarl Yerrigan.

The future of Julimar State Forest influences the quality of water in the Swan-Avon River. Whilst the flow of water from the Forest is ephemeral, the quality of that water is fresh, making Julimar Brook, in particular, an important contributor to the Swan-Avon River system.

Conversely, any major pollution event in the Forest or surrounding farmland will impact on all communities downstream. The water from the area flows through the Swan Valley, and ultimately through Perth.



Map 5. Brooks running through Julimar State Forest.

Bushwalkers traversing the Camino Salvado Pilgrim Trail that passes through Julimar State Forest. Photo by Bridget Leggett.

Cultural and Social Significance and Ecosystem Services

"Nature is essential to our health, wellbeing and quality of life". This is a key claim and section heading in the Commonwealth Government's Strategy for Nature. It states unequivocally:

"Whether you live in the city or rural Australia, nature provides the building blocks for our very survival, such as clean air, water and shelter. Beyond providing for our fundamental needs, nature also provides more subtle benefits to people and communities." (Commonwealth of Australia, 2019, p5)

Human health depends on protecting and nurturing what we can of our natural environment. With the growing urbanisation surrounding Perth and the growing population in the metropolitan area, preserving forests such as the Julimar State Forest has become an urgent priority.

Key findings of *Australia State of the Environment, 2021*, include statements about Indigenous connection to Country. The message is unequivocal:

"The health of Country and people are deeply interconnected.

There is a deep interconnection between the health of Country and the health of Indigenous people. Healthy country means healthy people – and if people are healthy, they can look after Country. Mainstream management decisions that disconnect people from Country have a negative impact on health and wellbeing.

Country connects people to each other, to their culture and to the past, and there is a close relationship between Indigenous people and Country in wellbeing outcomes.

Indigenous people and communities have been saying for a long time that health and wellbeing are linked to connection to Country, cultural practices, cultural safety, spirituality and language use."

(Janke et al, 2021)

Julimar State Forest is already home to many recreational and educational activities, including bushwalking, orienteering, rogaining, and camping - which is currently illegal.

The Forest's natural beauty has been used to organise artistic endeavours such as plein air sketching and painting as well as passive recreational activities such as yoga and meditation. It is also a place for citizen science.

Pilgrims, school students, and bushwalkers alike enjoy the 20 km stretch of the 180 km Camino Salvado Pilgrim Trail that passes through the Forest.

People's emotional and psychological ties to forests are largely unvalued, yet time in forests can offer a refuge from an increasingly frenetic lifestyle. The cost of not having access to nature is subversive.

Only 80 km from Perth CBD, Julimar State Forest is a significant untapped social asset and tourism location. Its loss would be unconscionable.

Annually, the United Nations hosts the UN Forum on Forests, which in 2019 listed as its top priorities 'climate change and the real cost of deforestation', noting:

"One of the key take-aways from the 2019 session of the UN Forest Forum was that, too often, forests are under-valued, because it's hard to put a clear monetary value on all of the positive contributions they make to the world.

As a result, the true cost of deforestation and forest degradation is not taken into account when policy decisions are made on land use, such as decisions to clear forest land to use for commercial agriculture."

(UN News, 2019)

Forests … are in fact the world's air-conditioning system—the very lungs of the planet—and help to store the largest body of freshwater on the planet … essential to produce food for our planet's growing population. … In simple terms, the rainforests, which encircle the world, are our very life-support system—and we are on the verge of switching it off.

Prince Charles (now King Charles) speaking at the Presidential Palace, Jakarta, Indonesia, 2008.

Bushfire near Julimar State Forest.
Photo by Wayne Clarke.

The Need for Appropriate Management of Julimar State Forest

Although the many commitments to protect Julimar State Forest have included a commitment to manage it as if the conservation status had been granted, this has not happened. But it is possible.

Comprehensive management planning needs to be undertaken in consultation with the Traditional Owners, scientists and the community to protect the cultural and ecological values of the Forest. With National Park status comes the obligation on governments to deliver appropriate management. A real commitment to implementing the plans is also needed.

Forests are vulnerable and threatened worldwide. The true value of forests is ignored at each stage of decision-making. Deforestation is occurring across all continents driven by population growth, consumerism and the increased demand for raw materials.

Fire Threat

Fire is an emotive issue because of the confronting images of razed homes, dead animals, sadly fallen, blackened trees and destroyed wetland habitats that are all too often seen on news broadcasts after a wildfire event. Imperfectly understood are the impacts of prescribed burning programs on flora, fauna and the soil biome.

The National Burning Project's Overview of Prescribed Burning in Australasia concluded: "There is general agreement that inappropriate fire regimes, including those resulting from prescribed burning, can damage biodiversity and other environmental and community values and that there is an ongoing need for more research." (Australasian Fire and Emergency Service Authorities Council, 2015, p6)

DBCA in WA conducts a controlled burning program as a part of its bushfire/wildfire mitigation strategy. The location and timing of prescribed burns in Julimar State Forest could and should take into account the locations of the Chuditch populations used for re-location programs and the timing of the breeding cycles of the Carnaby's Black Cockatoo.

In 2023 fires were lit just as the Black Cockatoos were returning from the Swan Coastal Plain to look for breeding hollows, and the whole of the eastern half of Julimar State Forest was covered by planned burn locations; fortunately not all of the area was razed.

Spread of pathogens

Decisions about the use of Julimar State Forest are inevitably decisions about the risk of introducing or spreading Phytophthora. It is unclear whether there is yet any Dieback *(Phytophthora cinnamomi)* in Julimar State Forest, but at least most of the Forest is believed to be clear of this plant pathogen.

The disease is spread by the movement of infected soil, water or infected plant material. Any human activity within the Forest will put it at some risk, because Phytophthora can be carried and moved around on vehicles, equipment, machinery, tools, shoes, hiking poles and even personal belongings.

It is also spread by feral pigs which turn over the soil in their search for food, damaging its physical structure and any ground cover, reducing its quality and water-holding capacity and releasing carbon dioxide into the atmosphere.

Earthquakes may increase mining risk at Julimar

Doug Blandford
Environment Earth Scientist

ACID mine drainage (AMD) from development of the Gonneville ore body, will become the greatest environmental risk over the life of the mine and beyond.

This risk is a direct consequence of seismic activity within the south-western WA seismic zone, formerly known as the Cape Ritchie – Yandanooka Lineament.

A seismic event is an event that causes the earth to shake, i.e. an earthquake, and such events may be triggered by a number of processes both natural and man-made.

For example, the 6.5 intensity Meckering earthquake in 1968 was triggered by a natural seismic event within the south-western Australian Shield.

approach presents a well-tested uniform methodology for planning and for project area description and environmental impact assessment.

Standard treatment of potentially acid forming materials involves encapsulation within the dump, or by additional material processing prior to encapsulation.

Accordingly, the success of the encapsulation process will be dictated by the material addressing specific engineering attributes such as particle-size distribution, permeability and hydraulic conductivity.

Such an encapsulation programme will be an integral part of the mine operations and will continue for the life of the mine.

Unfortunately,

Now fast forward to a point in time where decommissioning and mine closure operations are complete.

Out of the blue and unpredicted, a seismic event is recorded adjacent to the abandoned mine site, compromising the integrity of the encapsulation envelope.

Note that over six thousand earthquakes have been recorded in the South-west Seismic Zone between 1968 and 2002.

The possible response scenarios to such an event are very limited.

At some point in post-

and hence into the Swan River system?

In such a situation, an acid mine drainage control and remediation programme cannot be retro-fitted to a closed mine.

The scenario presented above is very real.

Project design, environmental impact assessment and management, mine closure, and decommissioning will all require a very level of scrutiny by the lawmakers.

This will ensure that stakeholders—

Many risks associated with proposed mining

Clair Medhurst

Retired mining lawyer, former co-convenor of Residents for Responsible Mining, member of Avon & Hills Mining Awareness Group Inc.

ASCHALICE Mining attempts to introduce a large-scale nickel, copper and platinum group elements (PGE) project into the Shires of Toodyay and Chittering, communities and environmental advocates are growing concerned about the potential environmental, of commercial impacts.

concerns is the

feasibility study, including an environmental assessment via a Public Environmental Review (PER) process overseen by the State's Environmental Protection Authority (EPA).

Some residents of Chittering might remember going through this process before – a record-breaking three-year PER was undertaken from 2010-2015 in relation to proposed bauxite mining.

In the end the proponent, Bauxite Alumina JV, withdrew from the process due to overwhelming opposition from the local community.

In 2019, during the process of updating Chittering's Local Planning Strategy, the WA Department of Mines determined that the Chittering/ Toodyay region should become a mining province, despite its unique environmental values and fast-growing popularity as an agri-tourism and lifestyle destination.

The EPA decided on a PER process for

Will Chalice mine leave an unwanted legacy?

Doug Blandford
Environmental Earth Scientist

I READ with interest the article by Sharon Richards (*Toodyay Herald*, March 2024) where local fauna is at risk through lack of control of feral predators.

The article exposes a much deeper problem facing protection of the natural environment, not only globally, but across Australia and specifically here in Western Australia.

A case in point being the ceased mining projects in the Northern Territory namely the Rum Jungle and Ranger Uranium mines, as well as the Lake George Mine at Captains Flat in New South Wales.

These mines may be termed "Legacy Projects", that is, someone else is cleaning up the mess.

Mining at Rum Jungle occurred from 1953 to 1971 and the environmental statements at the time gave a rehabilitation period of 15 years.

The minerals making up the ore were uranium, copper, lead, cobalt, nickel, and zinc.

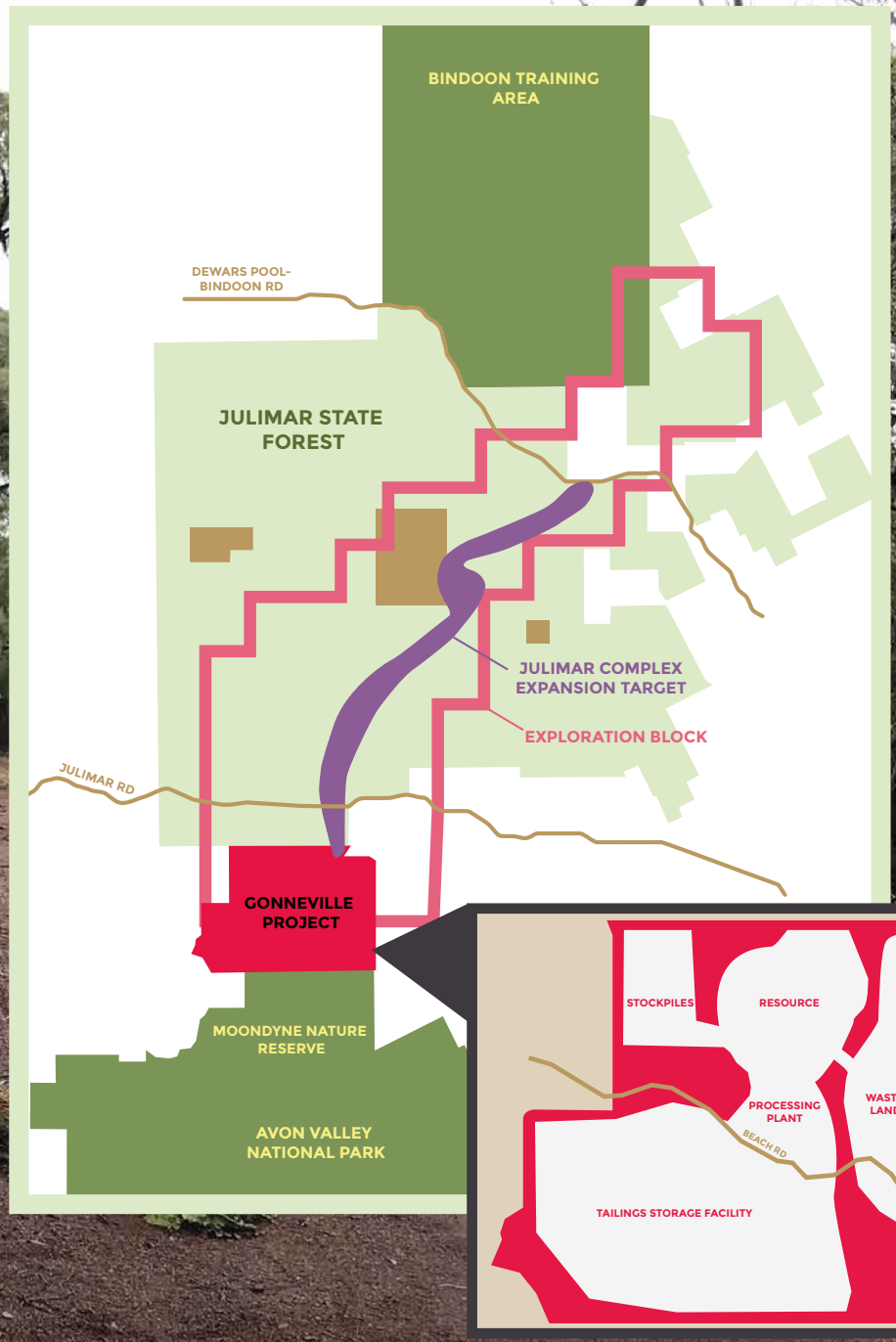
A lack of clearly defined corporate

natural resource, and every effort should be made to protect this rapidly diminishing resource from pollution and contamination.

It will be a brave law-maker in the WA Government that would approve a mining project that has the potential to result in long-term contamination of local and regional surface and groundwater systems.

Don't forget that our environmental watch-dog probably won't be going in to bat for us.

Continues in June edition. Toodyay Herald.



Mine development envelope and conceptual layout

Mining Threat

Mining in forests has devastating consequences for the delicate ecological balance that has developed over time. The impact extends across multiple factors, including:

- The physical, chemical, and biological composition of the soil,
- Surface and sub-surface water availability and flow,
- The intricate relationships between flora, fauna, and the micro-climates they create.

In most scenarios, mining amounts to deforestation of the mined and infrastructure areas and transport corridors, with serious degradation of the forest surroundings.

Western Australian forests are particularly vulnerable due to the state's legal framework, which prioritises mining over other land use.

The Gonneville Project, a large-scale critical minerals mining development located adjacent to Julimar State Forest's southern border, is an immediate threat to the Forest. The deposit contains critical minerals essential for electric vehicles, renewable energy systems, and other clean energy technologies.

Currently (as of March 2025), Chalice Mining is conducting a feasibility study for the first phase of the project, which includes an environmental assessment through a Public Environmental Review (PER) overseen by the Environmental Protection Authority (EPA). The initial mining operation will be an open-pit mine. Chalice has conducted exploration drilling in Julimar State Forest, indicating plans for potential expansion into this ecologically sensitive area. The project is focused on a geological formation known as the 'Julimar Complex', spanning over 30 kilometers through the Forest.

Ecological and Environmental Impact

Julimar State Forest is part of a 68,300 ha bushland corridor, connecting the Bindoon Training Area in the north to the Walyunga National Park in the south. The proposed clearing of 940 ha of vegetation for the Gonneville Project threatens this critical green corridor, disrupting wildlife migration—an issue that is particularly concerning in the face of climate change.

The mine's hydrological disruption, continuous noise, dust, and artificial lighting could interfere with breeding cycles and force wildlife into unsuitable habitats, increasing the risk of species decline and extinction.

Threats to Water Resources

A major concern is the potential impact on the Avon and Brockman River catchments, which are essential water sources for local ecosystems and communities. These catchments feed into the Swan River system, which plays a vital role in the health of the broader region.

The geology of the Gonneville site presents serious risks of acid mine drainage—a long-term environmental hazard which generates sulfuric acid. This acidic runoff can contaminate local aquifers and surface water for decades, making water pollution one of the project's most pressing concerns.

Sealing tailings dams (used to store mining waste) and waste rock dumps will be exceptionally challenging due to the geological conditions. If acid mine drainage occurs, preventing it from spreading into surrounding water systems will require extensive and ongoing environmental management.

Additional Environmental Risks

- **Air and Water Pollution –** The project's mining processes could introduce harmful particulates and chemicals into the air and water. Dust rich in silica poses a long-term risk of chronic lung issues like silicosis. Preliminary geological data indicates potential asbestos in the ore body, creating serious airborne and waterborne pollution risks that demand strict environmental controls.
- **Tailings Dams and Wildlife Risks –** Mining waste ponds can look like natural water bodies, which unfortunately attracts wildlife and has caused documented mass bird deaths in Australia.
- **Seismic Activity –** Extracting groundwater for mining operations could trigger seismic events, further destabilising the region.

A High Cost for Nature and Communities

The destruction of critical habitats, the contamination of water resources, and the disruption of local ecosystems and economies make it clear that the true cost of this project will be borne by the environment and the people of the region.

Burnt out, rusted car in Julimar State Forest.

Feral animals caught on camera in Julimar State Forest.
Left to right: Cat, Fox and Pig.

Feral Animal Management

The Forest is the home to feral pigs. Currently, there is no active control of feral pigs in the Julimar State Forest, except for the actions of adjacent property owners.

Julimar State Forest is also home to feral foxes and cats. DBCA's Western Shield program has the capacity to minimise fox numbers through 1080 baiting, and reduce feral cat populations through Eradicat and Felixer.

However, only quarterly fox baiting is conducted in Julimar State Forest, and there are no plans to introduce cat control; instead Julimar State Forest is to be used as a 'Reference Site' so that DBCA can demonstrate conclusively how effective the increase in baiting is in other areas.

Illegal Activities

There are a number of inappropriate and illegal uses which are currently having a negative impact on the Julimar State Forest and could be stopped. These include:

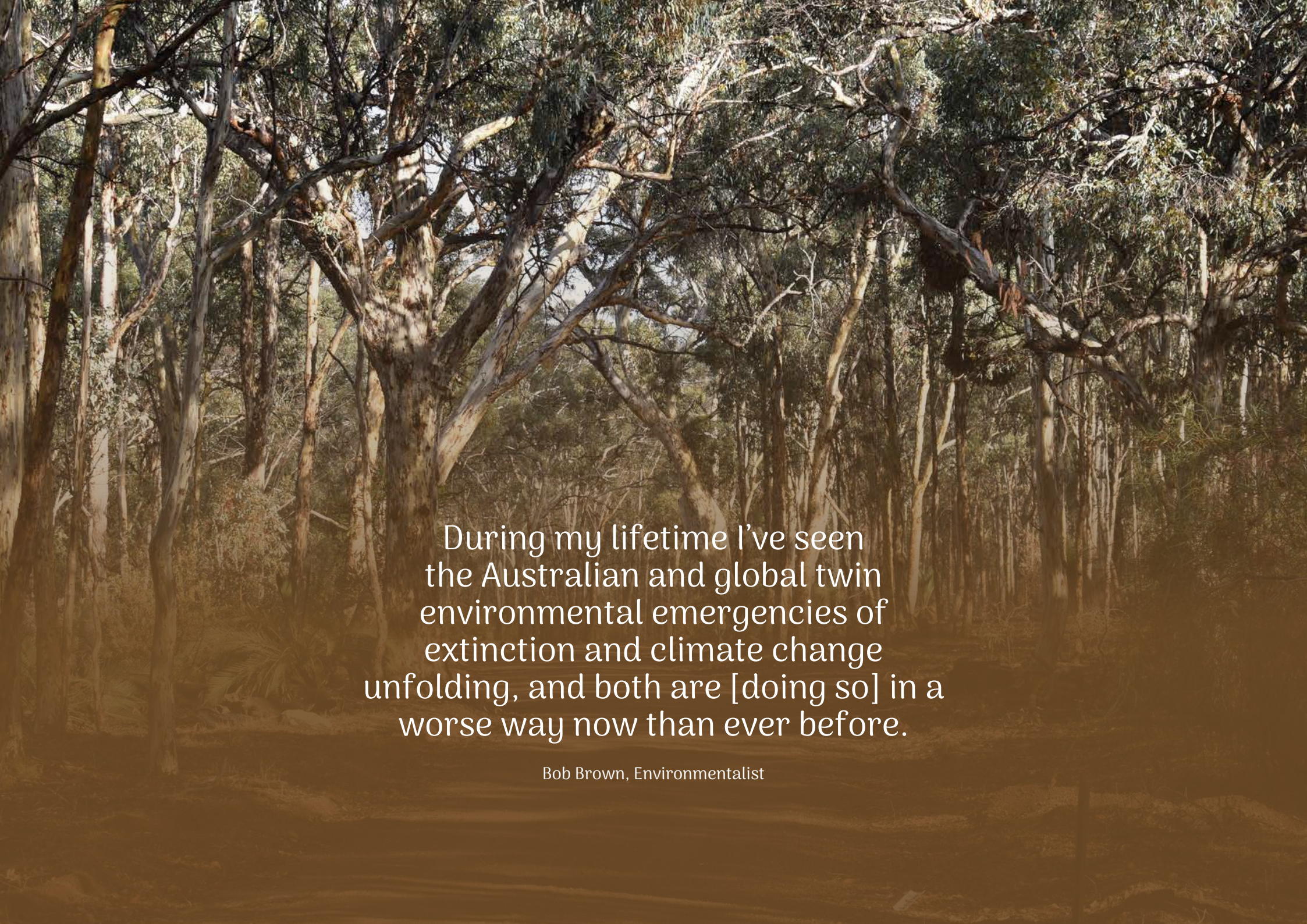
- illegal firewood collection
- unfettered access for off-road driving (two and four wheeled vehicles)
- illegal, unregulated short and longer-term camping
- poaching
- dumping of rubbish and littering

Illegal activities involve the movement of vehicles and the associated increased risk of the spread of Dieback.

The elephant in the room is short-term thinking, resulting in short-term decision-making. Decisions we make today limit the range of possibilities for tomorrow. Greenwashing propaganda from individuals, companies and governments proliferates and enables 'business as usual' to dominate at a time when threats are compounding.

4WD damage to the tracks that run through Julimar State Forest.

Campfire remnants.



During my lifetime I've seen the Australian and global twin environmental emergencies of extinction and climate change unfolding, and both are [doing so] in a worse way now than ever before.

Bob Brown, Environmentalist

Conclusion: The Case for Protection

Julimar State Forest is irreplaceable. It is a unique and vital part of the Northern Jarrah Forest Region, a region where only 11.2% of the forest has formal protection. In contrast the Government's target is to have 30% of its natural habitat protected by 2030.

The 28,600 ha of forest is contiguous with 20,200 ha of the Bindoon Training area to the north, **providing wildlife with a total of 48,800 ha of natural vegetation**. It is connected to a further 19,500 ha of protected natural vegetation to the south via a five kilometer corridor of bushland on private land.

Its outstanding environmental value has been recognised for decades, but despite over 40 years of Government commitments to its conservation, **the Forest is still waiting to be protected**.

It is now time for this to be resolved and for Julimar State Forest to be given formal protection.

Julimar State Forest **provides crucial habitat to 9 of the 14 threatened animal species** that DBCA is specifically protecting through its Western Shield program. The Forest is home to one of the few remaining wild populations of the critically endangered Woylie. The Julimar population of the vulnerable Chuditch continues to play a key role in the conservation of this species by providing animals for re-location programs within WA and interstate.

The Forest is host to all three species of Black Cockatoos, and **contains one of the two largest breeding sites for the Carnaby's Black Cockatoo.** Local records document 140 bird species which have have been sighted in the Forest.

There are five major vegetation complexes in the Forest. Within these complexes and the transitions between them, there is a rich mosaic of ecological communities; **over 500 native plant species have been recorded**, including at least one, and potentially four species of Xanthorrhoea which have yet to be named.

In terms of landscape-landform and geomorphic systems, the **Forest retains the imprint of around 3.5 billion years of landscape evolution**, and should be recognised and preserved in its own right as a bio-geological monument.

It is widely documented that spending time in **nature is good for human health and wellbeing**. The Forest is only 80 km from the Perth CBD and easily accessible by road from the northern and eastern suburbs. It offers people an opportunity to reenergize and revitalize in a forest-bushland environment.

The bio-physical condition of **Julimar State Forest is under threat from the absence of active-management by government departments**. This lack of management is enabling illegal and damaging uses of the Forest including irresponsible off-road driving, firewood collection and camping, all of which exacerbate the risk of the spread of Jarrah Dieback. Feral animal control is totally inadequate.

There is a **significant threat from mining**, which, should it occur, would produce irrevocable damage to the Forest, including the destruction of flora and fauna. Mining operations, such as construction work including roads and administration areas, and the operation of waste dumps, tailings dams and processing plants, cause changes in a range of environmental conditions, to the detriment of forest ecosystems.

Once destroyed, the Forest can not be replaced. The benefits of having Julimar Forest protected and conserved for posterity are profound.

References

- **ANZECC & MCFFA** [Australian and New Zealand Environment and Conservation Council & Ministerial Council on Forestry, Fisheries and Aquaculture]. (1997). *Nationally agreed criteria for the establishment of a CAR Reserve System for forests in Australia* Commonwealth of Australia. Accessed www.agriculture.gov.au/sites/default/files/sitecollectiondocuments/rfa/publications/nat_nac.pdf
- **Australasian Fire and Emergency Service Authorities Council (AFAC).** (2015, March). *National Burning Project: Overview of prescribed burning in Australasia.* knowledge.aidr.org.au/media/4893/overview-of-prescribed-burning-in-australasia.pdf
- **Braby, M.F., Yeates, D.K. & Joseph, L. (2023)**. Woodland birds and insect decline. *Emu – Austral Ornithology*, 123(3) pp255-257. www.doi.org/10.1080/01584197.2023.2233758
- **Bradby, K and Cross, A (2023)**. *Achieving Quality Restoration (Version 1.1).* Gondwana Link. gondwanalink.org/resources/
- **Chalice Mining Limited (2024, March).** *The Gonneville Project, Environmental Referral Supporting Document.* www.epa.wa.gov.au/sites/default/files/Referral_Documentation/Gonneville%20Project_Referral%20Supporting%20Document_March%202024.pdf
- **Clarke, J. (2023, May 8).** Wildlife reintroductions across Australia in 2023. In *Wildlife Matters*, 45. Australian Wildlife Conservancy.
- **Commonwealth of Australia. (2019).** *Australia's strategy for nature.* www.australiasnaturehub.gov.au/sites/default/files/2020-11/australias-strategy-for-nature.pdf
- **Conservation and Parks Commission. (2023).** *Forest Management Plan 2024-2033.*
- **Department of Environment and Conservation. (2012)**. Chuditch (Dasyurus geoffroii) Recovery Plan. *Wildlife Management Program No. 54.* www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/dasyurus-geoffroii-2012
- **Department of Environment and Energy. (2016).** *Eucalypt Woodlands of the Western Australian Wheatbelt: a nationally protected ecological community.* www.dcceew.gov.au/sites/default/files/documents/guide-eucalypt-woodlands-wa-wheatbelt.pdf
- **Department of Parks and Wildlife. (2017, August 21).** *Chuditch population going strong at Julimar.* www.dpaw.wa.gov.au/news/item/3291-chuditch-population-going-strong-at-julimar
- **Department of Primary Industries and Regional Development. (2022).** *Native Vegetation Extent (DPIRD-005).* Accessed 24 May 2023 at: catalogue.data.wa.gov.au/dataset/native-vegetation-extent
- **Dutson, G., Garnett, S. & Gole, C. (2009, October).** *Australia's important bird areas: Key sites for bird conservation.* BirdLife Australia.
- **Gammage, B. & Pascoe, B. (2021).** *Country: Future fire, future farming.* Thames and Hudson.
- **Gaynor, A. (2008).** *Wandoo in health and decline: A history.* Department of Environment and Conservation.
- **Huynh, L.T.M., Gasparatos, A., Su, J., Lam, R.D., Grant, E.I. & Fukushi, K. (2022).** Linking the nonmaterial dimensions of human-nature relations and human well-being through cultural ecosystem services. *Science Advances 8* (31).
- **International Union for Conservation of Nature and Natural Resources. (1970).** *Tenth General Assembly, 1969: Proceedings and Summary of Business.* portals.iucn.org/library/efiles/documents/ns-sp-027.pdf
- **International Union for Conservation of Nature [IUCN]. (2021, May 19).** *World met target for protected area coverage on land, but quality must improve.* IUCN Press Release. www.iucn.org/news/protected-areas/202105/world-met-target-protected-area-coverage-land-quality-must-improve
- **International Union for Conservation of Nature. (2021, August 20).** We need to protect and conserve 30% of the planet: but it has to be the right 30%. *Crossroads Blog* www.iucn.org/crossroads-blog/202108/we-need-protect-and-conserve-30-planet-it-has-be-right-30
- **Janke, T., Cumpston, Z., Hill, R., Woodward, E., Harkness, P., von Gavel, S. & Morrison, J. (2021).** Australia state of the environment 2021: Indigenous, independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra, doi:10.26194/3JDV-NH67.
- **Johnson, B., Reaveley, A. & Morris, K. (2006).** Julimar: Turning full circle. *Landscope 21*(4), pp. 56–61.
- **Kanowski, J. (2023, May).** AWC reintroductions and global rewilding efforts. *Wildlife matters. 45* (May). uk.australianwildlife.org/wp-content/uploads/sites/2/2023/05/WM_45_A4_web_single-pages.pdf
- **Knowles, D. (2011, September).** *Malkup Brook Reserve Shire of Toodyay Fauna Inventory Survey 1: macro-invertebrates and herpetofuana.* Spineless Wonders Biosurvey Services, Western Australia.
- **Leeuwin Group of Scientists. (2023).** *Alcoa is destroying our Jarrah Forests. Open letter to the WA Government.* theleeuwingroup.org.au/_data/papers/ALCOA_DESTROYING_OUR_FORESTS.pdf
- **Leue, B. (2023, May 4).** *Western Quoll reintroduction at Mt Gibson Wildlife Sanctuary sets a new milestone in conservation.* Australian Wildlife Conservancy Press Release.
- **Morris, K. (1992).** Return of the Chuditch. *Landscope, 8* (2), pp10-15.
- **Murphy, H.T. & van Leeuwen, S. (2021).** Biodiversity: Flora and fauna. In: *Australia State of the environment 2021, Australian Government Department of Agriculture, Water and the Environment.* Canberra, soe.dcceew.gov.au/biodiversity/environment/flora-and-fauna, doi:10.26194/ren9-3639
- **Office of the Appeals Convenor. (2022).** *Appeals Convenor's report to the Minister for the Environment: Appeals against Grant of Clearing Permit CPS 9365/1 Hartog and Baudin Project, Exploration licence 70/5119, Shire of Toodyay.*
- **Plibersek, T. (2022, July 19).** *National Press Club address.* minister.dcceew.gov.au/plibersek/speeches/national-press-club-address
- **Ritchie, E. (2022, October, 19).** 'Gut-wrenching and infuriating': why Australia is the world leader in mammal extinctions, and what to do about it. *The Conversation.* theconversation.com/gut-wrenching-and-infuriating-why-australia-is-the-world-leader-in-mammal-extinctions-and-what-to-do-about-it-192173
- **UN News. (2019, May 10).** *Ensuring the 'lungs f of the planet' keep us alive: 5 things you need to know about forests and the UN.* news.un.org/en/story/2019/05/1038291
- **Wheatbelt NRM. (2015, September).** *Toodyay BioBlitz: Final report.* Wheatbelt NRM. www.wheatbeltnrm.org.au/sites/default/files/knowledge_hub/documents/2015%20Toodyay%20Bioblitz%20Report%20-%20web.pdf

Glossary

- **BioBlitz:** A snapshot study of a particular location where community members and experts work together to survey a particular area and record as many species of living things as can be found in the designated time – usually 24-48 hours.
- **Biodiversity Hotspot:** A biodiversity hotspot is a biogeographic region that is rich in diversity that is threatened by human activity. It must include at least 1500 species of endemic vascular plants and has lost at least 70% of its primary vegetation. 36 regions have been identified worldwide, one of which is thesouth-west of Western Australia.
- **Biome:** A major or complex ecological community which may be characterised by location or climate or by the dominant plant life.
- **Bioregion:** large, geographically distinct regions based on common climate, geology, landform, native vegetation and species information. Australia has 89 bioregions and 419 sub-regions as identified in version 7 of the Interim Biogeographic Regionalisation for Australia (IBRA) system. The bioregions and sub-regions are the reporting unit for assessing the level of protection in the National Reserve System.
- **Conservation dependent (WA):** Species that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as Threatened. Currently only applied to fauna.
- **Conservation reserve:** An area set aside primarily for the conservation of ecosystems, but which may allow a level of recreation or other uses consistent with the proper maintenance or restoration of the natural environment (Conservation and Parks Commission, 2022, p122).
- **Contiguous:** Touching along a boundary.
- **Country:** To Indigenous people, Country "encompasses all living things and all aspects of the environment, as well as the knowledge, cultural practices and responsibilities connected with this" (Australia State of the Environment: Indigenous, 2021, p14).
- **Critically Endangered (WA):** Facing an extremely high risk of extinction in the wild in the near future.
- **Critical weight mammals:** Mammals with a body weight between 35g and 5500g.
- **Cultural Ecosystem Services:** The non-material benefits humans derive from nature which contribute to human well-being. They may be intangible and socially constructed; examples include: spiritual enrichment, recreation, cognitive development, social relations and aesthetic experiences.
- **Ecological community:** a naturally occurring group of native plants, animals and other organisms that are interacting in a particular type of habitat.
- **Ecosystem services:** The varied and often quantifiable benefits provided (directly and indirectly) to humans by the natural environment and by healthy ecosystems.
- **Ecosystems at risk:** Plant communities comprising plant species susceptible to dieback (Phytopthora cinnamomi) or other risks as specified.
- **Ecotone:** A transition area between two biological communities; it may be gradual or abrupt.
- **Endangered (WA):** Facing a very high risk of extinction in the wild in the medium-term future.
- **Endemic:** Found in that single geographical region.
- **Geomorphology:** The form and evolution of the earth's surface and landforms.
- **Guild:** The major ecological functions/services provided by a group of organisms.
- **Herpetofauna:** The reptiles and amphibians that inhabit an area.
- **IBA:** The important bird and biodiversity areas as identified by Birdlife International using standard scientific criteria.
- **IBRA bioregions:** The national and regional planning framework for the systematic development of a comprehensive, adequate and representative National Reserve System.
- **Macro fungi:** Fungi that produce visible fruiting boddies (above or below ground level)
- **National park:** A protected area that is managed for ecosystem protection and recreation.
- **National Reserve System:** A system designed to ensure that Australia has a Comprehensive, Adequate and Representative (CAR) network of reserves to protect examples of all of its ecosystems.
- **Priority species (WA):** Species needing specal consideration for conservation including those which may be Threatened, but for which there is insufficianet data to classify them. Lists of these species are maintained by the Department of Conservation and Attraction
- **Reserve:** Land that "holds intrinsic community value or is of high conservation value that should be preserved and maintained for the benefits of future generations." (Department of Planning, Lands and Heritage, 2022).
- **Riparian zone:** The transitional zone between the land and the river, stream or brook.
- **Threatened ecological community (TEC):** A TEC is one which is found to fit into one of the categories 'presumably totally destroyed', 'critically endangered', 'endangered' or 'vulnerable'.
- **Threatened (flora or fauna) species:** Species listed as critically endangered, endangered, or vulnerable.
- **Topography:** Physical appearance of the land especially the shape of its surface.
- **Vulnerable (WA):** Facing a high risk of extinction in the wild in the immediate future.
- **Watershed:** The line of relatively high ground which separates two river system catchments.

Abbreviations and Acronyms

ANZECC	Australian and New Zealand Environment and Conservation Council
CBD	Central Business District
DBCA	Department of Biodiversity, Conservation and Attractions
IBA	Important Bird and Biodiversity Areas
IBRA	Interim Biogeographic Regionalisation of Australia
IUCN	International Union for the Conservation of Nature
MCFFA	Ministerial Council on Forestry, Fisheries and Aquaculture
NRM	Natural Resource Management
NVIS	National Vegetation Inventory System
UN	United Nations
WA	Western Australia

Special Thanks

JCAFA extends its sincere appreciation to the key contributors to this document. Special thanks to Doug Blandford's tireless, crucial support, the Toodyay Op Shop's funding which has enabled its printing, and Bridget Leggett's invaluable work in writing and collating the original resource document which formed its very core.

Julimar Conservation & Forest Alliance

Web: julimarcafa.org.au | Email: julimarforest@gmail.com

Toodyay Friends of the River 30 Years 1994 - 2024 | The Toodyay Historical Society (Inc) Established 1980 | Toodyay Naturalists' Club est. 1968 | birdlife Australia