

# WONGAN HILLS

AN

'ISLAND'

SANCTUARY

RISING LIKE AN  
ISLAND FROM THE  
VAST SANDPLAINS OF  
THE WESTERN  
AUSTRALIAN  
WHEATBELT, THE  
WONGAN HILLS  
PROVIDE A SANCTUARY  
FOR A UNIQUE  
ASSEMBLAGE OF  
PLANTS AND  
ANIMALS, MANY OF  
WHICH ARE RARE OR  
ARE FOUND ONLY IN  
AND AROUND THE  
HILLS.

BY SUZANNE CURRY





**T**he sandplains of Western Australia's vast Wheatbelt once supported low woodlands and shrublands, which have now largely given way to farmland. The town of Wongan Hills, 194 kilometres north-east of Perth, forms the centre of a rich wheat and sheep farming district. The Wongan Hills themselves were never cleared, and today represent one of the most significant areas of natural vegetation remaining in the northern Wheatbelt, providing a window to the region's natural history.

The Hills are composed of hard metamorphic rocks that protrude from the surrounding plain (the highest point being Mt Matilda at 434 metres). These have been eroded away to form striking flat-topped mesas, which are thickly encrusted with laterite (ironstone gravel). The mesas are dissected by numerous deep gullies surrounded by well-developed breakaways. The plateau top of the mesas is mainly covered by lateritic gravel and shallow soil, whereas alluvial debris predominates on the gully floors. Rich red soils flank the Hills.

## EARLY EXPLORATION

The Swan River Colony was established in 1829, and within a year the limited river flats were occupied by colonists. If the Colony was to continue to expand there was an urgent need to find suitable agricultural land, and exploration of the areas surrounding the Colony became a vital issue for Lieutenant-Governor James Stirling. The Wongan Hills, which were known as *wangan katta* by the Aborigines, were first discovered by Europeans only seven years after the founding of the Swan River Colony. In November 1836, a party led by Surveyor-General John Septimus Roe, George Fletcher Moore (Secretary of the Agricultural Society of Western Australia) and surveyor George Smythe explored and named the Wongan Hills.

The scientific importance of the Wongan Hills was first recognised in 1842, when two of the outstanding naturalists in the fledgling colony explored the area. James Drummond the botanist and John Gilbert, a natural history collector employed by the famous English ornithologist John Gould, made careful observations of the natural history of the Hills and made many collections of plants and animals previously unknown



to science. Remarkably, many of these species can still be found there more than 150 years later, a tribute to the natural resilience of the bush and a confirmation of the importance of the Hills as a biological sanctuary.

Vast tracts of native bush in the sandplains were opened up to agricultural clearing, to become part of the prosperous Wheatbelt. But this tide of agricultural expansion swept around the Wongan Hills. They escaped clearing, primarily because of their rough terrain, and survived as an 'island' sanctuary.

## A WEALTH OF SPECIES

Recent surveys of the Hills have listed more than 400 plant species. There are more than 60 species of the family Myrtaceae alone, including more than 25 species of eucalypts. Many of the Myrtaceae produce striking displays of flowers. Between September and November, the starflower bushes (*Calytrix depressa*) are covered with

**Pompom head (*Cephalopterum drummondii*) is one of the colourful spring annuals found in the hills.**  
Photo - Marie Lochman

**Previous page**  
The agile varied sitella (*Daphoenositta chrysoptera*) is a trunk-feeding bird which can be seen in the hills in family groups numbering up to ten.  
Photo - Babs & Bert Wells

pretty yellow flowers. The broom honey-myrtle (*Melaleuca uncinata*) often forms dense thickets on the gully floors, and is easily recognised by the hooked tips of the cylindrical leaves and by the pale yellow flower-heads.

There are about 50 species of daisy (Asteraceae) growing in the Hills. Most of them are colourful spring annuals such as the pompom head (*Cephalopterum drummondii*), pink sunray (*Rhodanthe manglesii*) and golden waitzia (*Waitzia nitida*). Among the most beautiful of the plants to be found in the Hills is the tiny blue fairy





**Top:** The Wongan Hills rise like an island from the vast sandplains of the surrounding wheatbelt.  
Photo - Marie Lochman

**Above:** Feather flowers (*Verticordia* spp.) provide another bright splash of colour in spring.  
Photo - Jiri Lochman

orchid (*Cyanicula deformis*), which grows to only 15 centimetres tall.

The Hills are extraordinarily rich in wattles (*Acacia* species), and shelter both the common jam wattle (*Acacia acuminata*) and the rare sandpaper wattle (*Acacia denticulosa*). This very unusual species has thick rough heavily veined leaves, and remarkable yellow caterpillar-like flower-spikes that can grow up to eight centimetres long. Many of the wattles in the Hills are not found in any other nature reserve in the Wheatbelt.

The Wongan rhagodia (*Rhagodia acicularis*), belonging to the family

Chenopodiaceae, is rare and mainly restricted to the Hills. This small compact shrub has many spiny branchlets covered in small rounded hairs, which give it a rough appearance. It is found in red soil on the gravelly laterite slopes, and flowers from October to May. The appropriately named *Eriostemon wonganensis*, known as the Wongan eriostemon, is another rare plant known only from the Hills. Belonging to the family Rutaceae, this erect, many-branched shrub grows to about one metre tall. It has pink-striped white flowers and warty leaves. Another rare plant described from the Hills is *Microcorys eremophiloides*, so-named because the flowers resemble those of the poverty-bush genus, *Eremophila*. The attractive deep pink to red flowers grow up to four centimetres long, and are probably pollinated by birds.

Many of the rare species found in the Hills are normally associated with breakaways and other erosional features. They have also been found colonising

disturbed ground adjacent to roads or walking tracks, and walkers should take extra care where they put their feet when walking in nature reserves in the Hills, to avoid trampling rare plants.

The significance of the flora of the Hills lies not so much in the number of species to be found per square kilometre, but in the remarkable combination of plant species that grow there.

## COMMUNITY LIVING

There are many different types of plant community to be found within the Hills. Dense shrubby prickly-leaved *Dryandra* species such as the Wongan dryandra (*Dryandra comosa*) predominate in some areas, usually on summits and upper slopes. Tough mats of the herbaceous pincushions (*Borya* species), accompanied by attractive feather flowers (*Verticordia* species), are found on rocky pavements fringing the lower slopes of the Hills.

Mallees are an integral part of the vegetation and form the basis of many of these communities. Mallees are woody plants of the genus *Eucalyptus*, and generally take the form of erect many-stemmed shrubs or trees. They vary in shape, but commonly have a spherical or vertically flattened canopy raised well above the ground. The leaves are usually borne near the ends of the branches and the stems arise from a lignotuber (mallee 'root') or swelling at the base of the plant. These mallees include redwood (*Eucalyptus transcontinentalis*), Drummond's gum (*E. drummondii*), sand mallee (*E. eremophila*) and red-flowered mallee (*E. erythronema*).

As well as being the basis for many plant communities, mallees provide a habitat for an array of animals. Trunk-feeding birds such as the varied sittella (*Daphoenositta chrysoptera*) forage on their trunks. These agile birds are seen in family groups of up to 10, typically working down the trunks, probing crevices and levering flakes of bark away to feed on small animals. The race of varied sittella found in the Wongan Hills is characterised by a glossy black crown and pure white underparts.

Australia's smallest bird, the weebill (*Smicromnis brevirostris*), feeds on tiny insects on the leaves of eucalypts. These diminutive yellowish green birds are only about eight centimetres long, but they

have a robust voice for their size and are usually heard before being seen. Weebills are widespread, being found in a wide variety of habitats in all mainland States of Australia. They can be seen in the Wongan Hills, fluttering in and around the foliage of the mallees, producing a sharp clear 'weebill' sound.

Animals find shelter underneath the bark that is regularly shed from mallees. Long streamers of bark fall to the ground, where they provide a haven for lizards and geckos, such as the clawless gecko (*Crenadactylus ocellatus*). This tiny dark grey-brown gecko lives in the leaf litter, feeding on tiny insects such as termites. It is unusual in being the only one of its kind without claws, and unlike most other geckos, it rarely ventures into the open. Butler's skink (*Morethia butleri*), named after Harry Butler the renowned Western Australian naturalist, is one of the small lizards associated with the mallee. It is olive-brown in colour and is heard during the day as it rustles through the leaf litter in search of small insects.

The young shoots of mallees produce a substance that attracts many insects,

particularly ants. The flowers of many mallee species offer a rich supply of nectar and pollen, and honeyeaters are very active around the flowers, including the attractive white-eared honeyeater (*Lichenostomus leucotis*).

### A HILLTOP REFUGE

There are now only a few types of mammal in the Hills, bats being the most common. One of the smaller bats, Gould's wattled bat (*Chalinolobus gouldii*), lives in tree hollows there. The white-striped mastiff bat (*Tadarida australis*) is the largest of the mastiff bats and mainly feeds high above the tree canopy. It is so-called because its wrinkled lips and square muzzle resemble those of a mastiff dog, but its fierce appearance belies a very gentle nature. Other mammals found in the Hills include the echidna (*Tachyglossus aculeatus*), which is widespread. Evidence of its diggings is most common around breakaways. The euro (*Macropus robustus*) occurs in small groups throughout the Hills. The ash grey mouse (*Pseudomys albocinereus*), which was

once common throughout the Wheatbelt, is now confined to a few widely scattered reserves, and occurs in a few sandy places within the Hills. Predation by feral cats and foxes has led to widespread decimation of our vertebrate fauna (see 'Masterly Marauders', *LANDSCOPE*, Summer 1992-93) and the mammals that still survive in the Wongan Hills probably represent only a part of the original fauna.

Birds are plentiful in the Hills. Some 90 different species have been recorded there, including cuckoos, owls, honeyeaters and wrens. The renowned malleefowl (*Leipeoa ocellata*) was first recorded there by Septimus Roe in 1836. John Gilbert made detailed descriptions of the birds and of their nest mounds in 1842. These big-footed birds grow to about 60 centimetres, but are well camouflaged and are capable of moving quite stealthily through the bush. They lay the foundations for their extraordinary incubation mounds by digging a shallow hole in the ground, which is then filled with pebbles, soil, dry leaves, twigs and bark. These are left to be dampened by the winter rains before



**Left:** Mallees (*Eucalyptus* spp.) form an integral part of the vegetation of the hills and provide a home for Australia's smallest bird, the weebill (*Smicrornis brevirostris*).

Photo - Babs & Bert Wells

**Below:** Evidence of the diggings of echidnas (*Tachyglossus aculeatus*) are most common around the breakaways of the hills.

Photo - M & I Morcombe





being covered with soil. As the plant material starts to decompose it generates heat, and the male works the mound daily until the temperature stabilises at about 33 degrees Celsius. When the incubation mound is ready, the female lays up to 30 eggs over a period of many days. The eggs are then buried deep within the mound. The male continues to manage the mound, controlling the incubation temperature. These rounded mounds are often re-used again and again, growing in size over the years. The oldest mounds can be as large as four metres in diameter and one metre tall, with the foundations probably extending 75 centimetres below the ground. Because there are relatively few malleefowl left in the Hills, their mounds are not commonly seen.

Pairs of western yellow robins (*Eopsaltria australis*) are often found in the gullies and wooded thickets. These yellow-breasted robins are a rare species in the Wheatbelt because of loss of their habitat. Their cup-shaped nests are made of bark bound by spiders' web and are lined with leaves. The nests are well camouflaged, but can sometimes be seen in the forks of saplings and trees. Other species that are declining in numbers, but that can still be found in the Hills, are the beautiful blue-breasted fairy-wren (*Malurus pulcherrimus*) and the southern scrub-robin (*Drymodes brunneopygius*).

Because of their position near the overlap between the South West and the arid zone, the Hills provide a haven for a diverse array of bird species. They are extremely important as a refuge for resident, migrant and nomadic birds, as indicated by the fact that most of the species recorded by early ornithologists are still found there. Similarly, the Hills support an assemblage of reptiles that are not found elsewhere in the northern Wheatbelt.

More than 40 species of spiders have been recorded in the Hills. The Wongan Hills wishbone spider (*Kwonkan wonganensis*) is an interesting trapdoor spider that builds a mound over its burrow, usually composed of pebbles and sometimes of eucalyptus nuts. The crater-like burrow entrance, which is lined with silk, can be found in the centre of the mound. These mounds are quite substantial structures, and can be 10



**Top:** The fierce appearance of the white-striped mastiff bat (*Tadarida australis*) belies a very gentle nature. Photo - Babs & Bert Wells

**Above:** The beautiful blue-breasted fairy wren (*Malurus pulcherrimus*), though declining in numbers, can still be found in the hills. Photo - M & I Morcombe

centimetres wide and four centimetres high. During heavy rain, the mound acts like a levee in preventing flooding of the burrow.

## CONSERVATION IMPORTANCE

The Wongan Hills shelter a unique assemblage of plants and animals, and their conservation significance has long been appreciated. The first comprehensive natural history of the Hills, coordinated by Department of Conservation and Land Management (CALM) Principal Research Scientist

Kevin Kenneally and published in 1977 by the Western Australian Naturalists' Club, stands as an invaluable benchmark for further studies in the area. The Department recognises the immense value of the Hills and continues to fund survey work in the area. Local volunteers from the Toodyay Naturalists Club have assisted CALM in surveys for Declared Rare Flora species, and have increased the Department's understanding of the unique flora and fauna of the Hills. The area has been monitored using colour aerial photography. This photography shows boundaries between plant communities, indicates land-use regimes in the surrounding area and is used for the construction of survey maps. In addition, the Western Australian Herbarium houses a collection of 2 500 plant specimens collected in and around the Hills.

A factor of vital importance in the preservation of the flora of the Wongan Hills area is the threat posed by dieback disease. Fortunately, the area is currently

free of the *Phytophthora* fungus that causes the disease, but if fungal spores were accidentally introduced many of the native plants growing in the area, particularly those on the sandplains surrounding the Hills, could be lost. It is vital that sensitive areas such as this should remain free from contamination.

There are a few simple precautions that can help to restrict the spread of dieback fungus.

The disease is spread in Western Australia mainly in infected soil carried on the wheels and underbodies of vehicles. By avoiding walking or driving in bushland areas under wet conditions, when there is a greater risk of picking up contaminated soil on boots or vehicles, and by keeping vehicles clean of mud, wet soil or vegetation, you can help to prevent the spread of this devastating disease.

Although only part of the Hills is reserved for flora and fauna conservation, CALM, in co-operation with local landowners, other government authorities, the local community and voluntary organisations, is working to ensure that the whole of this unique area will be protected for present and future generations.



**Top:** Mallee eucalypts are common throughout the hills.  
Photo - Kevin Kenneally

**Above:** Emerging flowers of the sand mallee (*Eucalyptus eremophila*).  
Photo - Jiri Lochman

**Left:** Gimlets (*Eucalyptus salubris*), with their polished and fluted trunks, dominate much of the heavy soils in the hills.  
Photo - Kevin Kenneally



Suzanne Curry is a CALM Technical Officer in the Science and Information Division. She spends much of her spare time researching and writing on the natural history of WA and can be contacted on (09) 334 0492.

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An excellent reference on the Wongan Hills is *The Natural History of the Wongan Hills*, published in 1977 by the Western Australian Naturalists' Club.



# LANDSCOPE

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The galah is just one of the many bird species that visit our urban and suburban gardens. 'Birds in the Garden' shows us how we can attract more.



In spring, the Wongan Hills are ablaze with wildflowers, but this 'island' sanctuary is also a home to a wide variety of animals. See page 21.



Yanchep National Park is having a facelift. Our story on page 28 examines the history and rebirth of one of Perth's closest and most visited national parks.



Banksia gardneri var. brevidentata is one of a number of plants named in honour of Charles Gardner. See 'Gardner's World' on page 41.



The Pinnacles is one of several destinations for licensed tours operating in WA's national parks. See 'Travel Companions'.

## FEATURES

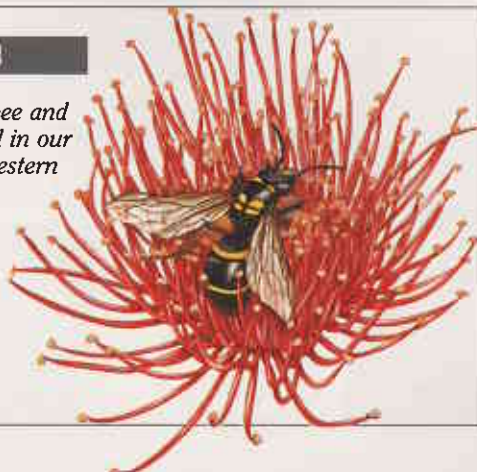
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## COVER

*Hyleoides zonalis* is a solitary bee and one of the native bees described in our story about the 'real' bees of Western Australia on page 17. The illustration is by Philippa Nikulinsky.



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