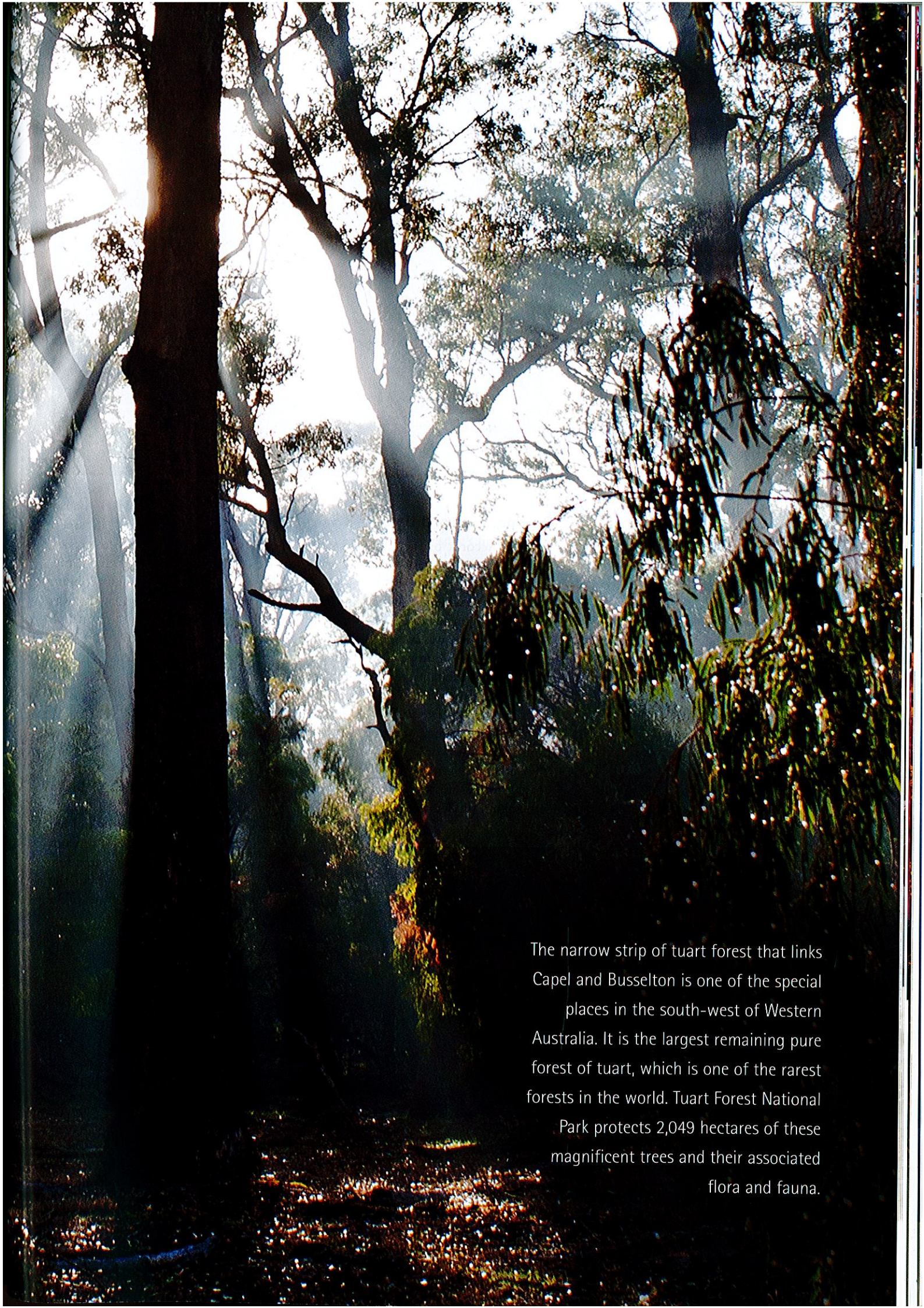


Tuart Forest National Park

by Ann Storrie and
Carolyn Thomson-Dans



The narrow strip of tuart forest that links Capel and Busselton is one of the special places in the south-west of Western Australia. It is the largest remaining pure forest of tuart, which is one of the rarest forests in the world. Tuart Forest National Park protects 2,049 hectares of these magnificent trees and their associated flora and fauna.

The majestic tuart (*Eucalyptus gomphocephala*) grows to more than 35 metres high. Its trunk can be more than two metres in diameter at the base, with a girth of nearly 10 metres, and it has a habit of growing into several nearly equal spreading branches. The broad, dense canopy of greyish-green foliage spans many metres. In mature trees, the rough, brown bark sheds to reveal an almost white trunk that once gave rise to an alternative name of 'white gum'.

The tuart is only found in Western Australia, growing on coastal limestone between Jurien Bay and Busselton. Trees vary considerably in size and shape over this range. In the northern regions, trees are of low to medium height and, in coastal areas, they may be broader than they are tall. The tuart even forms a mallee in some locations. The tallest trees are found in Tuart Forest National Park.



Grazing, lime and timber

Early records of the state's history describe the tuart forest between Capel and Busselton as being "a beautiful open forest in which visibility was clear for a half mile in any direction" and that "the natural grass was as high as a horse's wither". Before European settlement, Aboriginal inhabitants took advantage of this abundance of grassland and the plentiful water to live well on the area's wildlife. They named the trees 'toart' from which the word 'tuart' is derived.

With the arrival of Europeans, coastal forest areas were cleared for settlement, timber and fuel. Because

the tuart forest presented an open landscape, with a wide variety of grasses, its land was excellent for grazing cattle. The poisonous heartleaf (*Gastrolobium bilobum*) in the undergrowth was quickly disposed of, and any native grasses unsuitable for grazing were soon replaced with exotic species.

The surface deposits of limestone also attracted early settlers. The limestone was quarried, stacked in kilns with alternate layers of wood and burned. Later the cooked limestone was powdered and used for fertiliser and building mortar. The lime kilns, at the northern end of the forest, were built in the mid-to-late 1800s and are now partially dilapidated. The remains of a number of kilns still exist in a few locations on the coastal plain, but the lime kilns in the tuart forest are of an unusual circular design and age.



Previous page

Main Tuart forest is one of the rarest forests in the world.

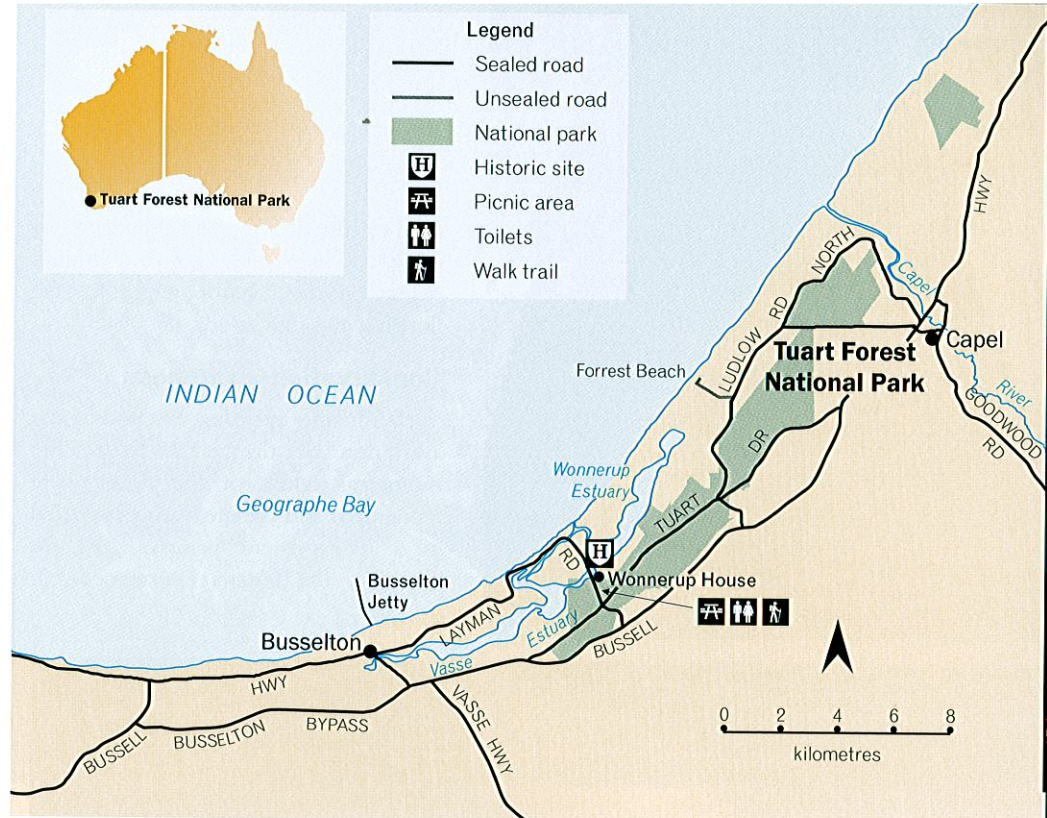
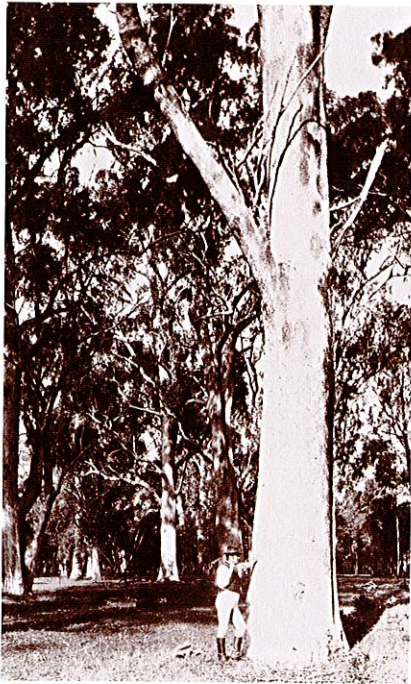
Above An old railway line over the Abba River in the park.

Far left Tuart trees can grow to more than 35 metres high.

Photos - Ann Storrie

Left Tuart buds and flowers.

Photo - Cliff Winfield



Tuart timber was cut from the forest throughout the 1800s. Wooden-railed, horse-drawn trams ran the length of the forest, hauling logs and timber products to the mills. Sleepers and other relics from these operations can still be seen. The tuart timber industry greatly contributed to the development and prosperity of the south-west. A Royal Commission into Forestry in 1903 reported that “the value of tuart far exceeds that of any other local timbers”. The famous 1.8-kilometre-long Busselton Jetty was built to service the timber industry. The need to transport timber from the forest

to the ports was the stimulus for the development of the state’s first modern rail system.

Tuart wood was used by craftsmen to construct the rim, spokes and hubs of whim (a type of windlass) and wagon wheels and as journals for propeller shafts in boats. Other uses included decking in wagons, telegraph pegs and tool handles. The wood is subject to termite attack and not suitable for general construction purposes.

Despite this early cutting, a high volume of standing timber remained. In the early 1900s, local property owners and the timber industry lobbied the

Above left Tuart forest, early last century. Photo – Battye Library [012058D]

Below left Tuart trees. Photo – Bill Belson/Lochman Transparencies

government to purchase the remaining tracts of forest back from the estates of Governor Stirling, to secure its use for future timber production and railway purposes. This culminated in 1919 with the passing of the Forests Act and the gazettal of the areas as State Forests 1 and 2—the first publicly owned forests in the state.

After assuming management of the forest, the Forests Department solved the problem of rapid build-up of flammable understorey by regrazing the forest. It achieved this by leasing paddocks back to the local people. In 1920 a sawmill was erected across the estuary at Wonnerup Beach, some 10 kilometres east of Busselton. A small jetty was built off the beach to ship sawn timber to South Australia and Fremantle. Shallow-draft boats took the timber out to schooners anchored in Geographe Bay. Plagued by a shortage of fresh water, the mill only operated for about 10 years, cutting logs supplied from large, mature and over-mature trees. After World War II, wood was again in strong demand. A new mill was built at Ludlow in 1955 which worked on and off until 1974. The wood was





used for the decking and side panels of railway rolling stock and, to a limited extent, in construction, especially for flooring and stair treads.

Conservation awareness

With the growing environmental awareness of the early 1970s, the biological values of the forest were recognised and the area was designated as a management priority area for fauna by the Forests Department. In

1976, the forest and adjoining wetlands were nominated and listed on the Federal Register of the National Estate as a place of national biological and environmental significance. In 1987, 1,700 hectares were gazetted as Tuart Forest National Park and today the park comprises 2,049 hectares. In 1988, the National Trust of Western Australia classified the forest and wetlands on environmental grounds—the first time an area had been accepted for classification on criteria other than cultural ones.

Tuart Forest National Park is significant for a number of reasons. Tuart was once widespread, but today it is estimated that only four square kilometres of an original 69 square kilometres (six per cent) of tall tuart woodland and 107 square kilometres of an original 1,039 square kilometres (10 per cent) of medium tuart woodland remains. The forest at Ludlow contains all of the remaining tall tuart woodland and represents 25 per cent of the world's tuart forest ecosystem. The park contains the tallest and largest specimens of tuart trees on the Swan Coastal Plain.

The park's vegetation also includes a number of isolated and remnant populations of several plant species, which are normally associated with WA's south coast. These populations extend the known range of the species by many hundreds of kilometres. More than 50 species of orchid have been found in Tuart Forest National Park and there is also a thriving community of fungi, including some species yet to be named. Last, but certainly not least, Tuart Forest National Park provides an abundance of nesting hollows used by mammals and birds, including many species of waterbird which feed in the adjacent wetlands.



Top left Fungi on an old tuart tree.

Above left Various species of fungi are found in Tuart Forest National Park.

Left The blue lady orchid (*Thelymitra crinita*) flowers in late spring in Tuart Forest National Park.

Photos - Ann Storrie



Above Southern boobook.
Photo - Hans and Judy Beste/Lochman
Transparencies

Woodland wildlife

Tuart Forest National Park protects WA's largest remaining wild population of the threatened western ringtail possum (*Pseudocheirus occidentalis*). Old tuart trees contain many hollows, while the dense secondary storey of peppermint supplies their major source of food.

Ringtail possums are distinguished from the larger brushtail possums (*Trichosurus vulpecula*) by their smaller rounded ears, and tails with shorter fur. Although it was once considered to be a subspecies of the common ringtail possum of eastern Australia, the western ringtail is now known to be a separate species. This species has suffered a severe decline in recent decades, but survives in reasonable numbers in a few coastal areas of peppermint woodland, particularly in Tuart Forest National Park and elsewhere around Busselton, as well as in the Upper Warren area near Manjimup and coastal areas around Albany. They are, however, threatened. Their decline, like that of many other mammal species, has been attributed to clearing and fox predation. Western ringtail possums usually have very dark brown fur, with a lighter belly. The tail fur lies flat and ends in a white tip. The ringed tail is curled around the

branches as an aid in climbing. Ringtail eyes are large and the ears are small and rounded. Adults weigh around one kilogram.

Ringtail possums are nocturnal and spend most of their time in the canopy, moving from one tree to another when the branches overlap. There are few hollows in peppermint trees, so ringtails build platforms or nests, known as dreys. They are unusually sociable and several

individuals may live close together. Females may seek the hollows of nearby tuart trees to raise their young. Leaves, fruit and flowers form the staple diet of the western ringtail. It appears that some ringtail populations can breed all year round and raise more than one litter in that time. Twins are not uncommon. Young stay in the pouch for about 18 weeks and then travel on their mother's back for several more.

Diseases of tuart forests and woodlands

Tuart diseases are linked to a number of recent declines of eucalypts in Western Australia. Many physical and biological factors have been suggested and it is thought that interactions of multiple causes are likely to be involved. These include salinity, declining rainfall, declining water tables, changing fire regimes, drought stress, increased use of herbicides, fungicides and insecticides, and nutrient enrichment of water and soil as a result of urban development and agricultural practices. The presence of pathogens and insect infestations overlay these predisposing and contributory factors.

Tuarts in Tuart Forest National Park have experienced individual tree deaths for many decades thought to be due to the fungus *Armillaria luteobubalina*. This soil-borne fungus causes root rot of a wide variety of plants. Typical disease symptoms in Ludlow tuarts are full canopy browning and loss over a single season quickly followed by tree mortality.

This is different to the gradual decline of tuart woodland at Yalgorup National Park, between Mandurah and Bunbury that was first noticed in 1997 at Preston Beach. Tuarts here suffered 'dieback' of the limbs and branches, yellowing of foliage, splits or scars on the trunk, poor vigour, the production of kino gum and darkening of the larger roots. The causes of tuart decline at Yalgorup are not yet fully understood but are thought to be due to a hierarchy of biotic and abiotic causes including soil-borne pathogens, loss of beneficial fungi known as *mycorrhizae*, and deficiencies of some micronutrients. This phenomenon is not found in Tuart Forest National Park.

Tuart Forest National Park is also home to the densest population of brushtail possums ever recorded in the state. Brushtails found in WA are usually silver grey with a pale belly. Some individuals, however, can be quite dark and occasionally have reddish shoulders and necks. The tail is bushy, although the underside is partly bare. The tip can be either black or white. Brushtail possums have large eyes and erect,

prominent ears. Their faces are more pointed than ringtails. They are also bigger, with females attaining around 1.3 kilograms and males 1.6 kilograms. Males often have a reddish stain on their chest, indicating an active scent gland. Brushtails nest in the hollows of the tuart trees.

Night-spotting possum trail

A car park that lies almost opposite the Layman picnic site off Layman Road marks the start of a self-guided trail that enables visitors to follow markers at night to spot possums, birds and other wildlife. Information boards at the start of the trail give an insight into the importance of the forest and nearby wetlands. The reflective markers that are positioned along the night-spotting trail are illuminated in a torch beam and easy to follow in either direction. Interpretive signs are also staged along the trail to explain the habitat and the natural history of the mammals and birds that can be seen in the area. Other mammal species that reside in Tuart Forest National Park include the brush-tailed phascogale (*Phascogale* sp.), bush rat (*Rattus fuscipes*), western grey kangaroo (*Macropus fuliginosus*) and quenda, also known as the southern brown bandicoot (*Isodon obesulus*).

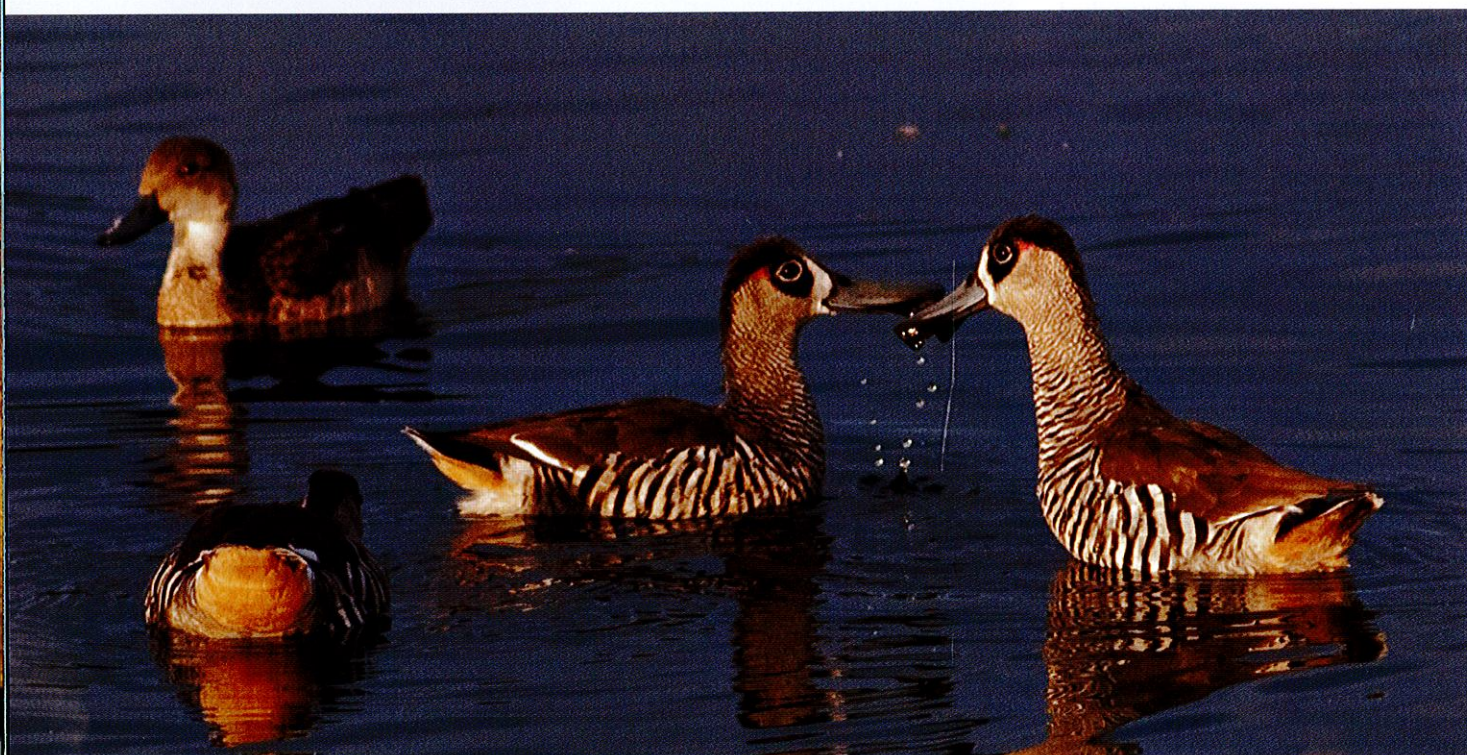
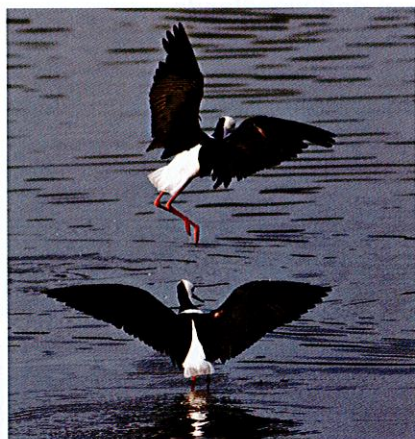
Wetland and forest birds

If you walk about 300 metres along the night-spotting possum trail, the path branches to a raised boardwalk that leads to a bird hide overlooking a section of the Vasse-Wonnerup wetlands on the Abba River (see 'Wetland wonders', *LANDSCOPE*, Winter 2010). The area is part of an internationally proclaimed Ramsar wetland that protects thousands of waterbirds including migratory birds from as far away as China and Siberia. It is a wonderful place to photograph spoonbills, egrets, ibis, stilts, cormorants, pelicans (*Pelecanus conspicillatus*), ducks and many more, especially at dawn and dusk. There are also wetlands on the eastern side of the national park that contain vegetation types almost non-existent elsewhere on the Swan Coastal Plain, due to land clearing and infilling of wetlands.

Within the forest, keep watch for wedge-tailed eagles (*Aquila audax*), little eagles (*Hieraetus morphnoides*), brown goshawks (*Accipiter fasciatus*), kites and falcons during the day. At night, you may be lucky to spot tawny frogmouths (*Podargus strigoides*), a southern boobook (*Ninox novaeseelandiae*), or a barn owl (*Tyto alba*) in the branches while following the possum-spotting trail.

Below Black-winged stilts (*Himantopus himantopus*) are often seen from the bird hide.

Bottom Pink-eared ducks (*Malacorhynchus membranaceus*) in the Vasse-Wonnerup wetlands, Tuart Forest National Park.
Photos - Ann Storrie



Right Take the Ludlow Forest Tourist Drive as an alternative route to Busselton.

Photo – Cliff Winfield

Below right Interpretive signage at Tuart Forest National Park.

Bottom right Cowslip orchid (*Caladenia flava*).

Photos – Ann Storrie

Drives through the forest

Tuart Forest National Park is a day-use area, with a number of beautiful scenic drives. The Ludlow Tuart Forest Tourist Drive along Tuart Drive is a 15-kilometre alternative route to a section of the Bussell Highway between Capel and Busselton. It passes through the western section of Tuart Forest National Park and an interpretive sign can be viewed at the Membenup picnic site along this road. Layman Road (which crosses Tuart Drive) takes you to the night-spotting possum trail, the bird hide and the Layman picnic site. The beautifully maintained historic buildings of Wonnerup house lie just north of this picnic site. This popular tourist attraction gives a wonderful insight into the lives of the early settlers of this area.

Eastern sections of Tuart Forest National Park can be accessed from Stirling Road (off Bussell Highway), Ludlow North Road and Mangles Road. Higgins Road, which comes off Stirling Road, leads to a section of park that has bushfire forest regeneration and where another information panel and short walk trail can be found. The panels and plaques along this trail describe the fascinating timber history, the habitat and many of the plants and animals that can be found in the forest.

The stately yet graceful tuart, once dominant along our coastal plain, is one of the most biologically valuable trees in the south-west. Many mammals, birds, reptiles and insects rely on tuarts for their food, shelter and reproductive habitat. It is an important ecosystem for other vegetation. Tuart Forest National Park, like all our remaining forests, must be preserved and cherished for our own heritage and future.



Ann Storrie, who has co-authored and photographed several Department of Environment and Conservation (DEC) publications, and Carolyn Thomson-Dans, a special projects officer for DEC, have co-authored a soon-to-be-released book, *Lighting up the Capes: Naturaliste to Leeuwin*.

Ann can be contacted at naturescapes.au@hotmail.com and Carolyn can be contacted at carolyn.thomson-dans@dec.wa.gov.au.

Information in the 'Diseases of tuart forests and woodlands' section courtesy of Centre of Excellence for Climate Change Woodland and Forest Health.

A draft management plan for Tuart Forest National Park is soon to be released for public comment.



- 48 The native garden: reconnecting home and place
One man's experience with planting a native garden fosters a new sense of belonging at home.
- 52 Nature in the city: Perth's regional parks
Perth's regional parks network offers a wealth of recreational activities, as well as the opportunity to preserve nature amid an urban environment.
- 59 A little gecko tells a big story
Surveys of the remote Kimberley islands have revealed a gecko species with more diversity than previously imagined.

Regulars

- 3 Contributors and Editor's letter
- 9 Bookmarks
Here on Earth: An Argument for Hope
The Garden Guardians
What Makes a Good Farm for Wildlife?
- 30 Feature park
Ningaloo Marine Park
- 39 Endangered
Unique bushland on chert
- 62 Urban Antics
The paperbark forest ...

Publishing credits

Executive editor Madeleine Clews.
Editors Joanna Moore, Samille Mitchell.
Scientific/technical advice
 Kevin Thiele, Lachie McCaw, Keith Morris, Chris Simpson.
Design and production Tiffany Taylor, Peter Nicholas, Natalie Jolakoski, Gooitzen van der Meer, Sonja Schott, Lynne Whittle.
Illustration Gooitzen van der Meer.
Cartography Promaco Geodraft.
Marketing Cathy Birch.
 Phone (08) 9334 0296 or fax (08) 9334 0432.
Subscription enquiries
 Phone (08) 9219 8000.
Prepress and printing GEON, Western Australia.

© Government of Western Australia
 September 2011

All material copyright. No part of the contents of the publication may be reproduced without the consent of the publishers.

ISSN 0815-4465

Please do not send unsolicited material, but feel free to contact the editors.

Published by the Department of Environment and Conservation, 17 Dick Perry Avenue, Kensington, Western Australia.

Visit DEC online at www.dec.wa.gov.au to search the **LANDSCOPE** catalogue.



Department of Environment and Conservation

