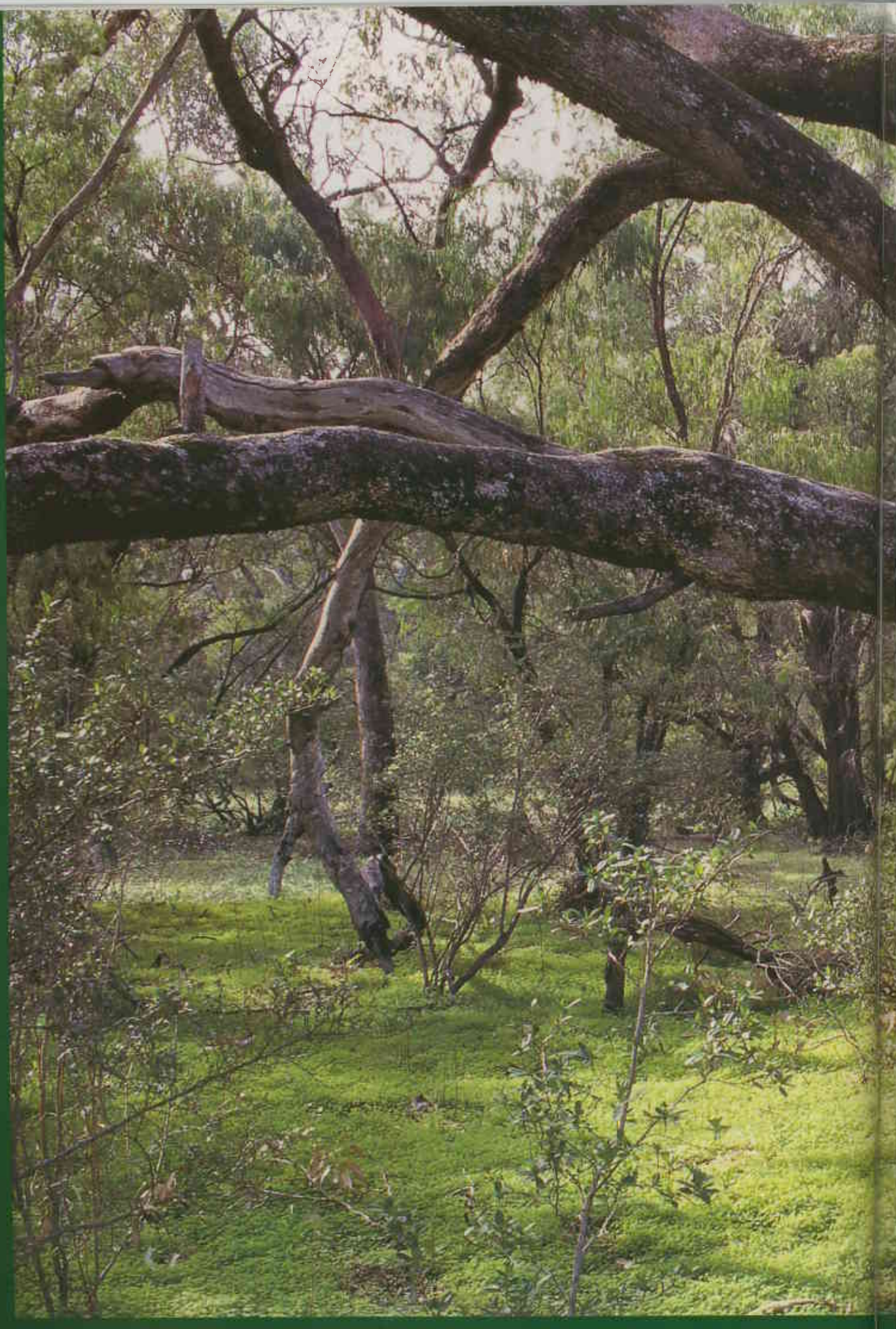


Cherish the Tuart

We should cherish the tuart tree, which originally grew on the narrow coastal strip between Jurien and Busselton—land now greatly sought after by beach-loving Western Australians. Consequently, tuart now occupies only a small fraction of its former distribution. How can we maintain or restore tuart as a feature of these landscapes?

by Robert Powell and Bronwen Keighery

Tuart occurs in a coastal strip from near Jurien to the Sabina River, near Busselton, and dominates the landscape in many places within this range. These include the otherwise cleared sandy flats from Ludlow to Mandurah, and the dune country from Bunbury to the Moore River.

Although mostly confined to a coastal strip five to 10 kilometres wide, tuart does extend further inland along the margins of our rivers and estuaries. The western block of the Lowlands property, on the Serpentine, and remnant trees on the flats at Ravenswood, on the Murray River, and in the Perth suburb of Ferndale, near Bannister Creek, illustrate these landscapes. A distinctive variety was known to occur at Guildford. Some of the interdunal wetlands are typified by tuart groves; significant locations are Manning Lake, where they grow into the lake, and the Perry Lakes, where they grow on the sandy flats around the lakes.

Previous page
Tuart tree on Leschenault Peninsula.
Photo – Rob Olver

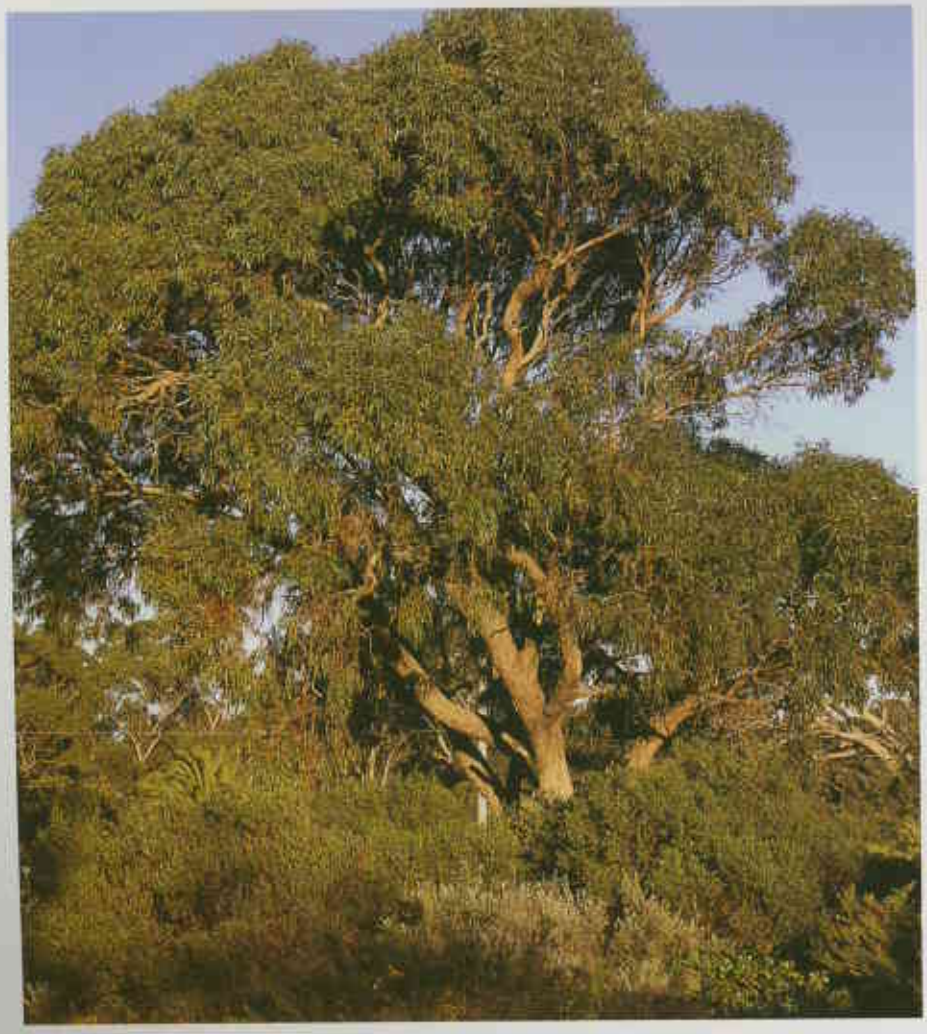
Left: Tuart forest, probably near Ludlow, in 1896.
Photo – Government Printing Office, A4264

Below left: Tuarts at City Beach with low, broad, dense canopies, in response to very salty sea winds.
Photo – Robert Powell

REMAINING OCCURRENCES

Most of the area where the tuart occurs has been cleared, or largely cleared, for agriculture or housing. A number of places, however, are preserved for conservation. The best known is the Tuart Forest National Park, at Ludlow, near Busselton. Well-known conservation reserves south of Perth containing tuart include Yalgorup National Park and Leschenault Peninsula Conservation Park. North of Perth are Southern Beekeepers Reserve, Nambung National Park and Bashford Nature Reserve. Within the Perth metropolitan region are Yanchep and Neerabup national parks, Woodman Point and Thomsons Lake nature reserves, Kings Park, Bold Park, Star Swamp and Trigg bushlands, and Blackwall Reach Reserve.

In suburban Perth, tuart has largely been destroyed. Isolated old specimens, however, still occur in such Perth suburbs as Nedlands, Floreat Park, Scarborough, Applecross and suburbs east and south of Fremantle. Further out, parks in Wanneroo and Joondalup, sadly cleared of most of their original vegetation, remain dominated by tuart.



SIZE, COLOUR AND FORM

Tuart, through its size, colouring and form, gives an identity to the landscapes of the Swan Coastal Plain.

Tuart is the largest naturally occurring tree on the Swan Coastal Plain, growing in places to more than 35 metres, with trunks two metres thick near the base (other local eucalypts such as jarrah and marri grow tall on the Darling Range, but smaller on the coastal plain). Combined with this majesty is its grace—the result of its flowing and well-spaced branches.

Tuart's colour scheme of greyish-green foliage and off-white trunks is not matched by any other eucalypt natural to the plain. The near-white colour of the trunks, particularly in mature specimens, gives rise to the tree's alternative common name, 'white gum'. One of the earliest land grants in the Perth area records the name 'White Gum Block' for a part of the farm dominated by tuart. Although preserved in the name of the suburb White Gum Valley, nowadays only old-timers use the name white gum for the tree—its

Right: Tuarts shed more bark than most rough-barked eucalypts, leaving paler patches. Shedding may be so extensive that the new, pale bark dominates, hence the name 'white gum'. In flower at the bottom of the picture is cockies' tongues (*Templetonia retusa*).
Photo – Bernhard Bischoff

Aboriginal name dooart (hence 'tuart') has prevailed.

Tuart typically adopts a 'splitting' habit of growth. Rather than having a dominant central trunk, with side branches coming off it (the 'shaft' habit), as many forest trees do, tuart tends to split into several nearly equal spreading branches. That habit is well suited to tuart's occurrence near the coast. Salt carried by the frequent onshore winds is very damaging to foliage. The broad, rounded canopy that results from tuart's habit, together with a greater mass of foliage than is found in most eucalypts, tends to deflect these salt winds, reducing their effect.

Tuart is not the only eucalypt on the plain to adopt a splitting habit. Flooded gum does so very typically. Jarrah, which has more of a shaft habit in the Darling Range, has a splitting habit on the plain. But tuart's form is nonetheless distinctive. Its branches are more flowing and upwards-tending than those of jarrah, and sturdier and more widely spaced apart than those of most specimens of flooded gum. Its foliage is also thicker and more clumped than that of flooded gum.

Tuart varies greatly in size and shape over its range. Although it is often a tall tree, it is of low to medium height in the northern parts of its range, or on very shallow soils, or close to the ocean. Near the ocean, where it is more affected by salt winds, it is asymmetrical in shape, much broader than it is tall, and has a more closed canopy than it does elsewhere. In several near-coastal locations, north of Pipidinny Road in the Perth metropolitan area and on the coast at Dalyellup, south of Bunbury, it forms a mallee.

NATURAL HERITAGE

The type of vegetation formation it creates varies greatly too. In some places, it forms a forest, in others a woodland or open woodland. Or the trees may be spread still further apart, as isolated specimens, or clumped together in small groves. Thus tuart contributes much towards the variety of landscapes on the plain. The remaining tuart groves and individual trees in otherwise mostly cleared areas of the plain are important landscape features and a significant part of our natural heritage. The conservation of these tuarts is vital in maintaining the distinctive landscape of the near-coastal lands on the plain.

In Perth, tuart provides a link with history through the occurrence of specimens that were part of the vegetation before it was cleared for urban development. Even in Subiaco, one of Perth's oldest and most highly cleared suburbs, three specimens still survive in the gardens of Subiaco School and the Theatre Centre. They have been pruned in past years, but two of them have regained something of their previous majesty.

BIOLOGICAL VALUE

Tuart is one of the most biologically valuable trees in Perth. The older trees provide hollows for many bird species, possums and bats. Tuart's value to insects is especially important.

TUART RESPONSE GROUP

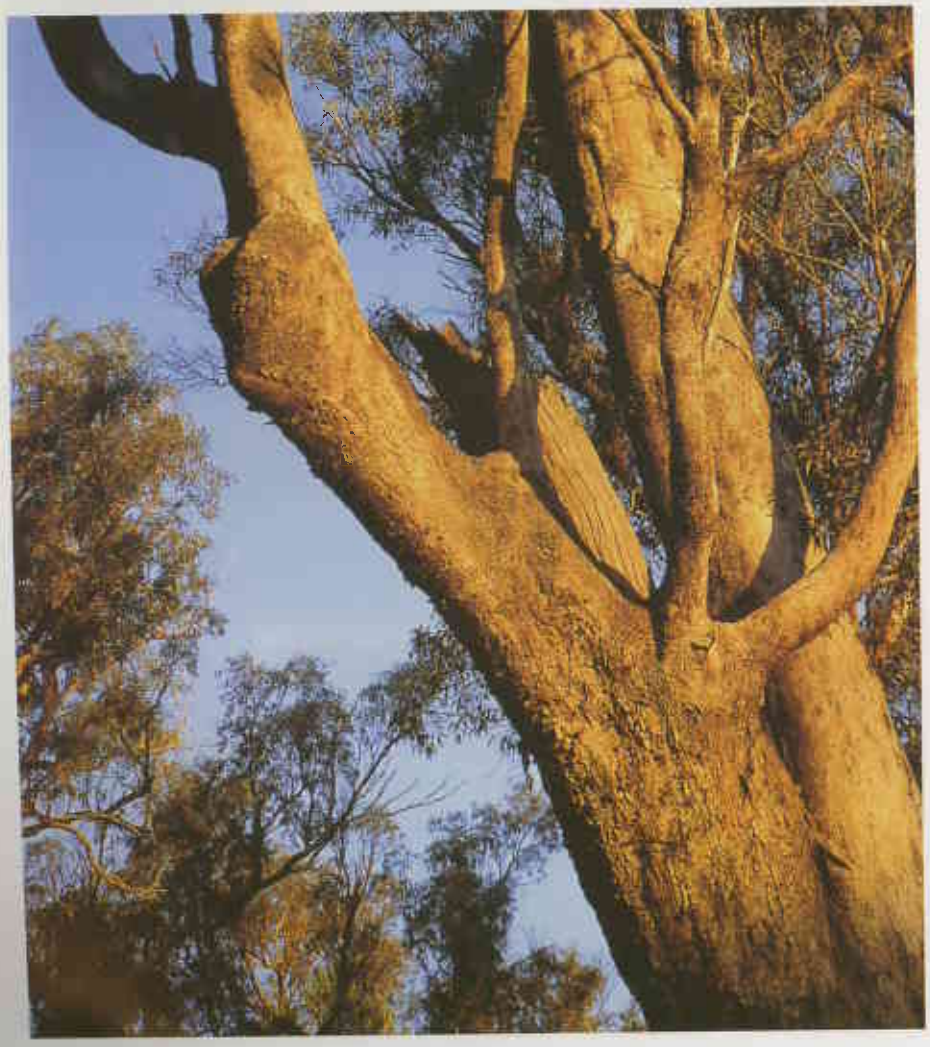
Since the late 1990s, there has been increased community concern about the future of tuart and its associated vegetation. In recent years, tuart woodlands between Mandurah and Preston Beach have suffered a severe decline, linked with a heavy infestation by wood-boring insects. The underlying reasons are not yet clear but may include:

- ongoing reductions in winter rainfall;
- hydrological and salinity factors near wetlands;
- changes to the soil or its nutrients;
- altered fire regimes;
- competition with understorey species;
- changes in the ecological balance between insects and their predators;
- adjacent clearing; and
- roadworks.

In the face of tuart's decline in health, a comprehensive conservation and protection strategy is needed.

Consequently, the Minister for the Environment, Dr Judy Edwards, has set up the Tuart Response Group to establish a partnership with local communities to plan and manage the conservation and protection of tuart trees and ecosystems, and to investigate the causes of their decline.

The Tuart Response Group has produced a Status Report on the Conservation and Protection of Tuart, which summarises the current information. It includes the findings of a Hydrology Workshop, held in May 2002, and the Tuart Science Workshop, held in July 2002. Future possible directions for conserving and managing tuart are outlined in the report. Copies of the report can be viewed on the Department of Conservation and Land Management's website (www.naturebase.net.au).



Recent studies are beginning to show what a high number of insects and other invertebrate animals are associated with naturally occurring eucalypts. For example, probably more than 750 invertebrate species are associated with jarrah or marri, of which well over 400 occur in just the foliage alone. These studies also show that eucalypts of the more fertile soils tend to support more insects than those of less fertile soils. Since tuart occurs on more fertile soils than either jarrah or marri, it is likely to support even more insect species. Insects and other invertebrates comprise most of the diversity of terrestrial ecosystems, and are also extremely important in the ecology. They pollinate plants, recycle plant materials, regulate each other's numbers and provide food for birds, lizards, frogs and small mammals.

That tuart supports many insect species can readily be seen by examining the foliage of specimens growing in the tuart belt. All sorts of different marks can be seen, evidence of the ways of life of many different insects. One can thus appreciate that such trees are part of a living ecosystem. Sydney naturalist Densey Clyne writes in her book *More Wildlife in the Suburbs:*

> 'Much of the fascination of a tree lies in its relationship with insects, birds and mammals. Their comings and goings leave signs behind on stems and bark and leaves, so a tree without such blemishes is like a friendless stranger in a foreign land.'

By contrast with tuart, most of the non-local trees planted in Perth tend to be largely free of blemishes; these are Clyne's 'friendless strangers'.

In addition to its other values, tuart can be established with no or minimal watering, and needs no watering or fertilising once established. Moreover, it is more resistant than almost all other eucalypts to the salt winds and limy soils of sites close to the ocean.

DECLINE OF TUART

Like most plants and animals today, tuart is suffering from the direct and

Left: Branches of an old tuart at Tuart Forest National Park.
Photo – Rob Olver

Right: Tuart trees contribute to the scenery along a bushland walk at Lake Joondalup.
Photo – Rob Olver

Below right: Urban sprawl encroaching on bush viewed from Neerabup National Park.
Photo – Jiri Lochman

indirect effects of human activities. An obvious direct effect is clearing. Indirect effects include changes to fire patterns and the introduction of weeds and canker fungi. Although possibly caused directly by the larvae of a native beetle, the recent severe decline of many tuarts over a wide area south of Mandurah has no doubt been triggered by stresses or ecological imbalances brought about by human activities, together with a significant decline in rainfall associated with climate change.

The natural distribution of tuart, the coastal strip from near Busselton to north of Guilderton, corresponds closely with the places where today's Western Australians most like to live. Consequently, the effect of people on tuarts has been severe: much of the land formerly occupied by tuart has been cleared for houses or other human uses, and many of the bushland reserves containing tuart have been greatly affected by weeds and frequent or severe fires.

The human population of this coastal strip continues to increase. Urban areas are expanding, alongside an increase in the density of buildings within established suburbs, in both housing lands and grassed parklands. The change in density is mirrored in rural areas in the expansion of horticulture into grazing lands and the subdivision of large blocks into smaller lots in special rural subdivisions. These changes in density bode ill for the remnant tuarts of the plain. Tuart is a large tree and not perceived by many as being compatible with housing, even though trees have persisted and graced urban yards since housing was established.

Many local municipalities have policies on retaining trees and in some cases replacing them. Unfortunately, these often focus on planted non-local trees rather than the local species, and there is a need to catalogue these significant local remnant trees and act to preserve and replace them. Much of this replacement could be achieved by using tuart in coastal suburbs when landscape plans allow tall trees. The currently favoured landscape trees in Perth and other urban areas include plane trees (a hybrid variety from the northern hemisphere), spotted gums and Norfolk Island pines. These are grown to about two metres tall and planted to create an instant treed suburb.

Thousands of these, and many other, non-local tree species have been, and continue to be, planted in urban areas within the tuart belt, competing visually with those tuart trees that do remain in parks and gardens. Many parks in the newer suburbs begin with a very visible group of tuart trees, but the tuarts soon become less visible as planted non-local trees distract attention away from them, or ultimately hide them from view. It is now non-local trees that are visually dominant in our urban areas, not only because of their numbers, but also because many are large and vigorous species. They are all the more large and

Above left: Tuart trunk, Tuart Forest National Park.
Photo – Rob Olver

Top: Larva of tuart longhorn.
Photo – Robert Powell

Above: Anthelid moth, one of a great many insects supported by tuart.
Photo – Robert Powell

vigorous because they support fewer insects than the local species, and fewer than they themselves would in their local environment. Tuart today is prominent in very few places in Perth apart from some bushlands, where there is less visual interference from non-local trees. Numerous natural landscapes dominated by tuart are slowly being eroded in this way—including some of national significance.

THE FUTURE

What can be done if we wish tuart to remain, or be restored as, a feature of our landscape? We need to do this directly—by preserving those tuarts that remain, and, where necessary, increasing their numbers or visibility—and also indirectly—by encouraging the community to be aware of and value tuart.

To preserve those tuart trees that remain, there is a need to catalogue these significant local remnant trees and act for their preservation or replacement. Much of the replacement of trees that cannot be preserved could be achieved by using tuart in coastal suburbs when landscape plans allow for tall trees. Tuarts have been and continue to be planted in many public parks; the recent plantings at the southern entrance of the Floreat Forum are just one example.

In many cases, unfortunately, too little attention is paid to where trees are sited. Many of the spots chosen for them do not allow for their full height or spread when mature. On sites close to the ocean, they are often placed without regard to the asymmetrical shape they will develop as a result of salt-laden westerly winds, and therefore will grow too close to obstacles to their east. To get the best out of tuarts as a landscape feature, the establishment of trees should where possible aim for a result that looks natural. Copying the natural groupings of trees, and including some of the natural understorey will help, as will making use of natural regeneration wherever possible.

Improving the visibility of tuart in this way should help to encourage the community to be aware of and value tuart.

Tuart, once the dominant tree of much of the coastal strip north and south of Perth, still gives a distinctive character to our natural landscapes, with its colour and habit, its variety, its vigour, its majesty and its grace. Despite land clearing and ecological pressures, it is possible to retain and restore something of this distinctive landscape, if people can be brought to understand and value tuart's natural qualities.

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This article was condensed from a paper by Robert Powell and Bronwen Keighery entitled "Tuart in the Landscape", which was published by the Wildflower Society of Western Australia in June 2002 in the book *Tuart and Tuart Communities*, edited by B J Keighery and V M Longman. The book is based on a workshop on tuart and its associated vegetation, organised by the Wildflower Society in conjunction with the Department of Conservation and Land Management and the then Department of Environmental Protection, and held in March 1998. It incorporates papers given and matters raised at the workshop, expanded by further research and collaboration since that time. It can be obtained from the Wildflower Society, phone (08) 9383 7979.

A subsequent *LANDSCOPE* article will look at the Tuart Response Group and its work (see box on page 20).

Winner of the 1998 Alex Harris Medal for excellence in science and environment reporting.

LANDSCOPE

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Once thought to be extinct, Gilbert's potoroo has overcome many obstacles. What is being done to improve its chances of survival? See page 28.

Cane toads are poisonous, prolific breeders and are getting closer to the WA border. Hop to page 10.

Discover some of the prehistoric megafauna that once roamed the State in 'Walking with WA giants' on page 23.

The tuart once typified the coastal strip north and south of Perth. Why should we cherish this majestic tree? See page 16.

Lichens decorate Lake Muir, near Manjimup, with varying colours and shapes. Turn to page 43 to learn more about these fascinating life forms.

FEATURES

REGULARS

COVER

Royal hakea rises above the surrounding heath, straight and column-like. When sunlit from above or below, its unusual large variegated leaves appear to glow like lanterns, so the shrub is also known as the Chinese lantern bush. Among the birds that obtain nectar from its flowers (hidden at the base of the leaves) is the western spinebill.

Royal hakea grows almost exclusively in Fitzgerald River National Park, an area that was reserved on the recommendation of then Government Botanist Charles Gardner (see 'Botanic Guardian' on page 36).

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