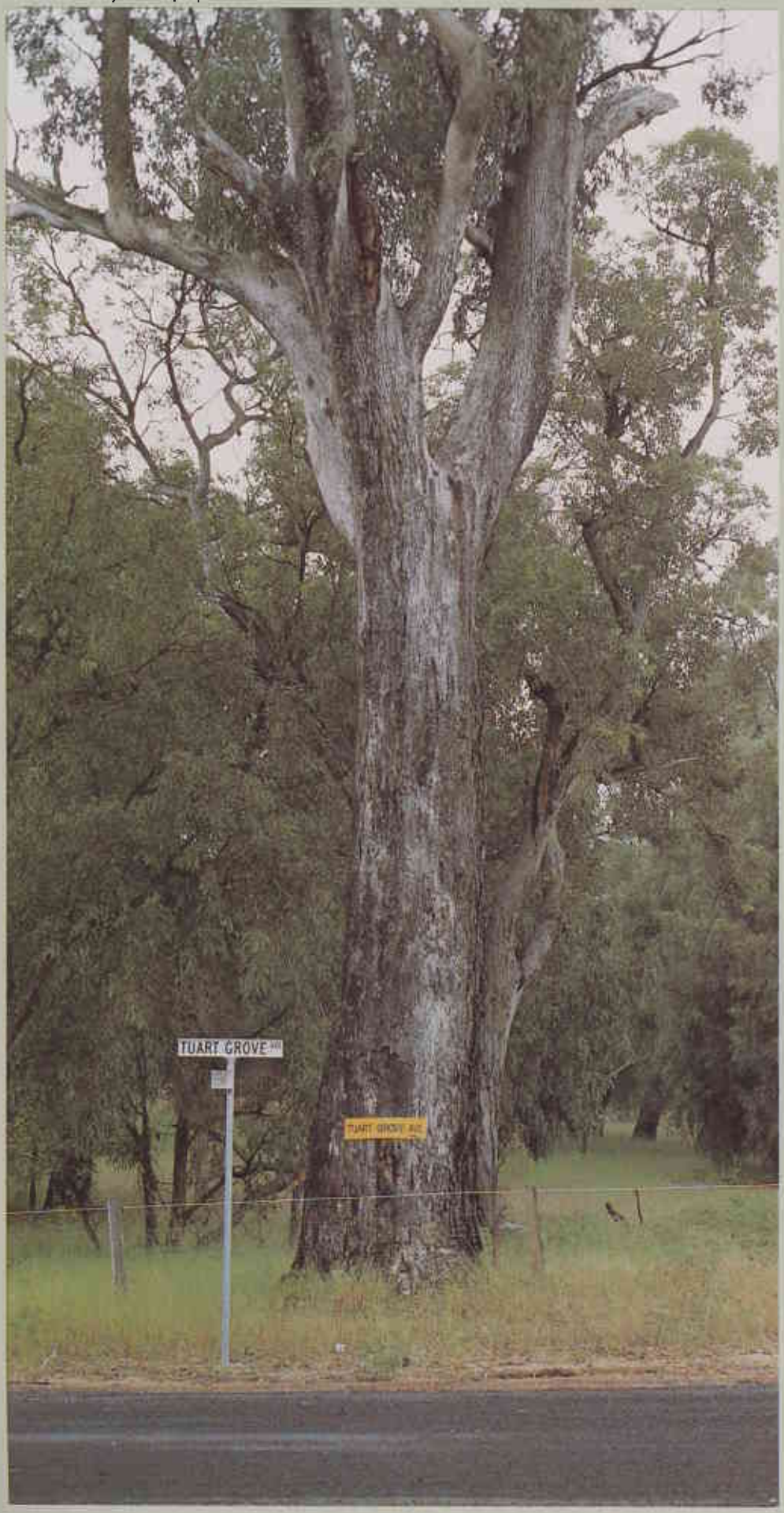
Tuart country is still popular real estate.



The Tenuous Tuart

by Ian Kay

Historically, coastal forest areas have seldom fared well in the sequence of colonial arrival, settlement and development. They are the first point of contact, supplying the basic needs of fuel, construction material and export income for the new community.

In many cases they have simply been in the way, taking up ground space needed by the settlers to build and grow other primary products. Later, for the remainder, there is the indignity of pollution.

W.A.'s south-west coast has not been excepted, and the whole process has been particularly damaging for the tuart (*Eucalyptus gomphocephala*) forest.

The species grows on limestone sands, and the original forest was confined to a narrow coastal strip between the Sabina River in the south and the Arrowsmith River some 300 km north of Perth.

The fact that any tuart forest remains today in this prime area of colonial real estate is testament to the efforts of the State's earliest foresters.

Its continued survival will depend very much on the dedication of their successors, and the environmental awareness of the forest's neighbours.

Early records of the State's history describe the tuart forest as being 'a beautiful open forest in which visibility was clear for a half mile (0.8 km) 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. Unlike their inland cousins they did not have to use fire to farm the grass and attract wild game. The word 'tuart' is anglicized from the Aboriginal 'tooart'.

With the arrival of the European, life's gentle patterns changed. Coastal forest areas were cleared for settlement, timber and fuel.

Because the tuart forest presented an open landscape with a wide variety of native grasses, its land was eagerly sought after for cattle grazing. 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.

An additional attraction in the area was the surface deposits of limestone. The lime was quarried, stacked with alternate layers of wood in kilns and burned. Later, the cooked limestone was powdered and used as fertilizer and building mortar.

Following the formation of the Forests Department and the passing of the 1918 Forests Act, land in the area between the Capel and the Ludlow Rivers was repurchased from private landholders, primarily 'for the growth of tuart'.

This land was dedicated as State Forest 1 and 2, and included some 1385 ha of prime tuart forest. Neighbouring properties which have since been added to the forest contained a further 1500 ha.

The old lime kilns (right).

The tuart forest is divided from the coastal sand dunes by a series of wetlands.

With only small parks remaining elsewhere, it was the last remnant of the species. Some cutting by early pit sawyers and sawmillers had been carried out in the 1800s, but a high volume of standing timber remained.

Forest Conservator Lane-Poole wrote the area's first working plan. In the Ludlow Forest the tuart is the dominant tree. Some trees measured have exceeded 33 m in height and 10 m in girth.

The tuart forest in this area is divided from the coastal sand dunes by a series of wetlands, formed in part by the Vasse Estuary and the Capel River overflow.

On the eastern side of the

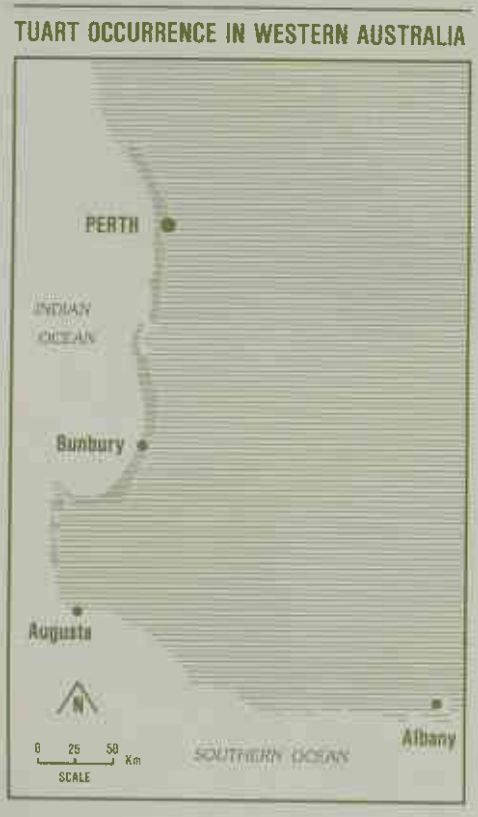
tuart forest is another series of swamps which form a distinct boundary between the tuart and the edge of the inland jarrah (*E. marginata*) and marri (*E. calophylla*) forests. An occasional tuart does grow in the mixed forest, but only close to swamp systems.

The rapid build-up of flammable understorey in the main forest was solved by the decision to regraze the forest. Paddocks were leased back to the locals, the cost (between £5 and £35 per acre) depending on the size of the area grazed. In the tuart forest grazing for fire control has persisted in spite of the successful development of controlled fuel reduction by fire in other W.A. forest types.

Sawmill

In 1920 the Forests Department erected its own sawmill across the estuary at Wonnerup Beach, some 10 km east of Busselton. A small jetty was built off the beach to ship sawn timber to South Australia and to Fremantle. Shallow draft boats took the timber out to schooners anchored in Geographe Bay.

Figure 1.



Plagued by a shortage of fresh water, the mill operated for about 10 years cutting logs supplied from large, mature and over-mature trees.

Tuart's light yellow wood was prized for its high density and resistance to wear. It was used by craftsmen in the construction of whim and wagon wheels — the rim, spokes and hubs — and as journals for propellor shafts in boats. Other uses included the decking in wagons, telegraph pegs and tool handles. The wood is subject to termite attack and is not suitable for general construction purposes.

After World War II wood in general was again in strong demand. In spite of continuing problems with the regrowth of the forest, the Forests Department built a new mill at Ludlow in 1955. Tuart was cut for Government Railway requirements and the mill worked on and off until 1974.

The tuart's 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.

Ludlow was also the site of the Department's earliest school of forestry, at which student forester Dick Perry (see article in *Forest Focus* 28) and 24 others made up the first class. It was here, amidst the beauty of the tuart, that the State's new foresters were first introduced to environmental management. Given the tenuous nature of the tuart's existence, it is not surprising that considerable attention was focused on the problem of its regeneration.

The tuart's floral cycle generally occurs every five years, with intermittent flowering between cycles. Much of the undeveloped seed is destroyed by the tuart bud weevil, and ripened seeds which do fall are taken for food by ants. Competition from grasses, and the quicker-growing peppermints, seemed to ensure total failure.

A whole range of regeneration techniques were tried, including burning and ploughing, but success proved elusive.

Desperate to continue some forest growth the Department resorted to planting pines, but the long-term aim was always to regenerate the tuart, and research continued. At last, after nearly 40 years of trial-and-error, a successful pattern of regeneration started to emerge.

Breakthrough

Taking care not to damage any healthy tuart trees, forest workers now spend the winter months clearing openings in the forest. Decaying standing trees and dead wood on the ground is cut and bulldozed into heaps, along with the peppermint understorey.

Forest openings of about one hectare are sufficiently large to allow plenty of light in, and the material is left to dry. The longer the drying time the better, but in practice at least one full summer is required.

The heaps are burnt, as soon as the autumn weather allows it, so that the fire is as hot as possible. A wonderful tool, the fire clears the forest debris, kills the competing grass and its seeds, and reduces the population of marauding insects, leaving the soil cleansed for the new seed.

In years when there is insufficient natural seeding from the crowns of the surrounding trees, it is necessary to hand plant tuart seedlings onto the ash bed and on the cleared land.

It is essential that grazing stock be excluded from the areas of regeneration. If they are not excluded, the new tuart seedlings are eaten, the unpalatable peppermint reclaims the site and the whole cycle will be repeated.

To control the grasses cool ground burns can be used once

the seedlings are two years old. Initially it was thought that fire would damage the new regrowth unless it was much taller, but the two-year-old grass on the cleared land proved to be easy to control with little heat.

Long-term trials are now underway to test the effectiveness of the cool burn technique as an alternative to grazing. In the research plots, so far, there do not appear to be any detrimental effects caused by the use of fire in this way, in fact the tuart trees look healthier than those in the unburned plots.

An added bonus of the controlled burning program is the great reduction in insect attack, particularly by the bud weevil.

Ironically, with successful regeneration techniques finally established and some ten years progress made towards improving the health of the tuart forest, its very existence is again under threat by resource exploitation.

Much of the tuart forest grows on mineral sands rich in ilmenite, used in the manufacture of titanium white pigment. The mining company working on neighbouring properties is keen to exploit the wealth below the forest floor. Company executives argue that with the problems of reafforestation largely solved the tuart could be replaced after their operation.

New life from the ashes.

The sand mining dam at the former Coolilup plantation adjacent to the tuart forest.

Bulldozed heaps are burnt in autumn.

Healthy established regeneration.

The foresters, however, are adamant; the tuarts should be conserved. According to Cameron Schuster, the district's senior forester, the tuart forest at Ludlow has a number of special values more significant than the minerals.

'*Eucalyptus gomphocephala* is one of the few eucalypts tolerant of saline water and adapted to limestone soils,' he said. 'As such, its seeds are of considerable value in overseas countries — Algeria, Tunisia and Morocco — with afforestation requirements in similar conditions.

'With the neighbouring estuary and wetlands, the forest is also a sanctuary for birds, particularly water fowl.

'Being so close to the coast the area is an integral part of their life pattern,' Cameron said.

During the hot summer months the coastal birds are joined by inland varieties seeking the cool of the forest and its adjacent water.

Last, but not least, Cameron pointed out that the tuart forest had always been a people's forest. 'Its unique location, the tall trees beside the estuary and so close to the ocean, seems to capture the imagination of all who come in contact with it,' he said.

Ludlow's tuart forest is very popular, mainly as a day-use area. The entire forest is used regularly, particularly by travellers breaking their journey on the Bussell Highway. The open nature of the forest and the understorey encourages people to enter it and explore.

Historic attractions in the area include the old saw pits, the limestone kilns and the Wonnerup House complex where visitors can combine the attractions of the forest with the nostalgia of yesteryear.

Over the years the Department has developed recreation facilities including picnic sites and walk trails. Future plans include additional facilities, but principally concentrate on the provision of bush camping sites for short stays, and facilities for nature observation, bush walking and scenic drives. The remaining pines in the forest will be harvested as they mature, and replaced by tuart.

'Basically our priorities now are to conserve the tuart, to encourage its growth and help visitors enjoy its attractions,' said Cameron.

'No-one knows if the tuart will regrow on the "stripped" sand. The tuart has hung on long enough for us to learn how to manage it; the important thing is for us to consolidate the gains we have made.

'Besides, with today's increasing demands for land for coastal development and the pollution from facility areas like Kwinana, the tuart has nowhere else to go,' he said.

For that reason alone it is important that tuarts of Ludlow remain secure.

Ludlow forest, a welcome sight for the traveller.

Cover
Pink and Grey Galahs do well to peer cautiously from their perch. Although a familiar species, the picture of the fledgling (right) emphasises the value and vulnerability of even our common wildlife.
Cover Photo: Jiri Lochman

Landscope

Volume 1 No. 3
December 1985

Contents

Published by the Department of Conservation and Land Management, 50 Hayman Road, Como, W.A. 6152. *Landscope* replaces *SWANS* and *Forest Focus*.

Editor: Liana Christensen
Designer: Trish Ryder

All Maps by Department of Conservation and Land Management Mapping Section.

Page preparation Typographix — Perth
Offset plates by Photolitho-PM.

Printed in Western Australia by the Government Printing Office ISSN 0815-4465

Selling

by Liana Christensen

Thousands of kilometres of isolated coastline, numerous deserted airstrips, lack of radar surveillance: the same factors which make W.A.'s Northwest a drug importer's haven also facilitate the less sensationalised crimes of poaching and smuggling wildlife.

Trafficking in native fauna is an extremely attractive criminal proposition. It is as lucrative as drugs — some estimate an annual turnover in excess of $40 million — and it is far less risky. Large operations, including the Mafia, are believed to be involved in both activities. Having established a safe route, they set up a 'conveyor belt' moving drugs into the country and sending wildlife out. In a telephone interview reported in *The Bulletin*, ex-Mafia boss Vincent Teresa claimed that bird smuggling was 'a racket that is just getting bigger and bigger'.

Smuggling is one of the major problems facing our State's 32 wildlife officers. In the Northwest, some wildlife officers are responsible for districts covering hundreds of thousands of square kilometres. They work in close connection with the local police, as well as federal police and customs officers. Typically, a wildlife officer will make ten-day patrols — which often stretch into two weeks because of problems with terrain or weather — checking known or likely trouble spots.

A Dangerous Job

A wildlife officer's work is often difficult, and sometimes

Kevin Marshall