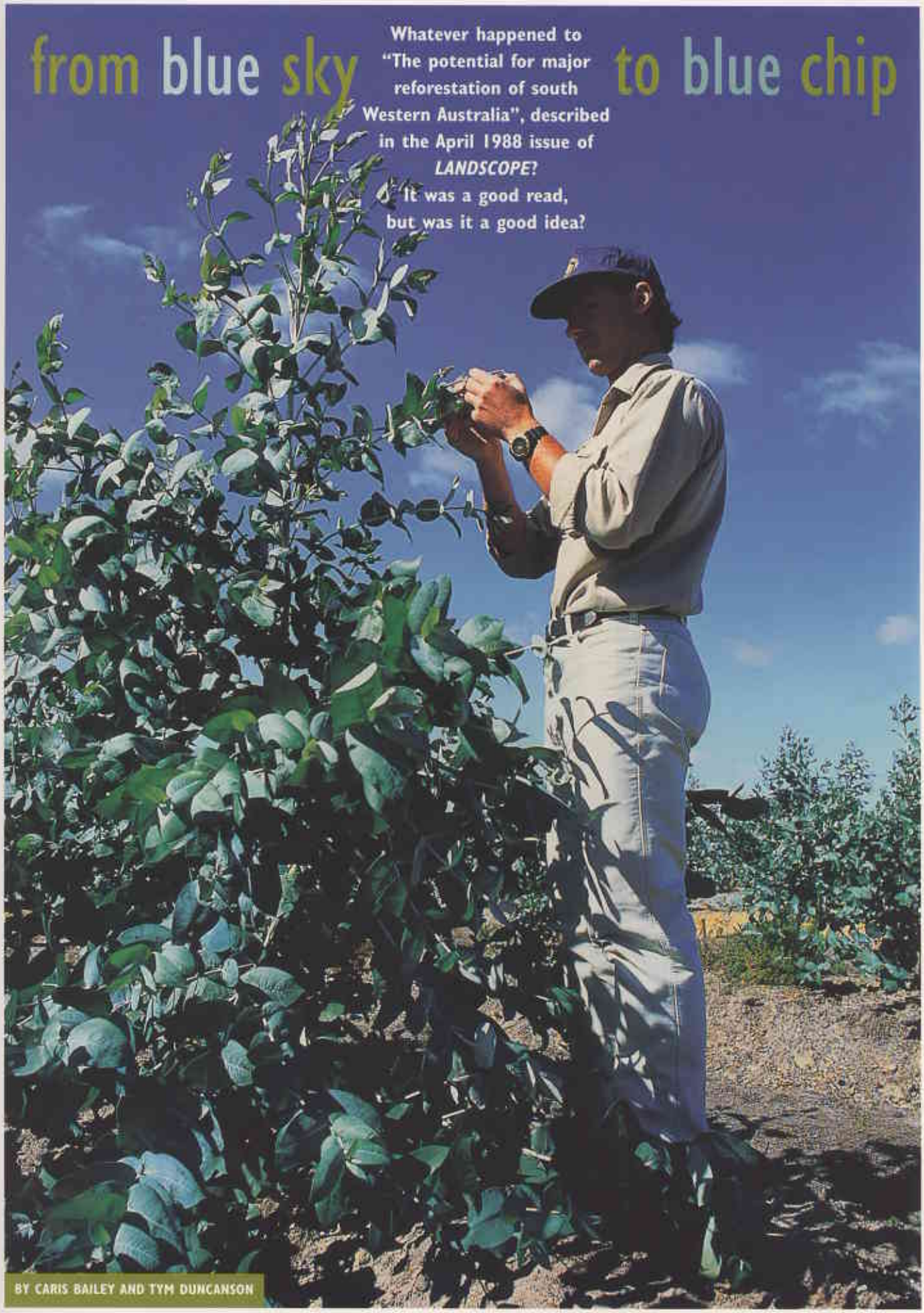
# from blue sky to blue chip

**Whatever happened to "The potential for major reforestation of south Western Australia", described in the April 1988 issue of *LANDSCOPE*? It was a good read, but was it a good idea?**



BY CARIS BAILEY AND TYM DUNCANSON

The idea to take a crop that couldn't be harvested for about 10 years and build an industry around it, in order to fight land degradation in the State's south-west, was first discussed in 1987 (See 'Restoring Nature's Balance', *LANDSCOPE*, Autumn 1988). The environmental benefits of planting trees are well known, of course, but there was talk about planting 100,000 hectares of bluegums (*Eucalyptus globulus*) by the year 2000.

Where was all this land going to come from and who was going to pay for a crop of 125 million seedlings? There were no local buyers, no local processing facilities and the trees would be grown for paper at a time when computers were making it possible to have a paperless office. The odds certainly seemed stacked against bluegum plantations.

If only it could be achieved, however, a new plantation industry would bring enormous rewards for landcare and rural employment.

Determined to prove the potential of bluegums in Western Australia, the Department of Conservation and Land Management (CALM) used loan funds to plant its first bluegum plantations. The loan was much smaller than it could have been because the Department didn't buy land, as it had previously done for pine plantations. Instead, the trees were planted on privately owned land in exciting new partnerships with farmers. In 1988, 1,551 hectares of bluegums were planted in a pilot sharefarming scheme with 21 farmers on the west-coast of WA. Another three hectares were planted on a farm near Albany, on the south coast.

It may have been a slow start, but 10 years down the track the 100,000-hectare target is about to be met—two years ahead of schedule. The land base has been provided by hundreds of farmers, and the plantations have been funded mainly by private investors who have been drawn to different bluegum projects by the rising demand for paper, particularly in the Pacific-rim.

Studies have shown that significant landcare benefits can be gained by planting trees on as little as 20 per cent of a farm. These benefits include lowering water tables to prevent, and even reverse, the massive salinity threat facing Western Australia (see 'Halt the Salt', *LANDSCOPE*, Spring 1997).

*Previous page*
Mark Giblett, from CALM's South Coast Sharefarms, monitoring the growth of a 12-month-old bluegum.
Photo – Marie Lochman

*Above left:* Bluegum crops, like this one growing on a south coast property, will soon support a major export industry.
Photo – Jiri Lochman

*Above right:* Bluegum seedlings ready to be planted out.
Photo – Chris Garnett

*Left:* Steve Pickering (left) and Morten Nilsson (right), from CALM Sharefarms, Lower West, inspect a plantation with Frank Lee, from Hansol Australia.
Photo – Chris Garnett

*Right:* The design of each plantation established by CALM's sharefarm units is designed to suit the landowner's requirements. The site preparation on this south-west farm shows how the trees will be planted on the contour.
Photo – Robert Garvey

Monitoring undertaken by Agriculture Western Australia on one south-coast property showed that the groundwater level under a crop of bluegums has fallen by 3.4 metres since the trees were planted eight years ago.

A recent study commissioned by Albany Port showed the impact this new industry is having on regional economies. It was estimated that bluegum plantations in the Albany region provided $46 million, both directly and indirectly in wages and other income during 1997. The amount of cargo through Albany Port is also expected to triple in the next ten years, largely due to bluegum and mineral sands exports.

## LAND FOR MY GRANDCHILDREN

This multi-million dollar industry, which shows how environmental and economic goals can be combined, has also had a personal impact in the south-west.

Porongurup farmer Geoff Clarke said that: 'It got to the stage where the prices of the commodity I was producing weren't economical. I had to come up with some alternative use to keep the land for my grandchildren'.

He is one of the hundreds of landowners now growing bluegums as part of their plans to diversify farm income. CALM alone is managing bluegum crops under more than 300 sharefarming agreements. The trees on the Clarke farm have been integrated with the existing pasture for sheep, and still left enough room for a vineyard. Some landowners have planted bluegums to overcome salinity problems already apparent on their properties, and others have established plantations to provide them with 'superannuation' at harvest time. Several other successful ventures are

### CASE STUDY 1

**Just 18 years after some of the land was cleared on their Boyup Brook farm, Ian and Jenny Purse saw signs of degradation–waterlogging and small hillside seeps–caused by rising salinity levels. Ian, who is chairman of the Farm Forestry Development Group and a member of the State Salinity Council, contacted CALM and Agriculture Western Australia for help.**

**The first step was a thorough investigation of the area by CALM's Farm Forestry Unit. Soils and groundwater levels were mapped and the data integrated with a farm and landscape management plan. Part of this plan was to plant trees in strategic locations to draw down the water table and protect remnant native vegetation.**

**Altogether, 35 hectares of bluegums were planted in 1996 in patches over 150 hectares of the property. Nearly six hectares of native species were also planted on sites unsuitable for bluegums. The bluegums will be harvested for wood fibre and then allowed to regrow from the cut stumps. The Purses chose CALM Sharefarms crop share option as it means they will share the revenue from the trees at harvest and also have not had to spend money to tackle land degradation ... in fact they will eventually earn an income from the measures in place.**

*Right: Eucalyptus camaldulensis* is one of the native species planted with bluegums on the Purses property. A piezometer to monitor groundwater levels is visible in the centre of the picture.

*Far right:* The bluegums on this site will prevent further land degradation, such as soil erosion.
Photos – Chris Garnett

*Left:* Bluegums crops have been planted between patches of remnant vegetation to help protect the native species from rising groundwater and from erosion.
Photo – Jiri Lochman

*Below left:* Bluegums regrow, or coppice, from a cut stump.
Photo – Chris Garnett

*Below right:* Coppice growth is vigorous – Steve Pickering, from CALM Sharefarms Lower West, is standing next to a stump cut only 11 months earlier.
Photo – Chris Garnett

featured as case studies in this article.

Steve Pederick not only planted trees on his property east of Collie, but left his former job to work as a contractor for CALM Sharefarms, carrying out site preparation work and spraying to control weeds. What began as a family business for Steve and his wife Denise has grown to a company employing nine staff in less than three years.

'We believed there was a great opportunity for us to become involved in work we enjoy doing,' Steve said. "We really get a kick out of seeing results when we go back to trees we helped establish and see the incredible growth rates in just 12 months.

'Trees are just another crop, instead of producing grain or wool you're producing timber—and more and more farmers are realising that you don't lose production with trees, in fact you gain', said Steve.

'We think this is going to be a very big industry with a long-term future and we're very excited about that,' he added.

Industry-wide figures are not available, but consultants working for Albany Port estimated that in 1997, 216 people were employed directly and indirectly on bluegum plantations in the Great Southern region. As the trees reach harvest age—about ten years after planting—there will be additional jobs operating and maintaining the harvesters, as well as transporting, processing and exporting the wood

CASE STUDY 2

Potato farmers around Scott River are turning to another sort of chip to meet their landcare goals—woodchips. Rows of bluegums, which will eventually be chipped to produce paper, are being planted in the awkward gaps around the irrigation circles used for potatoes and other vegetables.

Planting bluegums around potato circles has enabled farmers to control nutrient run-off from horticultural crop fertilising, shelter crops from harsh winds and provide income from unused land.

CALM Sharefarms Lower West planted 61 hectares on a potato farm in1997 and nearly 300 hectares on another two properties this year. The gaps planted last year ranged in size from about one hectare to nine hectares. As the potato farm plantings demonstrate, bluegum crops can be tailored to individual farm plans to meet environmental and economic goals.

*Left:* One of the giant sprinklers used to water potato crops and one of the wedge-shaped bluegum plantations planted between the irrigation circles.

*Below:* The bluegum crop on this potato farm is also integrated with stock production. Photos – Chris Garnett

fibre. Together with the new facilities planned, this increase in employment will be a massive boost for regional centres.

As Geoff Clarke says: 'This is not short-term. Nothing that's any good happens in five minutes.'

## NEW LOOK PLANTATIONS

The growth of bluegums from experimental plantings to a 100,000-hectare industry in just ten years is in contrast to previous plantation development in Western Australia, which reached 80,000 hectares after about 65 years.

The early plantations were established on Government-owned land to meet community needs, such as pine for the building industry and brown mallet for tannin production. The policy of the day was self-sufficiency, with the plantations only big enough to meet the demands of the local market. The trees were planted from fenceline to fenceline, in a time when land was either for trees or for agriculture, not for both.

The bluegum program started with quite different objectives—to meet world demand for wood fibre, rather than local demand, and to help solve serious land degradation problems. At the same time, the program was not constrained by the huge expense of having to buy land to establish plantations.

## WHY BLUEGUMS?

The species commonly known as the Tasmanian bluegum (*Eucalyptus globulus*) grows naturally in Tasmania, the Bass Strait Islands and south-eastern Victoria. The young trees have distinctive blue-green leaves, which change to green as the trees mature.

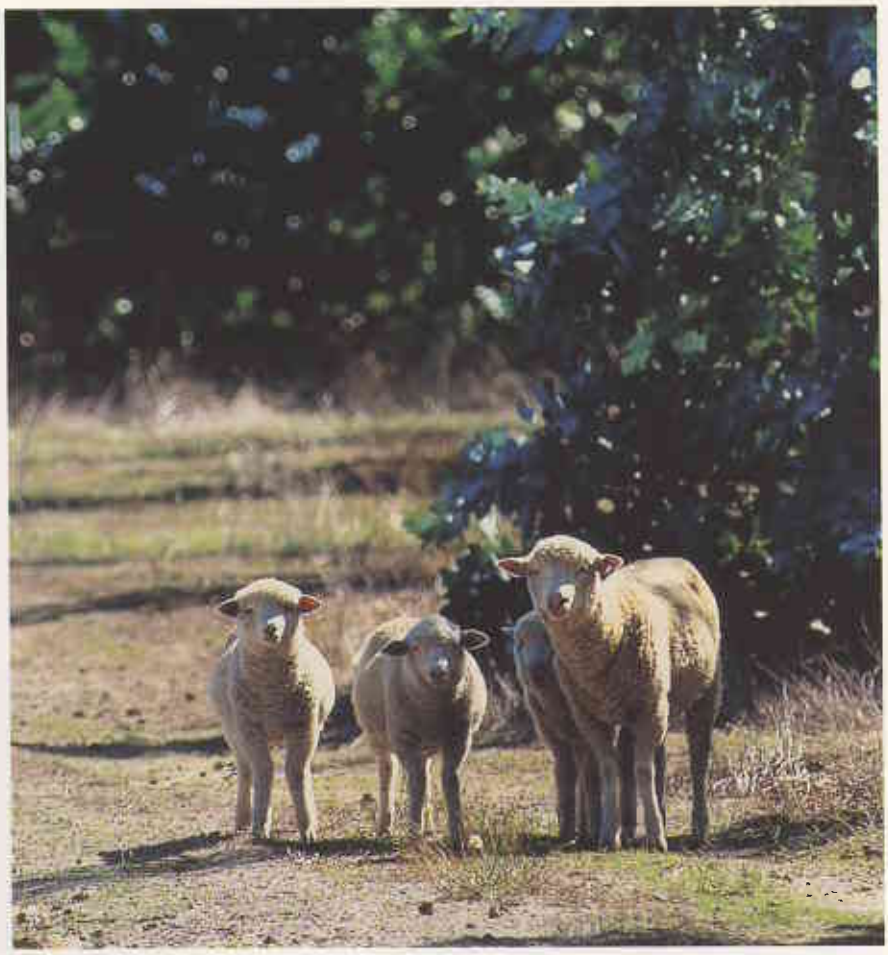
Bluegums have been planted overseas ever since British and French explorers collected seeds from the trees in the 18th century. Today, the species is the major plantation-grown eucalypt in the temperate zone. Bluegums are grown for fuel wood, poles for roundwood construction, sawn timber and pulpwood for paper manufacture.

Trial plots of bluegums were established across Western Australia's south-west in the 1960s, and the trees proved to be well suited to local conditions. In 1980, the Western Australian Chip and Pulp Company began small operational plantings. A few years later, sawmiller Gordon McLean put forward a proposal to grow bluegums on farms around Albany. The Environmental Protection Authority rejected this proposal, mainly because it relied on clearing native trees on the farms to fund the new plantations.

CALM approached Western Australia's two biggest timber companies and Japan's biggest pulp and paper companies, looking for investors to plant commercial bluegum crops on farmlands. Investors were interested, but weren't prepared to commit funds on the basis of trial plantings. Consequently, CALM began an extensive planting program funded by loan funds—8,000 hectares of bluegums were established on already cleared farmland between 1988 and 1994.

## SEEDING A NEW INDUSTRY

This policy proved successful. CALM is now contracted to manage three multi-million-dollar projects. These are



A bluegum crop can be integrated with traditional farm practices and will increase the productivity of other crops and stock by providing shade and shelter.
Photo – Jiri Lochman

funded separately by Albany Plantation Forest Company of Australia Pty Ltd (APFL), a joint venture between Oji Paper Company, Itochu Corporation and Senshukai Company; Hansol Australia Pty Ltd, a subsidiary of Hansol Forem Co Ltd; and Bunbury Tree Farms, a joint venture between Mitsui Plantation Development (Australia) Pty Ltd, Nippon Paper Company and MCA Afforestation Pty Ltd.

These projects have a combined planting target of at least 60,000 hectares of bluegums, which will be established at a cost of more than $150 million over ten years. Another $200 million will be paid to landowners over the life of the projects. APFL and Hansol are also planting a range of other tree species on sharefarming properties, and offering assistance with farm planning to maximise landcare benefits for landowners. Trees such as river red gums (*Eucalyptus camaldulensis*) and flat-topped yate (*E. occidentalis*) are planted on sites unsuitable for a commercial crop, including those that are too saline.

By the end of this year's planting season, CALM had planted 25,000 hectares of the target figure for bluegums. At the same time, CALM's interests in the 8,000 hectares of bluegums previously established are in the process of being sold by tender.

Local companies have also launched their own bluegum plantation projects—the area planted by private companies in 1997 alone was estimated at 14,000 hectares.

## 2020 VISION

Western Australia's bluegum industry has shown how land degradation can be tackled at the same time as developing a new industry for rural Australia.

In 1997, stakeholders (including plantation growing and processing industries and Commonwealth and State governments) released *Plantations for*

### CASE STUDY 3

**Planting grass was just as important as planting bluegums for Paul and David Vines. Their 800-hectare Scott River property sits in a low, flat valley and holds a lot of water—an asset for running cattle but a major problem for bluegum planting.**

**Initial assessments put the area of land suitable for bluegums at only 80 hectares, but CALM Sharefarms and Hansol more than quadrupled this figure with an innovative farm plan based around a series of specially designed drains. The drains work as biological filters to manage excess water and control nutrient run-off.**

**As a result of the new drainage system, CALM Sharefarms was able to plant 190 hectares of bluegums in 1997 and a further 134 hectares in 1998. The system, which was assessed and approved by Agriculture Western Australia, was the first of its kind to be implemented in the region and is now a model for future bluegum plantings in the area.**

*Right:* Specially-designed drainage channels on the Vines' property control the water flow and hold back silt and nutrients.
Photo – Chris Garnett

*Australia: The 2020 Vision*. This vision seeks to treble Australia's plantations by the year 2020 to achieve both economical and environmental benefits. These include attracting $3 billion in investment, reversing land degradation, increasing and diversifying farm incomes, helping reduce the $2 billion trade deficit in wood and wood products, and creating up to 40,000 jobs.

To achieve the vision, Australia needs to establish 80,000 hectares of new plantations each year. As mentioned previously, Western Australia alone is currently establishing more than 20,000 hectares of bluegum plantations each year. Expected expansion of other plantations such as CALM's Maritime Pine Project, which is expected to total 15,000 hectares each year from 2000 onwards, means that Western Australia is vital to the achievement of this important national initiative.

## BLUE SKIES AHEAD

Over the past ten years, CALM has promoted the bluegum industry by conducting research into the science of managing plantations, proving the potential for these plantations and providing an environment conducive to private investment. This was a major change to the State Government's role in plantations. Since the first plantations were established in the 1920s, CALM and one of its predecessors, the Forests Department, had been responsible for owning the land, managing the plantation, harvesting the trees and, in some cases, even sawing the timber.

The potential of a bluegum industry is certainly being realised, and several local companies are now offering tree-planting schemes to landowners in the south-west. The private sector is also contributing significantly to the pool of knowledge developed to ensure that Western Australia's bluegum plantations meet the world's best practice. Potential investors have confidence that the industry can meet financial and management objectives.

The next major phase is the continued development of expertise and infrastructure to harvest, transport, process and export timber from the bluegum plantations. Plantations will then be regenerated to form the next tree crop. CALM will continue developing and offering its expertise in these fields to ensure that the new generation of forest growers, industry and farmers, is able to continue leading in this important industry.

The new challenge is to bring all the benefits of commercial tree crops to landowners in the medium and even low rainfall zones, both of which are unsuitable for bluegums. There is, however, enormous potential for maritime pine and oil mallees in these areas. Watch this space!

Bluegum seedlings are loaded from a central location for planting in the field.
Photo – Chris Garnett

## CASE STUDY 4

A bluegum plantation in Albany has replaced the need to discharge the town's treated effluent into the ocean. Instead, the Water Corporation now pumps about 3000 kilolitres of treated effluent a day to its land disposal site, where CALM's South Coast Sharefarms has planted 365 hectares of bluegums since 1993.

The wastewater is used to irrigate about 60 per cent of the plantation. Another 39 hectares of bluegums planted in 1996 are still to be irrigated, together with nearly 26 hectares planted this year. The remainder of the plantation is watered naturally by Albany's 900 millimetres a year rainfall and is being used as a control to measure the increased growth and wood production of the irrigated trees.

The site also includes a 14-hectare arboretum planted over two plots with a range of species, including *Eucalyptus grandis*, *E. wandoo*, *E. camaldulensis* and *Acacia melanoxylon*, to monitor any variation in nutrient uptake, as well as tree growth rates.

Data from the research plots on the plantation have shown that irrigated four-year-old trees produce wood faster than rain-fed trees. The research project, which is being conducted by The University of Western Australia, is continuing.

## CASE STUDY 5

Doug and Fred Bamess, of Pemberton, were among the first to grow bluegums with CALM Sharefarms. This makes them among the first to see a bluegum crop harvested.

About 43 hectares of bluegums were planted in 1989 and all but two hectares were harvested last August. The crop produced nearly 12,000 tonnes of wood, or 209 tonnes per hectare. It was sold for $52 a tonne, returning a total of more than $600,000.

Two hectares were left uncut as a trial plot so CALM could continue to monitor tree growth to help determine the optimum timing for future harvests on other plantations. The remaining area was replanted this year to take advantage of the more productive Western bluegums produced by CALM's tree breeders (see 'Breeding Better Bluegums', *LANDSCOPE*, Summer 1997–98).

*Below:* Fred Bamess walks through the uncut portion of his 1989 plantation.
Photo – Chris Garnett

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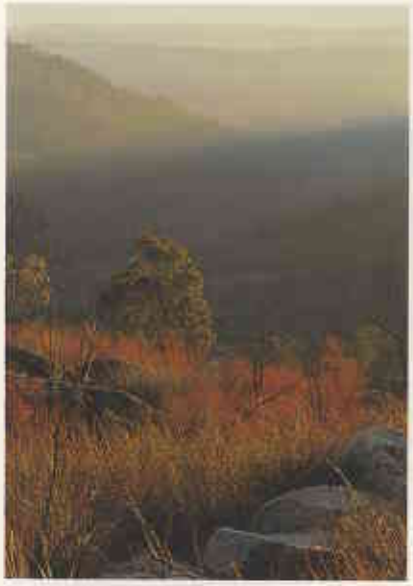

This land, where the Avon River cuts through the Darling Range, was home to WA's most notorious bushranger. His story is on page 10.

'What about the Animals', on page 21, discusses early findings from the Kingston Study.

# LANDSCOPE

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*Just when everyone thought it was extinct, this small mammal suddenly reappeared. See 'Dibblers' on page 28.*

*100,000 hectares of bluegums by the year 2000. Was it a realistic target? See 'From Blue sky to Blue Chip' on page 35.*

*'Karla Wongi: Fire Talk', on page 48, is a Nyungar perspective on the use of fire in the south-west of WA.*

## FEATURES



## REGULARS



## COVER

*One of Western Australia's best-known woodlands may be under threat now, but research by CALMScience Division staff is playing a key role in safeguarding their future. See 'Small Steps to Save Salmon Gums', on page 17*

*Illustration by Philippa Nikulinsky*


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