

CALM NEWS

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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DEPARTMENT OF CONSERVATION
AND LAND MANAGEMENT
WESTERN AUSTRALIA

Print post approved PP665002/0001

JUNE-JULY 1995



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Four centuries of forest care



Environment Minister Peter Foss and CALM executive director Dr Syd Shea are pictured here with Certificate of Appreciation recipients: (left to right) John Kruger, Robert Buckley, Peter Rado, Max Bending, Les Robson, Wayne Kitson, Max Rutherford, Mick Golding, Rod Simmonds, Glynn Hughes, Barry Ashcroft, Tom Gillard, Tom Wood and Wally Dunnnett. Photo by Ken Matts

MORE than 430 years of service dedicated to the responsible management of Western Australia's forests was recognised at CALM's June 9 Arbor Day ceremony on the Swan River foreshore.

Fifteen workers who, between them, have committed 433 years to the ecologically sustainable management of WA's forest resources, were presented with a Certificate of

Appreciation by Minister for the Environment, Peter Foss.

The fifteen recipients were: Wally Dunnnett, Alan Hatfield, Wayne Kitson, Peter Rado and Rod Simmonds from the Southern Forest Region; Robert Buckley, Tom Gillard, John Kruger, Max Rutherford and Tom Wood from the Central Forest Region; and Barry Ashcroft, Max Bending, Mick Golding, Glynn Hughes and Les

Robson from Swan Region.

CALM Executive Director, Dr Syd Shea, said the dedication and commitment of CALM staff often went unrecognised.

However, many people have given long periods of service to help ensure that all the values of WA's native forests are managed sustainably. These values include not only tree planting and management

but nature conservation, tourism and recreation, and protection of our water catchments."

Special tribute was paid to Wally Dunnnett, who retired at the end of May after 44 years with CALM. Wally has been involved in everything from seed collection and planting, regeneration and rehabilitation work, prescribed burning, survival counts, recreation

site work and roadworks.

Alan Hatfield, CALM's overseer at Walpole, was unable to attend the Arbor Day ceremony but was nevertheless recognised for his 29 year contribution to southern jarrah and karri forest operations and was presented with his certificate by Dr Shea when he visited the southern forests recently.

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New unit for nature tourism

AN Aboriginal Nature Based Tourism, Education and Training Unit has been established within CALM to facilitate the development of nature-based tourism projects which recognise the State's cultural and heritage values, particularly those of Aboriginal people.

CALM Executive Director Syd Shea announced the initiative at the WA Tourism Conference held in Perth recently.

Dr Shea said experience at major attractions such as Geikie Gorge, Karijini National Park and Yanchep National Park had shown there was enormous interest in Aboriginal culture and the Department was committed to increasing the participation of Aboriginal people in the tourism programs for lands and waters managed by CALM.

The unit's staff includes CALM's most experienced and senior Aboriginal wildlife officer, Trevor Walley, and Aboriginal employment and training officer Maxine Chi.

"The unit's purpose will be to provide training and expertise for people who will become involved in Aboriginal culture as it relates to nature-based tourism," Dr Shea said.

"As well, negotiations currently are under way with Notre Dame University to develop specialist courses to give nature-based tourism operators a better understanding of the State's natural attractions, including the dynamic—and often bizarre—relationships between our native plants and animals and their ecosystems.

"By extending training opportunities in partnerships with institutions such as Notre Dame, we can improve the range of knowledge and skills of people involved in the tourism industry and in so doing enhance the experiences for visitors to our State."

Dr Shea also told the conference that conservation of WA's amazing array of native plants and animals was directly linked to the development of the State's nature-based tourism industry.

He said there was a strong synergy between wildlife conservation and tourism.

"This synergy stems from the fact that if we integrate our conservation efforts with tour-

◆ Continued on page 2

Record planting expected this winter

A record 24 million tree seedlings will be planted over 16 500 hectares of private cleared farmland and in native forests and State-owned plantations throughout the South West of Western Australia this winter

Much of the area—7000 ha—will be planted by CALM under partnership agreements with farmers.

CALM has broken its own record for new plantings every year since 1992 when the first contracts with overseas investors to grow bluegums were signed.

This year's area is the biggest reforestation planting by a single organisation in Australia and is more than double the area planted under the CALM sharefarming arrange-

ments last year.

Nine million seedlings will be planted on farms around Gingin, the Wellington catchment, Albany and in the wheat-belt.

Environment Minister Peter Foss said the response from landowners to CALM's sharefarming scheme had been very strong, especially in the Albany district where

the year's target of 2500 ha looked like being exceeded by 500 hectares.

"Around Albany and in the Wellington catchment centred on Collie, most interest is in bluegums which are being planted under agreements with the Albany Plantations Forest Company and Hansol Australia Pty Ltd," he said.

"Farmers on the sandplains

north of Perth also are showing interest in pines to meet the growing demand for softwood.

This year's plantings result from an initiative CALM released last year that ultimately will see 5000 ha of pines established under partnership agreements over the next three years.

◆ Continued on page 2



I was looking through some back issues of *LAND-SCOPE* and I came across an editorial I had written, highlighting the fact that in that year (1989) CALM had planted 14 million trees. This year we will plant 24 million trees, and I would expect that private companies and farmers will plant at least another 10 million trees.

Ten years ago, I doubt whether more than five million trees were being planted each year, and there was almost no planting on agricultural land. It is not only the quantity that has increased, there has also been a massive increase in quality and efficiency in all stages of the tree-establishment cycle. We are planting trees with better genes; the seedlings that leave the nursery are bursting with vigour, site selection and preparation (particularly weed control which we have demonstrated is vital) are superb.

Our planting rates, I think, have gone about as far as they can go. Our teams are planting up to 5000 trees per day on cleared agricultural land and more than 2000 trees per day in clearfelled areas. These days we are disappointed if our survival rates are less than 95 per cent.

One of the principal reasons we embarked on a vigorous campaign to demonstrate that tree crops on farms were commercially viable, for both farmers and investors, was our conviction that it would only be possible to make significant impact on reducing salination—our major environmental problem—if the perennial crops, necessary to increase water consumption on farms, were also capable of generating wealth. Consequently, it is pleasing to record that we are beginning to see water tables dropping, and salt pans shrinking, in response to commercial tree crops that were established in partnership with farmers in the great southern region seven years ago.

The reason why public and private agencies are facing major changes in the way they operate is because, until now, we were not internationally competitive.

There are many ways to estimate competitiveness, but the only reliable index is the market. I am confident that CALM is internationally competitive because the largest and most successful pulp and paper companies in Japan and Korea have chosen us to undertake major tree-planting programs for them, investing \$120 million in the process.

Given the success of our tree-planting programs, I was bemused to receive a lecture from the head of a Commonwealth delegation (the Commonwealth now has five offices of forestry located in different departments, and forestry delegations now include at least one, and frequently two representatives from each office) on how the Commonwealth proposed, as part of its forests industry strategy, to encourage tree-planting on farms. It was particularly galling to have one of the Commonwealth bureaucrats interject several times when I was outlining our trees-on-farms program with the rhetorical question. "But they're monocultures, aren't they?"

Notwithstanding the efforts of a number of 'roving negators,' I am very confident that we will be able to maintain the massive tree-planting program being undertaken in WA by the private and public sectors. We would be mugs if we didn't. There is a desperate need for trees to 'restore nature's balance' in our landscapes and there is a huge market for tree products provided we are competitive. The capital is available to fund a massive tree program provided we can provide a stable political environment.

In no small way, my confidence is due to the fact that we have had people working for us like Wally Dunnet, who has over 40 tree-planting seasons under his belt, and continue to have people like Trevor Butcher, who quietly commenced the tree-breeding program more than 15 years ago that has given us Western Blue Gum. These are just two of the host of people in CALM who are responsible for the fact that we are a world-class tree-planting organisation.

Dr Syd Shea, Executive Director



AT a recent meeting of CALM's regional managers, Goldfields regional manager Ian Kealley presented Executive Director Dr Syd Shea with a wooden plaque, made from Goldfields white morrel timber. The CALM logo on the plaque was made from various

appropriately coloured goldfields minerals.

The presentation commemorated the Department's 10th anniversary and Dr Shea's 50th birthday.

On a lighter note, Ian also presented him with an 'exploding tomato' as a reminder of the colour-

ful description of Dr Shea that appeared in an article by journalist Brendan Nicholson in *The West Australian*.

Seen displaying the plaque and admiring the 'exploding tomato' with Dr Shea is Swan regional manager Alan Walker. Photo by Verna Costello

NPNCA Neerabup plans

ANYONE living in the City of Wanneroo will be aware that Neerabup National Park is becoming increasingly hemmed in by the housing developments rapidly taking place in Perth's north-west corridor.

CALM's 1994-1995 summer issue of *LAND-SCOPE* carried an article on Neerabup National Park and concluded with comments on future management.

Two principal issues mentioned are the Park's linear nature (being based on a part of the old Perth-Murchison Stock Route) and consequential management difficulties, plus the fact that the Park has yet to have a formal management plan prepared for it.

Apart from the public-use pressure that will be placed on the Park from the growing population surrounding it, Neerabup will also be affected by strategic planning decisions associated with north-west corridor development.

At the heart of strategic planning for Neerabup are issues such as:

- proposed additional land reservation in the south-east sector, near Joondalup.
 - proposed excisions/boundary rationalisation to accommodate water supply and freeway/railway extensions
 - minimising road and public utility at east-west crossing points
 - potential 'greenway' links to the coast, Yanchep National Park and Yellagong Regional Park, (Lake Joondalup).
- At a meeting last year of the National Parks and Nature Conservation Authority to consider priorities for the Neerabup and associated Nowergup Lake (east of Wanneroo Road), management plan, it was decided that there were other conservation areas with more pressing needs for management plans.

On the other hand, the NPNCA had already determined that planning focus

should be put on the National Park from a strategic point of view, within the context of north-west corridor structure planning, and statutory planning by the WA Planning Commission and the Ministry for Planning.

Strategic planning for Neerabup was a special topic at the NPNCA's April 1995 meeting, to which CALM's Swan District Manager, Allan Briggs was also invited.

A highly informative presentation on planning background, constraints and future direction was given by Ministry of Planning official Neil Foley.

The NPNCA now seeks a summary document from the Ministry, setting out directions and commitments for strategic planning involving Neerabup National Park—including the south-east extension.

It sees that some statutory planning and land acquisition proposals are of utmost urgency, and it will be advising the Minister for the Environment on this.

LETTERS...LETTERS...LETTERS...LETTERS

THE following is a copy sent to CALM of a letter addressed to the Publicity Officer, WA Tourism Commission in Perth.

Dear Sir,
From May 2 to 20 I conducted a personally arranged tour of eight people in a custom-designed itinerary from Kununurra to Broome,

largely based on the excellent brochure *Discover the Wild Kimberley—Ibis Aerial Highway*.

During the period, we used Alligator Airways, Slingair, Derby Air Services and Heliwork, plus stopovers at El Questro, Mt Elizabeth and Mt Hart Stations in addition to four-wheel-drive sectors and the trips on Lake Argyle and Ord River.

It was truly an amazing journey, which everyone thoroughly enjoyed as one of their most memorable experiences. An essential part of the planning was derived from the *Discover the Wild Kimberley* brochure. Congratulations to its compilers.

I expanded some of the brochure routes; with

more than 400 photographs taken by me.

I have had a special album made and seek an appropriate cover for it.

One idea was the small Ibis Aerial Highway sticker seen on some CALM vehicles and the dining wall at Mt Hart.

Taffy Abbotts (Mt Hart Station) suggested I call the Kimberley Tourist Association at Broome to obtain one. After a lengthy chat on the tour, facilities and potential, the lady said she would get CALM to send me one. Nothing has happened. Is it possible you could mail me one?

Roy Dallimore, Camberwell, Vic.
A sticker has been sent to Mr Dallimore from CALM's Broome office.

Forest care

Continued from page 1

Wayne Kitson, a forest workman at Pemberton, has worked in the southern jarrah and karri forest operations for 21 years.

CALM overseer at Manjimup, Peter Rado, has 30 years experience in the southern jarrah and karri forest operations.

Rod Simmonds, senior forester at Manjimup, has 26 years experience in the establishment of pine as well as southern jarrah and karri forest management.

Robert Buckley is CALM's overseer at Nanup. He has 23 years experience in pine and jarrah forest operations.

Tom Gillard, overseer at Busselton, has worked in pine and jarrah forest operations for 25 years.

John Kruger is a forester at Bunbury and has been involved in research and forest operations for 27 years.

Max Rutherford, also a Bunbury forester, has 40 years experience in pine and hardwood management, in the Collier area.

Tom Wood is CALM

overseer at Harvey and has 21 years experience in pine and jarrah forest operations.

CALM's overseer at Dwellingup, Barry Ashcroft, has 33 years experience in forest operations, tending and protection.

Max Bending is overseer at Mundaring with 32 years experience in forest operation including pine establishment and hardwood planting.

Jarrahdale overseer, Mick Golding, has 30 years experience in forest operations, first at Pemberton and recently at Jarrahdale.

Glynn Hughes is overseer at Perth district and has worked for CALM for 12 years at its Woodvale Research Centre, Woodman Point and Wanneroo, working on research projects, recreation management, rehabilitation work and pine operations.

Les Robson is a forester at Swan region, Kelmscott, and has 40 years experience in forest management and more recently in nature conservation.

Farm trees

Continued from page 1

It is expected total plantings could reach 20 000 ha in the next 10 years."

In the Wheatbelt, where the low rainfall made it unsuitable for growing short-rotation timber crops, many native oil-producing mallees thrived. CALM is evaluating their farm forestry potential in a series of commercial scale plantings at six centres.

The mallees not only provide landcare benefits, but with further development of harvesting and oil-extraction techniques, they may become a viable crop which could help offset the cost of landcare programs.

About 2500 ha will be planted this winter, bringing total plantings

to 3500 ha. The aim is to have 30 000 ha under oil mallees by 1998.

CALM will regenerate almost 3500 ha of cutover native forest and State-owned pine plantations.

More than 4 million karri and 2.3 million pine seedlings will be planted this winter as part of CALM's forest management operations.

The Department also will plant seedlings in former log landings and gravel pits as part of its reafforestation program.

While karri was the main native hardwood species planted, jarrah, marri, blackbutt and forest understorey species also will be used.

This year, CALM's plant propagation centres will produce 18 million seedlings.

New unit

Continued from page 1
ism, both will develop far more strongly than if they are allowed to evolve in isolation," he said.

"The reality is that our native wildlife will attract international tourists, and the income generated will pay for wildlife conservation programs."

Dr Shea said WA's animals, plants, ecosystems

and landscapes were the State's greatest natural advantages.

"Each of them is essentially sustainable for generations to come," he said.

"However, unless there is careful management to underpin this sustainability, we will lose these advantages and lose the benefits they can generate for us."

CALM NEWS — JUNE - JULY 1995

Managing Editor: Ron Kawallak
Editors: Verna Costello, Nigel Higgs
Contributing Editors: David Gough

Design, Layout and Production: Sandra Van Brugge

Published by CALM Corporate Relations Division, Cygnet Hall, (cnr) Mounts Bay Road & Hackett Drive, CRAWLEY, Western Australia 6009
Telephone: (09) 389 8644 Facsimile: (09) 389 8296

Story deadline for CALM NEWS is the 10th of the month preceding the month of issue. Printed by Lamb Print.

PRINTED ON 100% RECYCLED PAPER

CALM Classified

THIS column is divided into sections dealing with 'for hire', 'for sale', 'surplus equipment', 'swap', or 'wanted'. If you have any equipment or requirement that you wish to advertise through this service, please send or fax typewritten details to: The Editor, CALM NEWS, Corporate Relations Division

FOR SALE

Phone Robyn or Barb at Dwellingup Science and Information Division on (09) 538 1105 for the

following: Bradford gold insulation batts, 19 packs of eight, 4.5 sq. metre coverage per pack, R2.5 insulation rate, \$25 per pack.

Forest stewardship recognised on Arbor Day



Wally Dunnett (recently retired after 44 years with CALM) is presented with his Certificate of Appreciation by Environment Minister Peter Foss and Mrs Jo Court. Photo by Ken Matts



Principal research scientist John Bartle keeps a kindly eye on Adrian Winfield as he digs a hole for the tree Environment Minister Peter Foss is waiting to plant. Adrian's friends Greg Dempster and Carl Janeks look on with Mrs Jo Court and daughter Emma. Photo by Ken Matts

Quokkas alive and flourishing at Jarrahdale

QUOKKAS are not common on the mainland—at least not yet—but recent trapping by CALM staff has shown that a healthy population exists at Jarrahdale. This is the most northerly yet trapped on the mainland.

The quokkas were found by senior technical officer Rob Buehrig, who recently retired from CALM, in an unused patch of swamp within an Alcoa mine site, where bauxite mining had continued up to 1994. During mining operations, Alcoa personnel periodically reported seeing quokkas scampering across haul roads at night.

Rob had undertaken two weeks of trapping at the mine site, liaising with Alcoa consultant Owen Nichols and environmental field officer Larry Hantler. Two male and two female quokkas were caught, along with a

number of mardos (small marsupial carnivores) and quendas (southern brown bandicoots). One female quokka had a month-old joey.

Many people believe that quokkas occur only on Rottnest Island, although scientific records and old-timers confirm they were once widespread on the mainland, as far north as Mundaring.

CALM senior technical officer Mick Dillon, who has trapped and radio-tracked quokkas in and around Dwellingup for three years, says mainland quokkas now live in dense vegetation, typically found in swampy places.

"They've been known to occur in swamps around Dwellingup for more than 25 years," Mick said.

"They have also been seen around Collie, Harvey, Pemberton, Walpole and Bald Island, off the coast east of Albany."

At Jarrahdale, the quokkas' tunnel-like runs push through seemingly impenetrable stands of cutgrass, sawgrass and fine round grasses. Rob Buehrig says that this habitat may be a significant factor contributing to their survival.

"Densely grassed swamp areas would be difficult for foxes to penetrate," Rob said.

"Wildfires, however, do pose a serious threat to quokkas, as they destroy the protective vegetation and render them more susceptible to fox predation."

Rob has been involved in quokka trapping at both Jarrahdale and Dwellingup and says it is like a fishing trip—you never know what you might catch.

"Trap locations are carefully selected, and after several days of pre-baiting, trapping begins," Rob said.

"When baiting with apples we can catch an odd array of animals including bandicoots, mardos, rats, chuditch, feral cats—even the occasional raven."

After capture, quokkas are weighed, measured and tagged for future identification. Blood samples are then taken by Elizabeth Sinclair, a doctoral candidate at the University of Western Australia.

Elizabeth is studying quokkas from Rottnest and Bald Islands and comparing them with their mainland relatives. (Incidentally, it was while trapping for quokkas on the south coast that Elizabeth rediscovered Gilbert's potaroo—see *LANDSCOPE*, Autumn 1995.)

Using DNA and blood protein analysis, she hopes to determine relationships between populations—knowledge that will be useful in wildlife management.



Elizabeth Sinclair with a Jarrahdale quokka.



Goldfields region ecologist Andy Chapman with black-footed rock-wallaby. Photo by Grant Pronk

Wallabies gain from baiting

by Grant Pronk

CALM scientists and managers have recently launched a new program aimed at increasing and safeguarding a population of black-footed rock-wallabies (*Petrogale lateralis*) located at the Townsend Ridges, 50 km south-east of Warburton.

The black-footed rock-wallaby was once widespread and common in rocky hills and ranges in arid parts of Australia. (Previous work by Dr Mark Eldridge of the Macquarie University has indicated the Townsend Ridges population might be a distinct chromosomal race).

Explorers frequently have reported large numbers of rock wallabies in the rocky ranges they visited. For instance,

Finlayson noted between 1932-1935 that in central Australia, "... it was one of the commonest mammals ... with swarming populations in many of the rocky outliers of the main ranges."

Today, the WA populations of rock-wallabies are far from swarming, with population locations and field sightings rare.

Their demise is thought to have been caused, principally, by fox and feral cat predation.

A small CALM team, led by senior research scientist David Pearson, recently worked with the Warburton Aboriginal Community at Townsend Ridges to locate populations of rock-wallabies.

This was achieved by looking for fresh droppings. Areas giving evidence of recent rock-wallaby habitation were then targeted for further investigation.

Bromilow traps baited with apple were set in these areas with encouraging results. Four healthy rock wallabies were caught, including an adult female with a joey.

This indicated that the habitat was serving them well, and lends further weight to the theory that rock wallaby population numbers have dropped largely because of predation by feral foxes and cats.

The second phase of the program was to bait for foxes, around these rock-wallaby habitats, using fresh meat impregnated

with 1080 at specific locations that could be easily checked.

Members of the Warburton Aboriginal Community attended a 1080-use and safety training course run by the Agricultural Protection Board, with the intention of the community running the baiting program on a contract basis.

Results are encouraging, with fox tracks identified by the contractors being associated with numerous 'taken' baits.

It is hoped that continual baiting and monitoring by the Warburton Aboriginal Community and CALM should see a resurgence in population numbers of this remarkable animal in the Townsend Ridges.

CALM's tenth anniversary - 100

Ten years of technology

by David Gough

WHAT effects have the technological advances of the last decade had on the day-to-day work of CALM employees? Here, some staff members reflect on how they have been able to do their jobs more efficiently and effectively, thanks to such advances.

"It's important to remember that CALM always has been application-driven rather than technology driven," says Information Management Branch Manager Peter Bowen.

"If there are few or no substantial timesaving or quality gains to be made by using new technologies, they invariably stay on the distributors' shelves.

"With such a vast estate, it is important for CALM to maintain a consistent and reliable knowledge base of property boundary registration and tenure records. This has led to the development of the CALM Tenure Information System (TENIS).

"Records are now held in a comprehensive database that is accessible by CALM staff and provided to other agencies," said Peter.

As an outcome of this format for storing data, much of the information required to produce both general purpose and customised maps is available almost at the press of a key.

The 'new look' CALM 1:50 000 Land Management Series maps are being produced using this tenure data together with other geographic data using computer-assisted map-publishing technologies.

Cost and time savings

"Once the data is in hand, significant cost and time savings are provided through the use of these technologies," Peter said.

"Consistency of information also is provided, as the same data is used in multiple applications for planning, management and integration with other agencies."

Global Positioning Systems (GPS), using satellites, have revolutionised plotting and mapping work within CALM.

For example, staff can now accurately locate the boundaries of national parks to within a few metres, pinpoint fires with spotter aircraft and plot the exact locations of rare plant populations and, moreover, find their way back there again.

Equally, staff from CALM's Science and Information Division can use GPS equipment when

setting up long-term monitoring sites in areas like the Great Sandy Desert. The sites can be left unattended for several years and then accurately relocated to retrieve the data.

Vital data collection

They can also now take powerful laptop computers into the field and begin processing data as soon as it is collected, or even begin writing reports at the end of each day's work.

Handheld data-recorders are another tool helping field officers in the collection and processing of vital scientific data.

Values once were written in a notebook and later keyed into a computer for processing. Now they are entered, via a keypad, directly into a compact data-recorder and then downloaded to a computer for processing back at the office.

Calculations now can be made and tables printed out in a fraction of the time it used to take, and visual presentations of the processed data can be prepared quickly using the graphing options provided in the same software package.

For more than 30 years, radio-tracking has been an integral part of understanding how and where native animals live. Radio collars (transmitters) are fitted to the animals, and receivers are used to track their movements through the bush.

Early versions, using transistor technology and bulky batteries, weighed several grams, whereas the latest versions, using microchips and tiny hearing-aid-type batteries, can weigh a mere half-a-gram or less.

As radio collars became more compact, the movements of smaller and smaller animals could be tracked. However, the smaller the unit, the smaller the batteries, and the shorter the battery life. However, improvements in battery technologies are already addressing this problem.

Another important use of radio-tracking is to check the survival of animals during translocation programs and the like. Newly developed collars have a feature to help indicate whether or not the animal is still alive.



Payroll officer Cheryl Leonard (standing) and data processing supervisor Kerry Ruddick wonder what kind of gargantuan appetite of technology at CALM continues to swallow more and more complex tasks. Photo by Verna Costello

An interesting story from CALM research scientist Paul de Tores relates to the tracking of a woylie, which suddenly seemed to have become much less mobile.

The woylie had, in fact, been swallowed (radio collar and all) by a python, which was sleeping off its meal in a log.

"We had to operate to remove the radio collar," said Paul.

Snake and radio doing well

"Fortunately, the snake survived the operation and the radio collar was still working."

Senior research scientist David Pearson's work

with snakes has also benefited from advances in radio tracking technology.

"One of the problems we have with snakes is that they don't have a neck, so it was impossible to attach a radio collar," said David,

"But recently, very small transmitters have been developed that can be implanted into a snake's body.

"They have to be encapsulated in a material that can withstand body fluids, but which will not harm the snake.

These transmitters are temperature-sensitive and emit a variable pulse rate, depending on the temperature of the snake.

"This means we now can accurately determine the snake's temperature, without disturbing it, even when it is up a tree or hidden in a log," said David.

Fingering the felons

DNA fingerprinting—a technique much used in forensic science—has been put to good use in wildlife management.

The award-winning article 'To Catch a Thief' (LANDSCOPE, Winter 1992 issue) by CALM's David Mell and Curtin University's John Wetherall exposed a scam operated by a small number of unscrupulous bird breeders who were stealing eggs and hatchlings from the wild, while claiming they were bred in captivity.

"The DNA fingerprinting technique showed that in all, except one case, the young birds were in no way related to the adult captive birds," said David.

Ultrasound technologies

The recovery of the western swamp tortoise owes much to the development of ultrasound scanning technologies.

One of the problems in producing viable young was pinpointing the time the tortoises became fertile.

But the same technology that provided obstetricians with a tool to examine the human foetus in situ, also enabled Gerald Kuchling of UWA to examine western swamp tortoises for egg production, thereby enabling the successful fertilisation and hatching of young tortoises. These young have since been released into the wild at the Ellen Brook Nature Reserve.

Databases of the State's declared rare flora are held at CALM's Wildlife Branch, and work is already under way to complete a database of rare fauna.

The information contained in these databases is invaluable to botanists and zoologists as well as wildlife officers and researchers.

Staff at the WA Herbarium have developed sophisticated interactive databases to help with the identification of plant species. Shortwave radio communication has been with us for almost a

century, but communication over enabled a high cation.

old world telephony.

The technical by CALM staff.

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Checking an Operation Foxglove map at a computerised inkjet colour plotter is project leader Phil Poole, left, with project manager Roy Fieldgate. Photo by Verna Costello

- looking back ... and forward ...



wonder what kind of work they might be doing next if the more complex tasks. Photo by Verna Costello



Database operator Kaye Veryard uses a digitizer to validate the distributional data of some of the 350 000 entries in CALM's WA Herbarium specimen database. Photo by Donna Swan.

ances in century, but the advancements in digital communication over the HF, VHF and UHF bands have enabled a highly sophisticated level of communication.

World worker can now contact anyone in the world by telephone from an HF transceiver in their vehicle.

The technology also exists to send faxes and data via HF radio—although this is not yet used in by CALM staff.

The local area networks (LANs) have now been introduced into several locations within CALM, and these allow for the sharing of resources and information within an administration or research environment.

As the wide area network (WAN) expands to take in offices throughout the State, more rapid information exchange between the various divisions, branches and offices in different locations will become possible.

Computer-based electronic mail (E-mail) allows messages to be sent from one individual computer to another or, at the other end of the scale, to all the computers connected to the WAN.

But E-mail is not just for sending notes to one another; entire data files, documents, graphics and even moving images and sound can be sent through such systems.

New CONCEPT in accounts

Ten years ago, Cheryl Leonard was a drafting assistant. Then, she researched, drew by hand, coloured and lettered maps. Now, all of these tasks are done out by computers, so for the past two years she has been a payroll officer in Finance Branch and in that time has seen the introduction of CONCEPT, which has helped streamline the department's accounting procedures.

"Before CONCEPT was introduced, Human Resources would inform me of all salary variations," Cheryl said.

"I would manually calculate annual leave loadings, higher duties and temporary special allowances, increment arrears and overtime payments.

"Now, CONCEPT does these tasks, automatically calculating payments directly from Human Resources Branch input.

"It's just as well, because I now have more time to input overtime and fire duties payments, which seem to have doubled overnight."

Data processing supervisor Kelly Ruddick joined CALM's Finance Branch in 1985.

"In those far-off days we used an old-fashioned general ledger machine to record and update salaries' information for employees' pays. CONCEPT now takes care of it," Kelly said.

"Manual calculations of log book folios for mill intakes are now automatically processed by a relatively new kid on the block called LOIS (Logging Operations Information System).

"And the Government Accounting System (GAS) enables cheques to be processed automatically for urgent payments. In the past, cash orders had to be hand-written."

Word processing

Perhaps the single most important development in the office environment has been the desktop computer and with it, the word processor.

Kerry Carmichael from Crawley can well remember the many hours spent typing and retyping reports—armed with drawers full of Tipp-Ex, correcting ribbons and carbon paper. Fortunately, such encumbrances are well and truly things of the past.

"We used to have to type a draft copy, which was passed back to the author for checking, then retyped and circulated for internal review and then typed again and submitted to a scientific journal. Referees' comments usually required further changes to the text, and the report invariably had to be retyped a third time," said Kerry.

Even the most humble word processors brought with them a certain freedom to rethink or correct whole passages of reports and to rearrange documents into the required format.

More up-to-date versions now allow users to layout pages and see how they will look when printed, edit for spelling and grammar, choose a variety of typefaces, add formulae, photographs, graphs or illustrations and produce complex tables, all before hitting the print key.

"And when you do print," says Kerry, "each copy is as clear and crisp as the first one—not like the old carbon copies!"

Desktop publishing

A major extension of word processors has been the introduction of true desktop publishing (DTP) programs.

In skilled hands, these very powerful pieces of software can transform the written word into a high quality, attractive publication.

Together with LANDSCOPE magazine, the CALM NEWS you are reading, all CALM leaflets, brochures, booklets and saleable publications are produced using DTP.

Other graphics software provides users with the ability to draw or scan and manipulate illustrations and photographs, create or customise type styles, or scan whole pages of text directly into a word processor instead of having to retype them.

Presentation software can be used to prepare professional looking 'slides' for overhead projectors. Gone are the coloured pens and rolls of acetate.

The developments in video projectors will see staff able to mix live video and digitally-recorded sound with computer text and graphics to provide a dynamic audio-visual presentation. Such technology provides a powerfully persuasive tool for

those who influence decisions.

Fax machines have been around, in various forms, for a little more than a decade, but their popularity has grown rapidly in the past five years.

Text and images can be sent from one site to another for the cost of a telephone call and in a fraction of the time it takes by post.

The ability to check, confirm and disseminate information in a very short time makes this humble piece of office equipment an invaluable part of today's workplaces.

Fire maps can be sent from the fire scene to

CALMfire at Como and decisions made about the utilisation of resources in much shorter times, "and time is of the utmost importance when fighting fires," said CALMfire manager Rick Sneeuwjagt.

So, those are just a few examples of how the technological advances of the past ten years are helping CALM staff in their day-to-day jobs.

Some of these advances have become very much a way of life, others have uses still to be exploited. But who knows what will happen in the next ten years?



Technical officer Neil Thomas uses a Majellan Global Positioning System to locate, via satellite, the position of the malleefowl mound in left foreground. Photo by Tony Friend

Business units show real growth

CALM's Plantations Group will mark its first anniversary with record plantings this winter. (See page 1.)

Plantations Group Manager Gary Inions said CALM would plant 7000 hectares on farmland in the next few months and another 1500 hectares on second rotation pine sites.

This will increase the current plantation estate of 90 980 hectares by nearly eight per cent.

The Plantations Group was formed in mid-1994, bringing together management of the State's softwood and hardwood plantations, the Plant Propagation Centre at Manjimup and the former Vegetation and Tree

Planting Advisory Service (VATPAS).

This reorganisation addressed the commercial management of the State's plantations, in line with the recommendations of the McCarrey Commission, as well as CALM's social obligations to provide quality advice to landowners

about trees on farms.

The new structure now includes the Softwood Plantations Business Unit, headed by John Kaye; the Hardwood Plantations Business Unit, headed by Gavin Ellis; the Propagation Unit, headed by Peter Young; and the Farm Forestry Unit, headed by John Bartle.

These semi-autonomous business units are directed by a management team, which includes the group manager, administrative support staff, a projects officer and two technical advisers.

"In 12 months we've set up the new structure, (including a new system for financial man-

agement), launched Pine Sharefarms and the Farm Forestry Unit and negotiated new plantings with potential investors," Gary said.

"Pine Sharefarms will oversee a \$3 million dollar, three-year project to establish pine plantations on the sandplains north of Perth.

"CALM's goal is to plant 5000 hectares of already cleared farmland in sharefarming partnerships and to attract private sector investment for even larger plantings.

"The Farm Forestry Unit has been formed to create a new focus on commercial tree crops and our advisory service to landowners.

"We also hope to be able to make a major announcement shortly regarding future projects.

"Negotiations are continuing, and if successful, will lead to a third agency agreement between CALM and overseas investors."

There are more than one million ha of already cleared agricultural land in the South-West of Western Australia where it would be possible to grow commercial tree crops.

CALM estimates that tree-planting projects across the South-West have the potential to generate \$500 000 000 of export income per annum by early next century.

Plans for the next 12 months include implementing the new accounting system; the sale of non-productive assets and a management review to assess the efficiency of the new structure.



Hand hoeing pinaster seedlings are, left to right, Bev Pollitt, Claire Mark and Carol Paterson. Photo by Jiri Lochman

Collie tree bill before State Parliament

THE three millionth seedling in a project to improve water quality in the Wellington catchment will be planted this winter.

In a joint statement, Environment Minister Peter Foss and Resources Development Minister Colin Barnett said the \$30 million project combined both environmental and economic goals.

"The bluegum plantations being established by CALM are commercial crops that will create an additional source of income for landowners," Mr Barnett said.

"Plantation establishment and management will involve an investment of more than \$30 million over 20 years and a further expenditure of \$10 million per annum after year 10, when harvesting begins."

The project is being funded by Hansol Australia, a subsidiary of the major Korean forest products company, Hansol Forest Products. The wood fibre from the harvested trees will be exported to Korea to be made into paper.

Mr Foss said the company surveyed nearly a dozen other tree growing regions around the world before deciding to invest in Western Australia.

"Their choice illustrates the growing recognition by major international investors of the technical skills developed by

CALM in growing bluegums, as well as the exciting potential of the south-west region for fast growing, high quality pulpwood production.

"Hansol is committed to establishing 10 000 hectares of bluegums in the Collie region over the decade to 2003 and has appointed CALM as their managers."

A bill to ratify this agreement has now been introduced into State Parliament by Mr Barnett.

"The Collie Hardwood Plantation Agreement Bill has been drafted to give Hansol the necessary assurances for the long term development of bluegum plantations in the Collie region and the export of pulpwood," Mr Barnett said.

"The bill contains similar provisions to the Albany Hardwood Plantation Agreement Act of 1993, which covers the 20 000 hectare bluegum project underway in the Albany region.

"More than 1500 hectares of bluegums have already been established under the Hansol project, including 500 hectares planted in 1993 on SECWA land at Collie.

"Another 1000 hectares are expected to be planted on already cleared farmland this winter, bringing the total number of seedlings planted to more than three million.

"The majority of plantings will be undertaken in partnership with local landowners through CALM's sharefarming scheme."

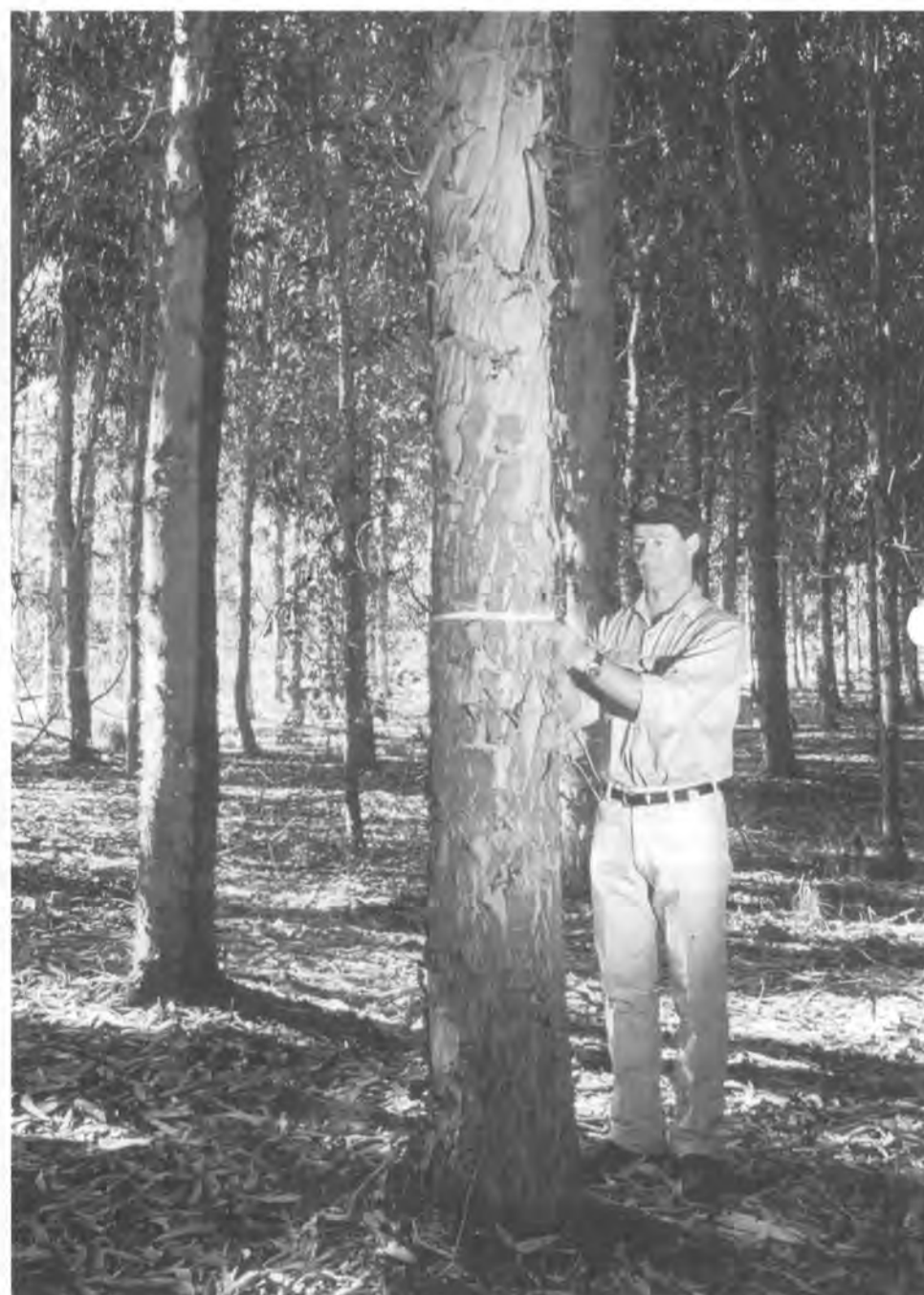
Mr Foss said the project would deliver significant economic and environmental benefits to participating landowners and to the State as a whole. As well as boosting farm income, bluegums on already cleared farmland would provide substantial land care benefits by:

- ♦ improving crop and pastoral production by creating windbreaks and shelter belts;
- ♦ reducing soil erosion by controlling surface water runoff; and
- ♦ lowering ground water levels, in turn reducing surface salt contamination and salinity in streams.

The project would also play a significant role in reducing the high salinity levels in the Wellington catchment area and the Wellington Dam itself.

Mr Barnett said the plantations would bring economic advantages not only to landowners growing trees, but to the whole local economy.

"Jobs will be created through CALM's use of subcontractors to perform most of the operations. In this way, the majority of Hansol's investment will flow directly to the local community."



Checking the growth of eight-year-old bluegums is South Coast Sharefarms field manager Mark Giblett. Photo by Jiri Lochman



Plant Propagation Business Unit Manager Peter Young. Photo by Jiri Lochman

Operations impress new nursery manager

MEET Plant Propagation Business Unit Manager Peter Young. Peter recently arrived in Manjimup from South Africa to take up the position and, together with CALM's Plant Propagation Centre staff, has just completed a review of the Centre.

"I am impressed with the way the nursery is run and the quality of both the softwood and hardwood seedlings grown," Peter said.

"The Centre produces genetically improved stock in a technologically advanced operation that is backed by research.

"We can't forget, though, that competition is increasing and we must work to maintain existing customers and to expand our customer base wherever possible so the nursery remains viable.

"I want to meet all existing customers, to discuss their needs and to develop contacts

with other forestry seedling users, as the basis for preparing an improved marketing strategy.

"The nursery industry is one that evolves fairly rapidly, and a successful nursery should be involved in continuing research and should keep abreast of new developments by maintaining contact with as many similar operations as possible."

Peter is also examining possible improvements to seedling production highlighted by the review.

These include erecting tables on which to raise karri seedlings, (currently grown on pallets on the ground) the introduction of tree growing from cuttings, further research into germination rates and growing some pine species in containers.

The 202-hectare Plant Propagation Centre is one of the biggest facilities of its

kind in the southern hemisphere, with the capacity to produce 24 million seedlings a year.

Peter was born in Zimbabwe and after acquiring a diploma in agriculture, he farmed for 10 years, growing tobacco, maize, seed maize, soya beans, wheat and coffee. He also raised beef cattle.

He has lived in South Africa for the past 11 years, where he worked as a nursery manager for Sappi Forests, which managed 450 000 hectares of plantations.

The nurseries department had the capacity to produce 40 million containerised seedlings per annum.

Peter is married to Mary and they are the proud parents of Ian, aged nine years, and Connor, aged seven.

Peter tells us he knew all along that the Springboks would win the 1995 Rugby World Cup.

Record sales from pine plantations

THE volume of pine logs sold from CALM plantations this financial year is expected to be 18 per cent higher than last year's record figure.

Sales in sawlogs, veneer and other industrial wood are predicted to total 599 000 cubic metres of timber, worth \$27.9 million.

This figure is an increase of 90 000 cubic metres from 1993-94 and will earn CALM about \$13.2 million in stumpage and \$1.5 million for in-forest roading and administration charges. The remaining \$13.2 million will meet contractor production and delivery costs.

CALM also provides a management and harvesting service to private growers and this year will cut about 36 000 cubic

metres of wood, earning the Department about \$60 000 in additional revenue.

Sales have been increasing since 1990-91 and, as the table below shows, the strongest rise has been in the higher value sawlogs and veneer wood.

"The increase in sales has been driven by domestic demand, together with a worldwide increase in demand for softwood products," said John Kaye, manager of CALM's Softwood Plantations Business Unit.

"Our industrial wood sales went up as Wesfi's medium density fibre plant at Kewdale came into production in 1991-92, then in 1992 sawlogs sold to Wespine began to increase in accordance with the Dardanup Pine Log Sawmill Agreement

Act of that year.

"Western Pine Associates at Greenbushes also began taking sawlogs in 1992-93, under their contract of sale.

"This year's good result is a credit to the dedication and efficiency of the Business Unit staff and I believe we are now well equipped to capitalise on bullish market expectations."

John said revenue from the softwood estate was expected to continue to rise each year to 2010 when Wespine's sawmill reached full production.

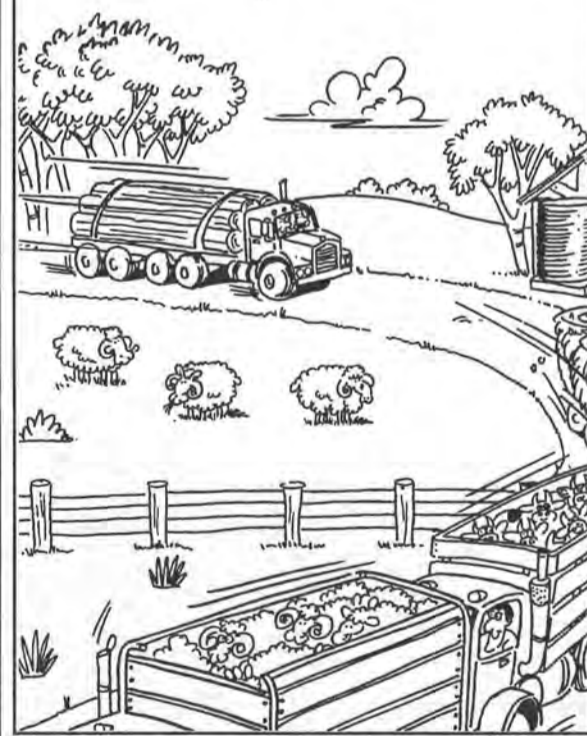
He said the total volume of pine products sold was expected to reach as much as 900 000 cubic metres per annum by the YEAR 2010. More than half of this total, or about 550 000 cubic metres, was expected to be high value sawlogs.

Production from CALM-owned plantations (M³ x 1000)

	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95*
Sawlogs & Veneer	121	93	101	133	185	246
Other (industrial wood)	191	208	262	279	324	253
Total	312	301	363	412	509	599
Total Revenue (x \$1000)	12 564	11 058	15 218	18 221	22 365	27 900

* estimates only

Grow with farm forestry



A new service has been set up to provide independent advice to landowners interested in tree crops.

The new Farm Forestry Unit replaces CALM's Vegetation and Tree Planting Advisory Service (VATPAS) that pioneered the oil mallee project.

The new unit brings together former advisory service staff and three of CALM's most experienced farm foresters including prominent researcher Richard Moore, based at CALM's Busselton research facility.

It will increase the focus on producing trees with environment and commercial benefits and provide advice to the rural community on all aspects of trees on farms.

Environment Minister Peter Foss, launched the new unit, and promotional brochure, shown left, on Arbor Day.

The unit's main activities will be to develop new tree crop species and technology, as well as providing technical support to farmers to implement innovative farm forestry plans. It also will co-ordinate activities with other extension agencies and farm management advisers as well as establish demonstration farms to promote farm forestry.

It is being headed by John Bartle with officers based in six centres throughout the agricultural areas and at CALM's State Operations Headquarters in Como.

Computers take the measure of CALM pines

THE vital statistics of pine trees, higher mathematics and computer programming are being combined in a 12 month-project by CALM's Forest Management Branch on behalf of the Plantations Group.

Martin Rayner, from FMB Manjimup, said the aim of the project was to improve growth and yield predictions about

CALM's pine plantations by producing a new computer model.

"Growth models are an integral part of our timber planning for all species and various models have been developed and used in the past," Martin said.

"The older pine models were developed in the 1970s, though, and need major revision

to give a better representation of the changes in site, genetic stock and management practices which CALM has introduced.

"A new model will improve our capacity to predict the consequences of changes to silvicultural practices on future timber supplies.

"This information is vital for the Softwood Plantations

Business Unit so they can examine industry supply scenarios and plan operations and forward budgets."

The new pine growth model is a joint project between FMB staff at Kelmscott, Bunbury and Manjimup and Science and Information staff at Como and Busselton.

Pine growth data collected

over 30 years from experiments and resource inventories is to be evaluated and added to by three teams of FMB assessors who are currently measuring pines across the CALM plantation estate.

These data bases will then be used to develop and validate the new computer model.

"The challenge is to integrate the many person-years of tree measurement and assessment already collected with all the new data being gathered, in a way that gives us a faithful mathematical representation," Martin said.

"As always, the mathematics must be tempered by our understanding of the biology of the species."

New plan to help disabled visitors

by Penny Walsh

A small steering group chaired by Dr John Byrne is currently preparing a Disability Service Plan for the Department of Conservation and Land Management.

The Disability Service Plan (DSP) will be a simple, easy to read document which outlines how CALM aims to help people with disabilities and their carers gain access to its services and facilities.

Ultimately, DSPs are designed to ensure that people with disabilities can more effectively contribute to the social, economic and community development of Western Australia.

Along with Dr John Byrne, other steering group members working on formulation of the DSP include Pippa Daly-Smith of the Disability Services Commission and Ron Kawalilak, Alan Scott and Wayne Schmidt of CALM.

The group needs to ensure that the Department has lodged a plan with the Disability Services Commission by the end of 1995 and that it addresses the following issues:

- 1) Adapting existing services to ensure they meet the needs of customers with disabilities.
- 2) Improving access to CALM buildings and facilities.
- 3) Providing information about CALM services and programs in formats which enhance communication.
- 4) Delivering advice and services via staff who are aware of and understand the needs of customers with disabilities.
- 5) Providing opportunities for people with disabilities to participate in public consultations, grievance mechanisms and decision making processes.
- 6) Providing and maintaining equal employment opportunities for people with disabilities within CALM.

Steering group member Wayne Schmidt stressed that CALM had already demonstrated a commitment to providing for the needs of people with disabilities.

"Since our formation in 1985, we have tried to improve public access and upgrade or provide new visitor facilities and services suitable for use by all members of the community including people with physical and intellectual disabilities," he said.

"Owing to the size, remoteness and ruggedness of many of our national parks, State forest areas and other reserves, this is not an easy undertaking.

"The Department has made considerable progress and a significant number of recreation des-

tinations throughout the State now have wheelchair accessible facilities such as toilets, parking areas, walkways and trails."

The Department's Recreation, Tourism and Visitor Services policy makes specific provision in planning and development of recreation opportunities for people with disabilities.

Operations staff have, for the past seven years, received training in providing for the needs of people with disabilities as part of CALM's recreation planning and management course.

"CALM has also actively sought to provide job opportunities for people with disabilities, and employs people with a wide range of disabilities at all levels of the organisation," said Wayne.

"As an equal-opportunity employer, the Department will continue to recognise the need for people with disabilities to be considered on merit in applications for employment, training and promotion and will continue to redesign jobs and facilities as required to remove barriers to employment and promotion."

With the assistance of staff in the Department, the steering group wants to prepare a draft plan for release in September.

The steering group would welcome any ideas or suggestions you may have concerning the six key outcomes as outlined, or other comments regarding the Disability Service Plan's content, preparation and implementation. These should be forwarded to John Byrne at Como.



Four gold medals won by LANDSCOPE in the 12th National Print Awards are held by (left to right) Don Lamb of Lamb Print WA, CALM graphic designers Maria Duthie and Sue Marais, and Director of CALM Corporate Relations Division Ron Kawalilak. Photo by Con Macarlinio

Four gold medals to CALM

LANDSCOPE proved best in its class at the recent 12th National Print Awards in Sydney, NSW.

CALM's flagship publication beat dozens of other Australian magazines and was awarded four gold medals for the

four issues published in 1994. Australian Geographic received one gold medal in the competition.

The awards were given for excellence in design, pre-production and printing and mean automatic entry for

LANDSCOPE later this year in the international Printing Industry of America competition in the United States.

CALM graphic designers Sue Marais, Maria Duthie and Stacey Strickland (now working in Sydney) also received

gold medals and certificates for their work.

The highly-coveted Heidelberg Australia Award of Excellence, chosen from all entries in the National Print Awards, was presented to Lamb Print WA for their work on LANDSCOPE.

A new course in farm forestry

A post-graduate certificate course in farm forestry recently conducted in Busselton by CALM has attracted wide interest.

The course is being coordinated through Melbourne University's School of Forestry, and provides training for extension advisers, leading landholders and others involved in the development of farm forestry.

By Richard Moore

The Federal Government's Farm Forestry Program is funding the course in five States.

The course is run in three short sessions over nine months. The first was run in Narrogin for five days and concentrated on the role of trees in the sustainable man-

agement of farmland. Topics included trees for control of salination and erosion and for improving agricultural production through shelter.

Armed with this information, participants undertook project work to outline how trees could be used to tackle land-use issues in a catchment of their choice.

Session Two was held in Busselton over five days

and concentrated on aspects of integrating commercial tree growing with farming; tree products and their markets, management requirements, costs, returns, harvesting and processing.

There were more than 30 presenters, mainly from industry and agencies in Western Australia, but also from interstate including Prof. Ian Ferguson from Melbourne

University and Dr Gary Waugh from the CSIRO's Division of Forest Products in Melbourne.

The final two-day session will be held in August and will tackle a major project—the development of a farm forestry plan for a catchment yet to be selected.

The course has attracted wide interest and plans are being made to establish it on a regular basis in WA.



Participants in the National Farm Forestry Course, Busselton. Left to right, Rick Giles (CALM Dwellingup), Peter Steven (Agriculture Victoria), Wayne Burton (CALM, Esperance), Ned Crossley (Department of Agriculture, Narrogin), Volker Mischker (Greening WA, Esperance), Rod Short (Department of Agriculture, Esperance), John Platt (Esperance Land Conservation District Committee), Arthur Lyons (Department of Conservation and Natural Resources, Melbourne), Bill Russell (Department of Agriculture, Bunbury), David Jenkins (Bridgetown farmer), Rowan Reid (Course Co-ordinator, Melbourne University), Rob Johnstone (South East Forests Foundation, Esperance), Richard Moore and Bob Hingston (CALM, Busselton), Theo Nabben (Department of Agriculture, Bunbury), Peter Coffey (Kojonup farmer), John Winchcombe (CALM, Busselton), and Martine Scheltema (Greening WA, Perth). Photo by Peter Eckersley

How's your health?

by Linda Gilbert

IT is time to get into training for the annual City to Surf Fun Run which takes place on Sunday August 27.

If you have never run or walked this 12-kilometre course, why not try it—make this the year to get serious about getting fit and thoroughly enjoy yourself in the process.

To ensure you do enjoy it as well as gain that wonderful sense of wellbeing that comes from being fit, it is important that you begin your training now - but gently, please!

Plenty of gradual warming up, strength and flexibility exercises and gradual cooling down will help you remain injury free.

By the time you hear the starting pistol outside Newspaper House in St Georges Terrace, there will be no holding you back - you will be hungry

to get going on the course to City Beach.

As for the more seasoned runners and walkers, no doubt you will all be out to improve your times.

This year's event also includes a 4-km course from Perry Lakes to the beach for those who are daunted by the thought of running or walking 12 km.

To enter as a team, each entry must be registered in the name of 'CALM' and sent to me, care of Human Resources Branch at CALM's Como headquarters.

Entry forms and training hints are available by contacting me on extension (09) 334 0398, or your district health and fitness representative.