CALM News

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PINE FORESTERS FACE NEW CHALLENGE

W.A.'S pine foresters are facing a new challenge — the re-establishment of the crop after the first harvest.

Extensive field trials initiated at Myalup this year are expected to provide the data required to guide future operations.

The study is being undertaken by the Busselton Research team and is under the direction of Research Officer Luisa de Braganca.

According to Luisa other second rotation studies are in progress.

"Experience from South Australia and Victoria shows that burning to dispose of the first crop debris does not benefit the young trees," she said.

"Hot broadcast burns after clearfelling destroy the organic matter and nutrients.

"Nitrogen is lost to the atmosphere, through volatilization. Other nutrients are mineralized and quickly leached out before the young trees have access to them.

"The organic matter plays an important role in nutrient cycling and in the structure of poor sandy soils."

"Traditionally, roughly prepared land has been burnt to clear unwanted vegetation and slash. The method has proved to be economical and the first pine crop grew well.

"The first crop had the benefit of the soil organic matter built up over the years.

"We will have to change our approach if we want to maintain the productivity of continuous pine crops."

The test sites are located in one and three-year-old pine logging slash.

Ground treatments include crushing, raking, burning (past practice) and untreated (control).

Under the general supervision of Peter Jenkins, Busselton Research, Mike Fielden's Harvey gang has planted radiata pine in carefully laid out plots.

"They have done a marvellous job for us," said Peter.

Managed

"Working in the control plots was particularly difficult, but the men still managed to keep the rows straight and the spacing even — both important for our statistical analysis.

"The men, of course, prefer to work over the clean burnt land, but they can see the reasoning behind the trials.

"The crushed slash retains the nutrients for the new plants.

"The organic matter also improves the soil texture helps greatly with the retention of moisture, and suppresses the weeds.

"Even after three years there is very little weed competition in these compartments, and I expect the trees to be well away before many weed species are noticeable."

Second crop field trials

Early indications are that the ground treated with the giant rotary rake may prove to be the best.

Peter pointed out that the rake wind-rowed all the bigger debris and left an even layer of light slash behind.

Mike confirmed that his planters had had no problems working over this ground with their spears, and the team is hopeful that further work with the rake will prove its long-term value.

"It may even be worth a trial on fire breaks," said Peter

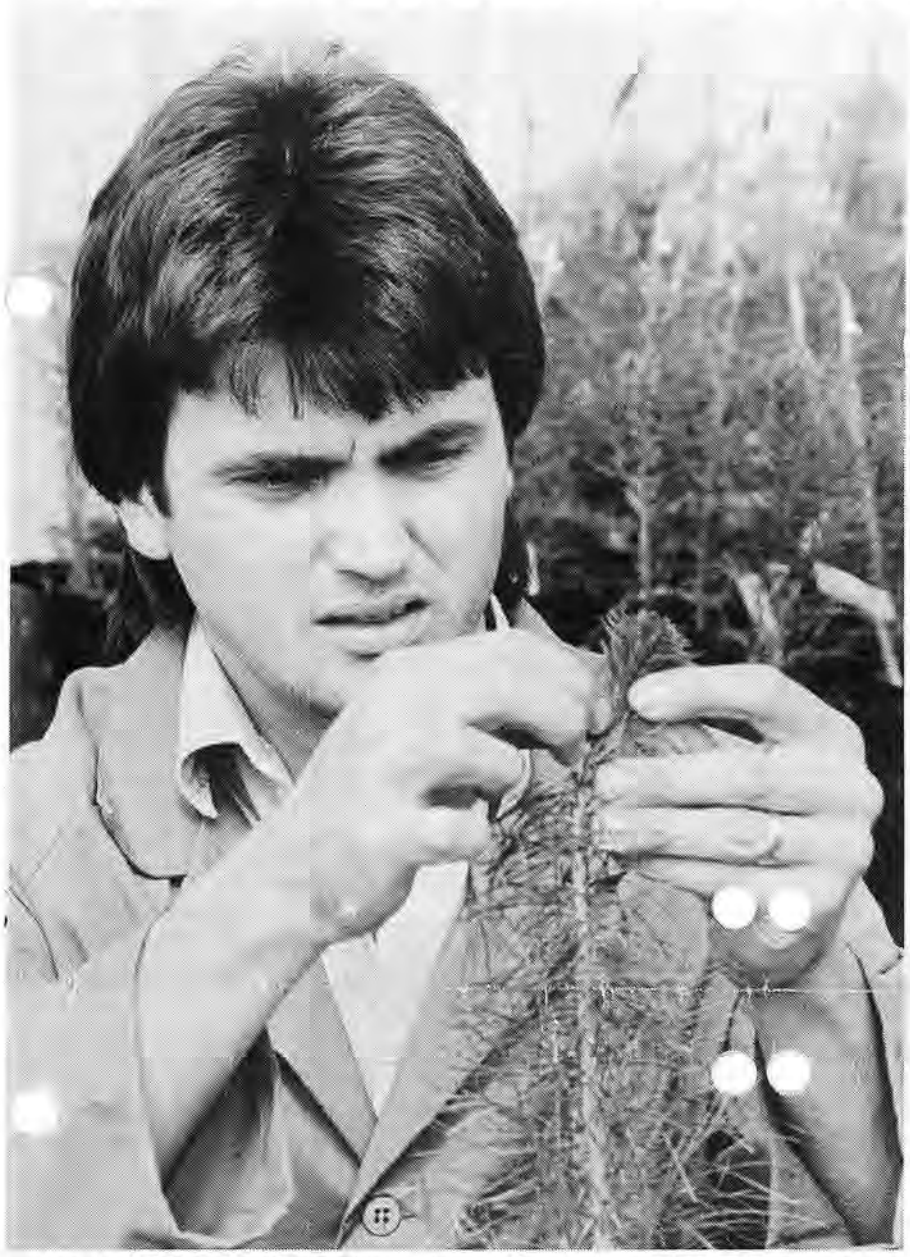
In March 1986, a survival count will be made in the trial area and progress details of the second crop trees will be mentioned for up to ten years.

"As part of the experiment design, the trial incorporates the use of fertilisers, clover and the advantage of a transpirant retardant," said Luisa.

One half of the seedlings was treated with a fine plastic spray on foliage, to help them conserve moisture.

"It will be interesting to see the results of this trial", said Luisa.

"The application could easily be made in the nursery at the time of final lift, and the plastic film may make a significant difference in survival rates, given W.A.'s dry climate."



CLAYTON SANDERS grafts radiata pine scions from Victoria onto local stock.

LUISA de Braganca and Peter Jenkins examine seedlings on a three-year-old crushed log slash.

HARVEY planters (from left) Stephen Prokopyszn, Fandy Birch, Glen Willmott and Des Dann.

Researchers seek the perfect pine

By ANDREW CRIBB

THE first new radiata pine seed orchard in 16 years is planned for West Manjimup, and Trevor Butcher and his researchers at Wanneroo hope their design will solve many problems.

The orchard is to be planted at two different sites — one for female trees, and one for males.

Each row of trees within the orchard will be a specific radiata clone with known characteristics.

By selectively cross-pollinating the various clones the Department will be accurately able to breed for features such as dieback tolerance, or superior growth.

The objective is to make available stock with the best genetic character for both dieback prone, and 'safe' areas.

To stock the orchard nearly 500 radiata scions have been imported from Victoria and 500 from South Australia.

The rest will come from WA — bred pines.

The imported scions have been taken from a part of Victoria so far uninfected by Dothistroma pinii — a pine-killing fungus thought to have come from New Zealand, which is prevalent in all the Eastern States except South Australia

Under the skilful hands of Clayton Sanders and his team, the new scions are being grafted onto local stock at the rate of 160 a day.

The young pine will be quarantined for at least six months, to ensure no Dothistroma has also been brought in.

The stock for the new seed orchard has been completely tested over one generation for dieback tolerance, and will also grow faster, have finer branches, and is expected to improve timber production by more than 10 per cent.

The first crop of seeds is due in six years.

SAFETY . . . ALWAYS

THE correct use of protective gear saved Forest Worker Michael McLaren from serious injury recently.

New on the job at Kirup, Michael was culling small pines with a chain saw.

While walking between trees with the motor running down Michael changed his grip on the saw and slipped on the Slash under foot.

The moving chain ripped into Michael's trousers above the left knee.

Fortunately, the trousers were fitted with chaps specially designed to guard against such an occurrence and Michael suffered no serious injury.

The chaps are made of energy absorbing fibres, similar to that used in bullet-proof vests.

Michael has since resumed work after further instruction from his overseer, but the incident clearly demonstrates the value of using the safety gear supplied by the Department.

FROM MY DESK

THE Policy Directorate comprises the four Directors and myself, assisted by the Directorate Manager.

This group meets every week, usually for half a day.

If you consider the vast array of situations, challenges and problems represented within one district or region, then multiply it by ten, then you might get an impression of the range of issues discussed at a Directors' meeting.

Added to the range of issues is the range of expertise and interests of the five principals and their varying backgrounds.

This could be a recipe for disaster, and it's probably fair to say that the first couple of meetings were not exactly what the Land Use Task Force had in mind.

I'm now pleased (and relieved) to be able to say that Directorate meetings have vastly improved and there is a more professional corporate attitude to decision making.

The meetings are varied nearly every week by the addition of invited staff members for the purpose of briefing the Directors on a particular topic or challenge.

In the short term this probably limits the number of policy decisions made, but it is essential for the group to all have a broad appreciation of the backround upon which decisions are made.

In order to ensure continuing communications with the General Manager and his operations group, the General Manager attends most Directorate meetings and alternate meetings are combined with both groups.

There are still hundreds of policy decisions to make, and as I said in the last issue of CALM News, the door is always open for anyone and everyone to contribute to development of policy decision — policies of all kinds are under constant review.

Syd Shea
Executive Director

Forest thinning enhances jarrah growth

By GEOFF STONEMAN

MOST of the Northern Jarrah Forest and much of the Southern Jarrah Forest carry dense stands of regrowth jarrah trees.

These stands have long been recognised as slow growing due to the intense competition for water and nutrients, and the slow process of natural selection for dominance (thinning).

Thinning is a well recognised forestry practise in managed stands of trees.

It is often found that by removing the slower growing trees the growth rate of the remaining trees can be increased without reducing the growth rate of the whole stand.

WA research has found that this general principal applies for jarrah.

By reducing the density of a stand of pole-sized trees from 35 sq m per/ha to 10 sq m per/ha the growth rate of the final 'sawlog trees' is doubled, while the nett growth of the whole stand is maintained at the same level.

In effect, the timber growth that would be spread thinly on up to 1200 trees a hectare can be accumulated on as few as 120 trees a hectare, without a loss in nett stand growth.

Without thinning, the pole-sized crop trees in dense stands would require a further 80 years before they reached sawlog size.

By thinning, this time is halved and 'crop' trees will take only a further 40 years to reach sawlog size.

This is a similar period to that taken by a newly planted pine.

In reducing the density of the forest a lot of trees are removed.

Unfortunately, at present, there is a very limited market for the sort of wood removed in the thinning operation.

Research results show that some 20 cubic m per/ha of the thinned wood can be used as sawlogs.

Of the other 90 cubic m per/ha, about two thirds is believed to have potential as small sawlogs, firewood, fence posts, strainers, reconstituted wood products, and charcoal, etc.

CALM'S Wood Utilisation Research Centre at Harvey is investigating some of these alternatives.

If markets are developed for the wood removed, then a thinning operation would become an attractive commercial proposition.

If the wood cannot be sold, thinning is still reasonably attractive because of the increased growth rate of crop trees.

The bulk of the trees that would be culled are so slow growing that they could not ever be realistically considered as quality sawlogs.

Researchers have measured up to 900 trees per hectare, growing at less than 1mm a year.

These trees would take at least another 300 years to reach a sawlog size, but if we thin we transfer that growth onto trees that will take only a further 40 years to reach a sawlog size.

Many foresters believe that somewhere between 10,000-20,000 ha of jarrah forest (about 10 per cent) is suitable for thinning.

These areas are characterised by dense even-aged regrowth pole stands, freely draining lateritic soils, high rainfall, and particular associations of understory vegetation species.

Other areas are unsuitable because wood production is in conflict with the primary land use (for example conservation of flora and fauna), or because the soils and topography are such that thinning may lead to intensification of dieback on these sites.

Research has shown that the fastest growing trees can be selected for retention when thinning a stand.

Trees should be selected for retention on the basis of their crown size (crown depth and width).

The trees with the largest crowns are usually those which respond best to a thinning.

Catchments in the high rainfall zone which are densely stocked with regrowth jarrah trees have been shown to be consuming more water than the old growth forest they replace.

By thinning we believe we can reverse this trend and increase stream flow from these catchments, thereby increasing the amount of water going into dams for metropolitan and country water supply.

Kalbarri road program

A THREE-year road improvement programme in the Kalbarri National Park is expected to be completed before the August school holidays.

The programme has upgraded existing roads and installed new ones to enhance the park's attractions.

The final stages included scenic lookouts on a new road leading to the Murchison Gorge, and the installation of a new road to Meanarra Hill which provided views over the National Park, the Murchison estuary and Kalbarri townsite.

Tourist funds were provided by the Main Roads Department for the Programme.

The new roads will provide all-weather access for tourist coaches and conventional vehicles.

The Department of Conservation and Land Management is aware of the importance of national parks to the tourist industry and has provided additional management resources.

This will provide improved opportunities for tourism and recreation in the Kalbarri National Park which will enhance the economic growth of the region.

— RICHARD MAY

Management plan for Swamp

A draft management plan is being drawn up for Benger Swamp near Harvey.

The swamp is a breeding ground for the freckled duck as well as a habitat for waterbirds that used the once extensive wetlands of the coastal plain.

Work on the draft management plan will start in September and be available for public comment in January, 1986.

About 90 per cent of Benger Swamp had been bought by the Government, and much of this is vested in the Department of Conservation and Land Management as a 'C' class nature reserve.

The remaining areas of the swamp will be bought as they become available.

In the past the swamp has been used for potato production, but this had proved to be economically unviable.

Vegetables and stock fodder are still grown.

A survey of biological values and agricultural uses had been carried out at the swamp over the past three years to determine management options.

A consultant had met farmers and people living in close proximity of the swamp.

Local and other interest groups will be consulted during the preparation of the draft management plan.

GREENING GRANTS ASSIST FARMERS

THE National Tree Programme through Greening Australia (WA) has given grants worth $56,000 for revegetation in the last month.

The recipients are from Nullagine in the north to Esperance in the south.

This year the G.A./N.T.P. Committee decided to make a piority of the farming communities involvement in revegetation.

The response was overwhelming with more applications received than the funds could meet.

However, $42,000 went to farmers who were actively engaged in protecting regeneration and planting trees and shrubs on their land.

Of all the applications from the farming community, the most notable was a group entry from Jerramungup, who together with the Agriculture Department had been attempting to redress the balance on badly cleared land.

The replanting was successful, but this past summer brought with it extensive bushfires, which destroyed most of their efforts. The farmers are not deterred and with help from the N.T.P. grants began planting again this winter.

The remaining $14,000 grant monies went to schools, community groups, service clubs, tree committees and shires.

The variety of activities ranged from school tree nurseries, to experimental plantings and community plantings.

Dr G Syme the Director of Greening Australia (WA), said that during the process of collecting and funding the applications, staff and committee members became increasingly aware of the problems and needs of the rural community, and that it was encouraging to see such a healthy interest from farmers especially when the economic climate was apt to discourage such activities.

The National Tree Programme grants are awarded annually, to the community (individual or organisation) and are advertised by Greening Australia (WA) at the end of November.

This year there will be application forms available to help produce more detailed applications and thus make the judging easier and fairer.

It is expected that next year's grants will encourage others to participate in the Greening of Australia.

Greening Australia and the National Tree Programme acknowledges the help received from the Departments of Conservation and Land Management and Agriculture in

AFFORESTATION'S ARTFUL AID

WOOD NYMPHS: "THANK YOU SO MUCH. THIS'LL MAKE A BEAUTIFUL HOME FOR US IN YEARS TO COME."

EX-UNEMPLOYED: "THAT MAY BE, MISS. BUT WHAT I LIKE ABOUT IT IS. IT'S MAKING A JOB FOR ME TO-DAY."

Minister launches 1985 Tree Awards

THE Minister for Conservation and Land Management, Ron Davies, launched the John Tonkin Tree Award for 1985 on Friday, August 8.

Mr Davies said the organisers, Greening Australia (WA), had initiated the awards to encourage the community to become involved in practical projects for the protection, regeneration and re-establishment of vegetation.

Annual awards would be made in eight categories with prize money worth $10,000.

Mr Davies said it was appropriate that the awards were named after John Tonkin, who as Premier and Minister for Environmental Protection was responsi-

The launching of the John Tonkin Tree Award was made at a ceremony at the Herdsmans Lake Wildlife Centre.

The Awards provide for local government, student, industry, farmer, families and community groups to nominate projects.

There were also categories for the development of innovations for tree planting and protection.

The categories reflect the diversity of commitment by the community to protect and enhance the environment, whether it be private land on the national estate.

Mr Davies praised Greening Australia (WA) for its on-going programmes to enhance the public's awareness of the value of trees and other vegetation.

He made particular reference to the organisations administering of Community Employment Programme schemes in

RANGER Tony Smith with his new vehicle.

Praise for Rangers, but . . .

CALL TO UPDATE RADIO SERVICES

THE recently held art safari to the Hamersley Range National Park was a great success.

Your assistance in waiving camp fees and the general support from all park rangers contributed in no small way to the well being and welfare of all who attended the camp.

I must make a special point of mentioning the fine work done by the rangers of the National Park Service.

They are the most competent group of people I have ever had contact with and are always obliging.

Their work would be greatly facilitated, however, if they had some reliable means of communication with the outside world.

I have watched with admiration the way they have coped with alleged emergencies when a reliable telephone or wireless link with Wittenoom would have saved them hours of worry and many kilometres of wasted travel.

They need this service so that they can carry out their ever increasing workload with greater efficiency . . .

F.W. GREEP
Principal
Lynwood Senior High School.

CALL ANSWERED

The first of a new breed of ranger vehicles left Como for park duties this month.

Equipment on the 5 speed 3.3 litre turbo assisted NISSAN Diesel includes power steering, air conditioning, extra heavy iron work, an additional battery and fuel tank, a water tank and tool box, spot lights, and numerous other creature comforts.

Assistant Ranger Tony Smith made the delivery drive to Kalbarri where he is awaiting the completion of new accommodation at Hamersley Range National Park before moving on.

"This type of vehicle is the answer to our prayers," he said. "It has a comprehensive range of equipment, including an HF and an AM radio.

"I expect it will make our work much easier."

The HF radio covers eight frequencies, enabling the operator to communicate effectively with the Department and the Royal Flying Doctor service.

And the $1500 electric winch mounted behind the roo-bar is worth its weight in gold according to Tony.

KUWAIT LETTER

WALLY Edgecombe recently received a letter from Bruce Hastings, the Department's Nursery Manager at Broome from 1982-84.

Bruce is setting up a nursery in Kuwait.

He says that the weather in July is hot — 40C to 46C — with some days to 52C.

All the drinking water is desalinated from the sea and costs $10 for 1200 gallons.

The scheme water is 6500 ppm and so is very tough on garden plants.

Rainfall is about 120mm per year and dust storms are common in summer.

Bruce has asked for some seed to be sent over.

The seed will be collected at Karratha (which has similar environmental conditions), but must be mailed through Alex Hart at the (Como) seed store because a phyto sanitary certificate is required.

The Department will be sending some Acacia and Eucalypt seed — hardy plants are needed along roadsides to screen the abandoned Chevys and Mercs.

One of the study projects that Bruce will be working on will test the feasability of growing date palms.

This study will be of particular interest to Wally as this is one of the species he is evaluating at the Karratha Arboretum.

Maybe there's a lesson for WA in this attitude?

Bruce sent best wishes to all his friends and expressed a great interest in the Department's development. His address is:
Palms Agro Production Co.,
PO Box 21976
SAFAT. KUWAIT.

Rare crustacean find at Yanchep

RARE, cave-dwelling crustaceans have been discovered in the underground streams at Yanchep National Park.

These microscopic creatures are so specialised that strong light may kill them.

A group of small "shrimps" known as 'amphipods' or sand lice, are the most diverse element amongst the cave fauna, but particularly interesting was the discovery of a closely related animal of the family Janiridae.

This is the first reported occurrence of freshwater janirids in WA, and since the initial discovery, they have not been found elsewhere in the State.

The species of janirid, new to science, has yet to be formally described and named.

Little is known about the biology of janirids.

Most members of the amily are marine or estuarine inhabitants: freshwater species are known to occur elsewhere only in south-eastern Australia and Tasmania, Brazil and South Africa.

Several species, all blind cavernicolous (cave living), forms have been described from South Africa.

What role janirids play within freshwater ecosystems awaits to be discovered.

Many of the crustaceans occurring in Australian freshwater excite zoologists for a variety of reasons, not least being their great antiquity, with lineages considerably older than for example, the marsupials and with limited distribution.

Not all the crustaceans have left a fossil record, but two groups known as phreatoicids and syncarids invaded Australian fresh waters about 200 million years ago (in the Triassic Geological Period) and their earliest records date from the Pennsylvanian Epoch (Upper Carboniferous — about 300 million years ago).

The antiquity of those animals without a fossil record can be inferred from the occurrence of related freshwater forms in countries which are now fragments of the ancient super-continent known as Gondwanaland.

This enormous landmass included Australia, New Zealand, South America, South Africa and India.

It started to break-up about 135 million years ago and the fragments have continued to drift apart.

Justifiable then, the Yanchep Cave crustaceans may be included in this assemblage of ancient groups.

However, several types of freshwater Crustacea in WA, including the cavernicolous forms discussed here, are restricted to just one or two localities, from which they are rarely collected.

This fact indicates their geographical ranges have contracted in response to environmental changes such as a progressively drying climate.

Furthermore, these rare animals restricted in locality, now are found only in areas of geologically recent rocks peripheral to the ancient granite rocks of the Precambrian Yilgarn block, which lie to the east of the Swan Coastal Plain.

Indeed, this stark contrast between the young geological age of the Caves and the antiquity of the animals, is particularly well demonstrated by the janirids and amphipods at Yanchep.

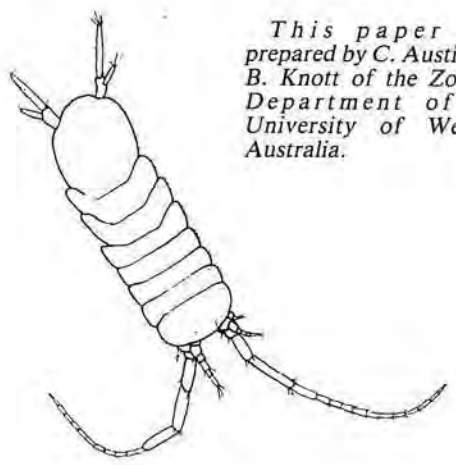
The age of this group of animals is uncertain, but most pre-date the break-up of Gondwanaland.

The caves at Yanchep are formed in limestone of Pleistocene age dated at between 50,000 and 100,000 years.

How or where the cave dwelling crustaceans survived the environmental vicissitudes of the past, has yet to be determined.

Whatever their history, it seems certain that security of tenure in the cave streams and therefore their long-term survival depends upon the normal drainage and water quality of the sources feeding the stream[illegible]ing intact and relatively undisturbed.

Fortunately, they fortuitously occur in a National Park where their survival should be secure, although the sources of the streams lie outside the Park.



AN artist's impression of a Janirid.

This paper was prepared by C. Austin and B. Knott of the Zoology Department of the University of Western Australia.

WILDLIFE CONFERENCE AT MURDOCH

AUSTRALIA'S first Wildlife Rehabilitation Conference will be held at Murdoch University on October 19-20, 1985.

The venue will be Lecture Theatre One and the Adjacent Bush Court will feature appropriate displays.

Conference speakers will include:

Harry Butler, C.B.E. — Commissioner for Conservation N.T., Honorary Wildlife Consultant for R.S.P.C.A.

David Schultz — An ornithologist, respected throughout Australia as an authority on avian medicine and a veterinarian in private practice in South Australia who attends Adelaide Zoo.

Dr Gary Reddacliff — Chief Veterinarian at Taronga Park Zoo, Sydney. Dr Reddacliff has been involved in the care of injured wildlife brought to the zoo for attention.

Other speakers will include representatives from CALM, the Perth Zoo, the Agriculture Department, and the Murdoch School of Veterinary Science.

Much emphasis will be placed on the informal technique of open discussion between delegates and guest speakers so that there will be an opportunity for communication between all levels.

Education information on the care of fauna will also be provided by photos, graphic art and live animals, and a nursery for marsupials will be open for the duration of the conference.

The original concept for the Wildlife Rehabilitation Conference was developed in 1984 by Keith and Susan Smith of Otayaba Malunna Wild Bird Hospital — a voluntary sanctuary for the rehabilitation of native birds.

The objectives are:

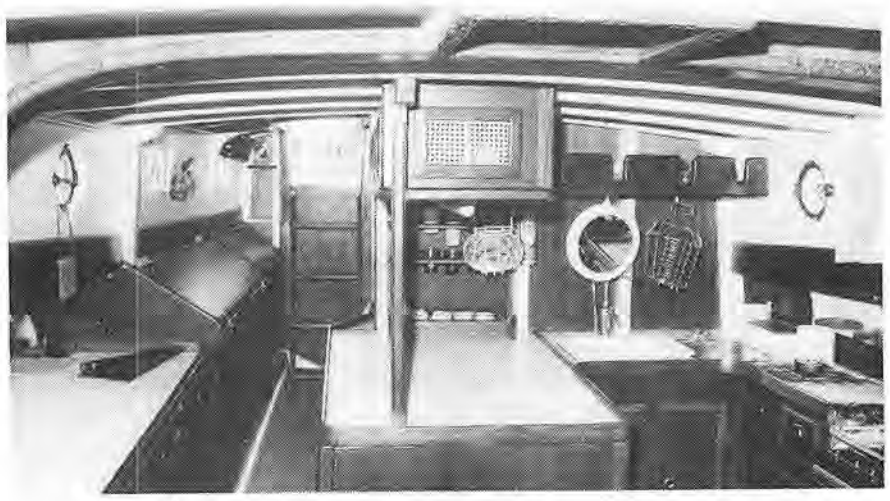
- to bring together lay people and professionals involved or interested in the care of sick, injured or immature wildlife;
- the dissemination of knowledge including collation and distribution of material presented at the conference, and subsequent exchange of information on the care of wildlife;
- to establish communication, co-operation and respect for different groups involved in the varied aspects pertinent to the care of wildlife as a whole; and
- to set a precedent encouraging future conferences with similar aims.

The conference will provide an opportunity for veterinarians, ecologists, biologists, government officials and the general public to meet and discuss the care of sick, injured and orphaned wildlife.

All speakers and display people have volunteered their efforts for this non-profit venture.

CALM has made a $1000 grant to help cover conference costs.

Registration forms are available from the convenor Susan Smith, phone 274 5244 ext. 2241.



JARRAH is used extensively below deck.

Durable Jarrah

JARRAH has many qualities, and none rank higher than its durability and strength.

These qualities have been utilised, somewhat surprisingly, in a 12m ketch, the South Wind.

Built to a New Zealand design, South Wind was built of jarrah planking in W.A. 35 years ago.

She was originally owned by a Bunbury doctor who sailed across the Pacific, the Carribean and then across the Atlantic to visit North Sea ports.

It was then onto the Mediterranean, Suez, the Indian Ocean and back to Fremantle.

South Wind is a traditional ketch with wooden masts, gaff rig, and a long, deep keel.

Acommodation includes a double and two single berths.

SOUTH WIND in her pen. Pictures courtesy WA Newspapers.

GETTING MORE OUT OF MAPS

By BARRY MUIR Planning Section

MANY people use maps for reasons, ranging from finding ones way about to determining what rock or vegetation type exists in a given location.

Much more than this can be discovered from even the most basic maps.

Topographic maps can be examined for areas with closely spaced contours indicating steep slopes.

On hard igneous and metamorphic rock types such slopes usually have outwash zones of denser vegetation.

Breakaways or cliffs, particularly in sedimentary rocks, may indicate caves or overhangs which in turn may contain bat colonies, Aboriginal sites, or be aesthetically pleasing.

Note the altitudinal range over the study area — flatness tends to indicate homogenous vegetation.

Gradients may be estimated using altitudinal range and distances between points.

High points with easy access may make excellent lookouts and steep-sided gulleys may contain pockets of relict flora or special habitats.

Permanent pools in ephemeral rivers and creeks may contain unusual flora or invertebrates and large seasonally flooded lakes particularly in deserts may provide important waterfowl breeding areas.

Any freshwater pools, rockholes or lakes in desert country could also be important Aboriginal sites.

Broad, flat plains in high rainfall areas may indicate seasonal wetlands if the soils are clayey.

It is worth examining locality names on maps for any which may have historical significance or be unusual.

This may lead the worker in turn to the existence of culturally important sites.

Geological maps may be examined for the presence of disused or operating mines or bands of probable mineral-bearing rocks.

These may indicate future pressures for mining.

Geological maps can be searched for rock types unusual in the region under study, for example basic dykes in acid-rock country, outcrops of igneous rocks among sediments, or alkaline rocks such as limestone or dolomite among acid sediments.

Such rock types usually break down into soils with different chemical and physical characters than surrounding rock and are, therefore, likely to carry different vegetation.

Soil maps are generally few in WA but where available provide additional insight, particularly into the vegetation of the study area.

Vegetation maps of any scale are useful to determine the number of different types of vegetation represented in an area that can be used as a measure of diversity if comparing two regions.

Similarly, the "mosaicness" of the vegetation gives an estimate of the distribution of non-mobile fauna which may be tied to soil or vegetation types, for example snails or some reptiles.

A high degree of "mosaicness" also indicates an abundance of ecotones which may be important to some fauna. For example, an abundance of ecotones in a two-component mosaic may effectively create a third habitat.

Estimates of the area of each vegetation type, perhaps expressed as a percentage of the study area, will suggest which are "rare" compared to others.

Continued on page 7

Southern Forest plantings

MORE THAN two million seedlings have been planted in the Southern Forest areas of Manjimup, Pemberton and Walpole this year.

Of the 1700 ha of public land covered, 380 ha were planted with pine and several trial areas of *Eucalyptus globulus* (Tasmanian Blue Gum) planted in alternative rows with pine were established.

The Pine and Blue Gum plantings were confined to farm properties recently bought by the Department.

The 490,000 pine seedlings required were supplied by the Department's Nannup Nursery.

Karri plantings covered some 1300ha of the total planting area, and included the enrichment of small areas not completely successful last year.

Nearly 1.5 million karri plants from the West Manjimup Nursery were used.

Other species planted included muellerana (yellow stringybark), marri (red gum), resinifera (red mahogany), jarrah, blackbutt, wandoo, red tingle and yate.

These species were planted on logging landings, gravelpits and snig tracks, and were also used for general landscaping and catchment protection.

PLANTING seedlings in the Southern Forest.

Forester dies

FORMER forester, Oscar Pears (84) died recently.

Oscar retired from the position of Senior Forester, Nannup, in 1965, after 36 years service with the Forest Department.

When "Ock" started with the Department it was common practise to go to a fire on a pushbike, complete with rations, a waterbag, axe and rake head.

On arrival at the fire a handle was cut from a suitable sapling, inserted in the rake head, and control of the wild fire would start.

Ock worked throughout the forest areas of the South West and will be remembered by many.

TEACHERS TAKE TO THE FIELD

NINE school teachers recently completed a successful Field Ecology Course at the Perup Field Study Centre east of Manjimup.

The teachers were from Geraldton, Mukinbudin, Southern Cross, Perth and Manjimup.

Most aspects of jarrah forest ecology were covered and the teachers participated in the trapping and handling of animals, spotlightingf and radio tracking.

Vegetation surveys and a bird census were also carried out.

This is the third course held for the Education Department and the demand for such courses appears to be growing.

Courses are also held for CALM officers and anyone interested in participating should keep a close watch on

LIXIE THOMPSON, Jenny Fouracres, Ken Patterson, Mike Palmer (partly obscured) and Steven Crake searching for evidence of animal activity

FOUNDATION TO HOLD AGM

THE Annual General Meeting of the Australian Conservation Foundation (Western Chapter) will be held on Monday, September 16, at the Mary Locket Hall, Christ Church, Queenslea Drive and Stirling Highway, Claremont.

Nominations for all positions on the Executive Committee are open and will be accepted up to the commencement of the meeting on September 16.

Following the AGM, information and slides on Fitzgerald River National Park will be provided.

Members of the Western Chapter wishing to visit the Fitzgerald River National Park on October 12-14 are asked to contact June McLaughlin on 320 3302 (W) or 387 3302 (H) as soon as possible. seats are limited.

They came . . . they saw . . . they conquered

KEITH CUNNINGHAM and Chris Done re-discover Mt Bruce

. . . before contemplating the climb

. . . and reaching the top and signing the book.

CALM TEAM SCALES RUGGED MT BRUCE

A team of CALM officers rose to new heights on Friday July 12, 1985, when they scaled Mt Bruce (4052ft) in the Hamersley Range National Park.

Preparations began early in the day at the Fortescue Hotel base camp, Wittenoom.

Lead climber Chris Done and his faithful Sherpa photographer W.E. had a hearty breakfast and left at 08.30 hours.

The trip proceeded via the treacherous Yampire Gorge and later rendezvoused with the local Rangers.

After lunch the party set out with No 2 climber and guide, Keith Cunningham, the resident Ranger Hamersley Park.

At 1500 hours, after travelling over tortuous tracks, the mountain was relocated.

No 2 camp was soon set up below the trecherous North face, the drinks, were placed in a cool spot, and the climbing commenced.

The one-hour climb to the summit included a number of spells to catch a breath and survey the scenery.

The trail followed a route pioneered by Ian Solomon — a Ranger now stationed at Cape Le Grand.

On the roof of WA a cairn is slowly growing.

One visiting officer estimated that in 15 years Mt Bruce will pass Mt McHarry (4085ft) and regain the title as WA's tallest peak.

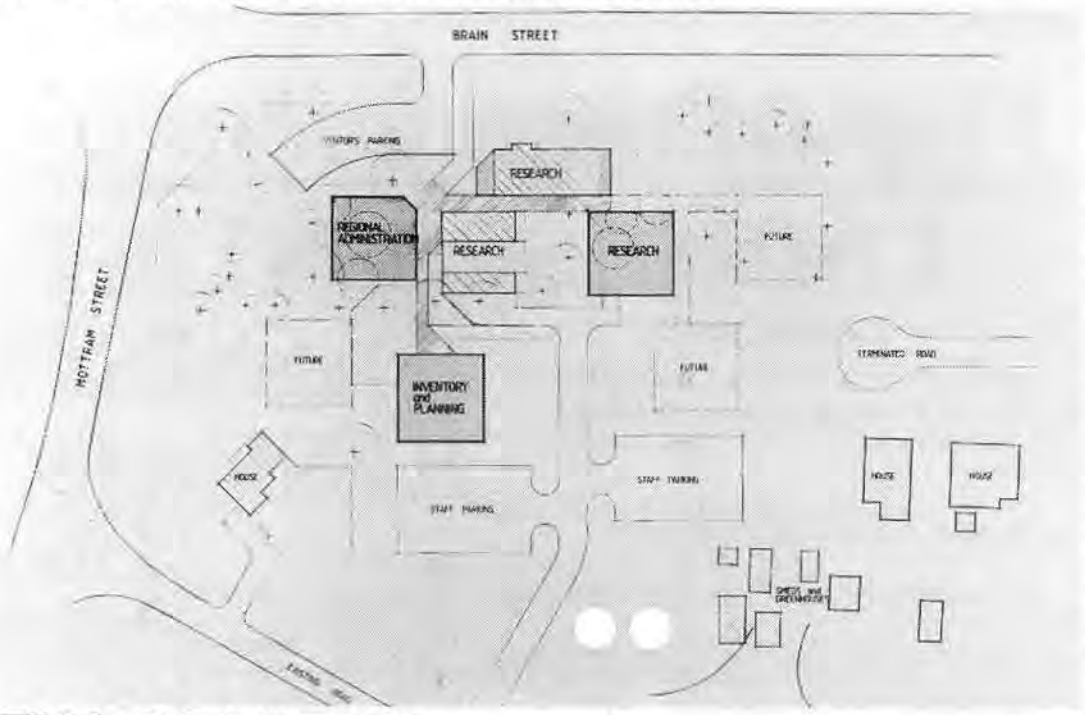
Already, however, the view from the top is spectacular.

The mount is surrounded by large mulga covered clay pans which flood with water in the wet.

To the south is the small prospecting settlement of Marandoo, with its associated gridlines and sample pits.

A large iron ore operation sponsored by C.R.A. and Hanwright may begin operation shortly.

As the hardy mountaineers left the craggy top of Mt Bruce with its collection of alpine mallies and Callitris dotted cliffs, there food for thought what the view would be like in years to come.



NEW OFFICES

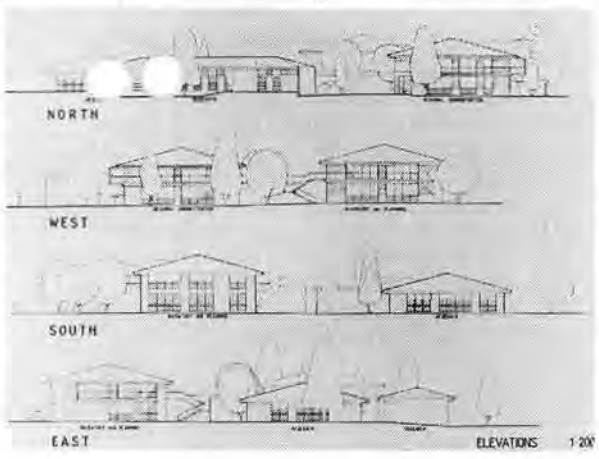
A NEW regional office for CALM Southern ..rests is in the pipeline, and staff who have been ..ving in demountables for years are heaving a sigh of relief.

The new office, costing about $1.5 million, is expected to house about 66 staff.

Two double-storey buildings will be constructed to accommodate Regional Administration, Inventory and Planning branches.

A third, single-storey office, will be for the research station.

J.M. Best and Son of Bunbury have been awarded the contract, and building will start in September this year. Completion is targetted for June 1986.



BUSY BEE PLAN ON SOUTH COAST

THE South Coast Volunteer Conservation Programme enters its fifth year of operation with a series of four fortnightly busy bees during spring, 1985.

The programme began in 1981 following a meeting in Albany of various organisations including walking clubs, the local wild-flower society, conservation groups and government agencies.

At the time the programme was thought to be the first of its kind in Australia, and in the first three years of operation more than 24 busy bees were held throughout national parks and nature reserves in the region.

The organisation's aims are to undertake in a voluntary capacity projects which help in the management and protection of national parks, nature reserves and other public reserves along the South Coast and its hinterland.

Typical projects include:

* establishment and maintenance of footpaths;
* dune restoration work;
* tree planting and other landscaping work; and
* erection of trail markers on lesser used paths.

Venues for busy bees in the programme include:

* William Bay National Park

* Ocean Beach Reserve, Denmark Shire
* Torndirrup National Park
* Two Peoples Bay Nature Reserve
* Porongurup National Park
* Stirling Range National Park
* Fitzgerald River National Park

The busy bees provide an opportunity for interested members of the local community or visitors to spend a few hours assisting in worthwhile conservation projects and to work alongside rangers and meet people with similar interests.

For further information on the programme, contact the person listed against each date in the calendar, or contact the CALM South Coast Regional Office in Albany.

Hawke Block Policy . . .

LAND use decisions are the prerogative of the Government, and CALM's task is to implement Government policies.

The present policy is that the northern section of Hawke Block is a Conservation M.P.A. and is not to be logged.

The southern section is a Forest Values M.P.A. and timber is recognised as a forest value.

While this classification remains, logging will be planned in the area.

Hawke Block is situated 20km southwest of Pemberton and is adjacent to Warren National Park.

It contains some fine pure stands of virgin karri, together with areas of mixed marri, jarrah and karri forest.

Proposals to log the area for karri sawlogs and marri woodchips have drawn criticism from a broad cross-section of the public including environmental groups and local residents.

Their concerns are that:

* Hawke Block contains the last and best stands of virgin karri near Pemberton.
* The area adjoins Warren National Park.
* Tourism in the area will suffer.
* The proposals are new, and that Hawke Block was previously reserved from cutting.
* There are acceptable alternatives where cutting could take place — for example Jane Block near Northcliffe.

Three aspects of Government policy affect Hawke Block:

* The withdrawal of logging operations in the Shannon Basin.
* The maintenance of existing and proposed levels of hardwood cutting no adjustments will be made for the loss of the Shannon resource.
* With the exception of the Shannon Basin, the land use plan set out in Forests Department General Working Plan No 87 of 1982 will remain in force.

The outcome of these policies has been the relocation of logging operations, previously scheduled for the Shannon, in order to maintain the planned annual cut

These logging operations have been relocated to:

* Selected road and stream reserves. Some cutting has been started on a trial basis and the effects are being monitored.
* Areas formerly retained as burning buffers. These have been relocated and amended to allow logging to be brought forward. Hawke Block comes into this category.

The land use plan for Hawke Block which was approved by the Government in General Working Plan No 87 of 1982 is shown on the accompanying map.

The breakdown of management priorities by area is:

* 1051 hectares (24 percent of the Block) is reserved for flora, fauna, and landscape conservation and will not be logged. This area adjoins Warren National Park;
* 447 hectares (11 percent) is stream and river reserve and is not scheduled for logging;
* 2819 hectares (65 percent) has been allotted a forest values function. These areas are subject to logging. Originally it was planned to cut in this area in the mid 1990s. The revised logging plan has brought this forward. The present proposals are to log in Coupe 17 (157 hectares) in 1985, and in Coupe 11 (119 hectares) in 1988.

Hawke Block is not the last and best stand of virgin karri near Pemberton.

More than one-third of the karri forest has been withdrawn from timber production.

Many of these reserved areas are virgin and are near Pemberton.

The logging is expected to have no impact on Warren National Park due to buffering by the flora, fauna and landscape conservation area to the west, and other State Forest to the south of the Park.

Areas of high conservation value within Hawke Block are located in the flora, fauna and landscape M.P.A. Plans to log Hawke Block are not new.

They have merely been brought forward by a decade or so.

The Government's commitment to maintain a timber industry means that all karri forest not reserved for other purposes is subject to logging.

Concern has been expressed that logging will disrupt tourism in the area.

However, Hawke Block has never been a focus of tourist activity.

Recreational activities in the Block are centred on the Warren River.

A wide reserve has been established along the river to protect the interests of canoeists and fishermen and other river-based recreationists.

In future years the cut-over parts of the Block may become a more important tourist attraction than they are now.

Most of the Block is presently inaccessible to conventional vehicle.

The development of roads as a result of logging will change this situation.

Second growth karri forest is highly attractive to tourists, as the popularity of the Rainbow Trail, Tramway Trail and Lefroy Brook Forest attests.

Industry faces challenge

By TED HILLIS, Chief Research Scientist, CSIRO

THE number of countries currently importing forest products is increasing.

For many countries forest products are the third most important commodity, and already their importation into the EEC is the second major cost item after petroleum products.

However, the F.O.A. has estimated that the supplies will be unable to meet demands by the year 2000 if the present patterns of use continue.

Australia imports about one quarter of its needs, although with its land and climatic conditions it is in a position to expand forest products which would help reduce the country's unfavourable trade deficit.

Because of the high transport costs this would be most effectively done by exporting value added products from our unique timber resources, ensuring increased production, improved management of natural forests and greater utilisation of the trees.

Furthermore, increased production of exotic pines will release native hardwoods for higher value uses and reduce the demands on native forests for the production of wood.

Recent developments of the forestry activities of CALM will assist the more effective use of the State's resources.

The Wood Utilization Research Centre at Harvey is studying various techniques to convert logs of jarrah, karri, and marri into timber suitable for furniture manufacture and other uses for which the logs are currently not being used.

The removal of selected logs will enable the remaining trees to grow more rapidly into more suitable sawlogs.

When work becomes a pleasure

NOBODY can question Ted Hillis' love or knowledge of his profession.

He loves to talk about wood, he loves to promote it, and to share his knowledge . . . and he is excited about the future of the forestry-based industries in Australia, and particularly WA.

This was evident when the seemingly indefatigable CSIRO scientist spent a week in WA recently at the invitation of CALM.

A highlight of his visit was a tour of the Wood Utilization Research Centre at Harvey, where he raised questions and proposed responses to the Department's activities and the industry's long-term outlook.

In particular, he mentioned the experimental nature of the centre, the management techniques employed in the regeneration forests, the need to improve Australia's export quality, and the auctioning of quality wood.

Undeniably impressed by what he saw at Harvey, Dr Hillis maintained a practical outlook to the research being undertaken.

He sees an ideal opportunity for both the Department and industry to train operators to use the experimental sawbench installed at the Research Centre.

He believes that while the skills of some operators do not match the technology available, they can bridge the gap, and even go further by gaining a broad understanding of the technology of timber seasoning.

For Ted Hillis, the Harvey Centre also provides the opportunity to enhance Australia's timber export reputation.

He believes that we have a reputation overseas of sometimes producing products of variable quality and that we need to export high quality products consistently.

The Research Centre has an invaluable role to play in gainng experience in converting a natural resource into high quality products.

This particularly applied to the regenerated forest wood that will be increasingly available to the market in the future.

Management of this new resource would enhance the long-term viability of the industry, but it must be developed to maintain a profit over a 20 or 30 year period.

And as time passed, management priorities must be updated to continually provide financial security for the industry.

He cited the short-term outlook of some companies in the Eastern States where three years ago many were operating in extremely tight financial conditions.

While there had been a turn around in the demand for timber, long-term planning was essential.

Dr Hillis sees one way of ensuring the industry's viability is the auctioning off of high quality timber — a practise used overseas.

Fire Management . . . CSIRO SCIENTIST ASSISTS RESEARCH

By Lachlan McCaw

FIRE research activities within CALM are being reviewed with the assistance of Dr Malcolm Gill, a fire researcher with CSIRO.

Dr Gill is a Principal Research Scientist with the Division of Plant Industry in Canberra.

His considerable research experience spans the behaviour and effects of fire in a range of ecosystems throughout Australia.

The primary purpose of the review is to summarise the available information on fire in W.A. and recommend areas where further research should be directed.

Fire management is a key issue on most of the land administered by CALM and a review of this type will assist in efficient allocation of research efforts.

Dr Gill will make three separate visits to WA in his role as a consultant to the Department.

During his first visit from August 5-9, Dr Gill met the Directors and General Manager, Roger Underwood, to discuss the current policies which govern fire management on CALM lands.

He inspected current operations and research programmes in the southern forests near Manjimup, and examined aspects of fire management in wheatbelt reserves around Narrogin.

Discussions were also held with staff from Protection, Research and Planning and Operations branches.

Dr Gill will return in mid September for further meetings with CALM staff, as well as scientists from CSIRO and tertiary institutes with an interest in fire research.

Recommendations from the review will be presented to a panel for discussion during a subsequent visit, and a final report for implementation is expected by the end of the year.

Library Services

CALM'S library is located at the WA Wildlife Centre at Woodvale.

Staff library services include the supply of information on a wide variety of subjects, either through photocopying of requested articles, loan of articles, circulation of journals, or computer on-line literature searches.

Photocopy request forms are available from the library.

The inter-library loan service is available if material cannot be located from the library's own collection.

However, computer on-line searches are available to professional research staff only unless approval is given by the officer-in-charge.

The library uses the Dialog network which enables a wide variety of databases to be searched on request.

These include CAB Abstracts, Biosis and Enviroline.

Computer request forms need to be filled in. These are available from the library.

A journal list is currently being compile together with an accessions list.

The library is open from 8.15 to 4.30 daily, and staff can be contacted on (09) 4051555.

FRIENDLY RE-UNION

THERE is always time to see old friends.

Judymae Jackson horticultural tradesperson from the Karratha nursery recently jetted into Perth for a week of sightseeing and tours — the prize she won for being judged one of the State's top 20 apprentices.

Here she is seen with (from left) Wally Edgecombe, District Forester at Karratha; James Haynes, also from Karratha, now at Bentley in the first year horticultural group; and Pat Ryan her former trainer in Karratha.

CEP TREE PROJECT RIGHT ON SCHEDULE

THE Commonwealth Department of Arts, Heritage and Environment is sponsoring a CEP project to plant trees in the Wellington Dam catchment area.

The project is being managed by Greening Australia (W.A.) in conjunction with CALM's Collie office.

Twenty-three people are currently employed on the project.

As the Commonwealth Government is the employer of the staff, wages are paid from Canberra.

The system has some "minor" faults, such as having to anticipate eight days "hours" and computer bugs which insist that three employees had a wages rate of $555 a year instead of $555 a fortnight.

To date, the team has bought and planted about 70,000 trees at about half the price paid for plants for two similar projects in the Eastern States.

This speaks volumes for the organisational ability of the project manager James Arthur (call me Bill) Smith, and his assistant Clem Elias.

Mark Thomas from Arts, Heritage and Environment, and Greg Little of the CEP directorate paid a visit to the project in July to see if the performance was as impressive as the progress reports, seeing that the group only started work towards the end of May.

A tour of the planting areas convinced them that our deeds matched our words, and a touch of W.A. hospitality soon had them in a good frame of mind.

Just to extend their experience in W.A. they booked in at the Lighthouse Inn and examined the Bunbury night life.

Now, contrary to what you may think, they have gone home with glowing reports of Bunbury being a "jumping town" that sports topless barmaids and a Chinese restaurant where they serve up a mountain of King Prawns that cost far less than an arm or leg.

The tree planting project has some months to run, and a return trip has been promised to monitor the further progress of tree planting and Bunbury —

VIC COOMBES

SAFETY AWARD TO NANNUP

THE NANNUP District received the Executive Director's safety award for working 12 months without a lost time injury accident on Friday, August 16.

The award was made by the Minister assisting the Minister for Conservation and Land Management, Dave Evans.

Mr Evans said for 73 people to work a full year without losing a day because of injury was no mean feat.

This was particularly so considering the work environment could be hostile and hazardous.

Mr Evans said that while each individual might perform different tasks and functions, each employee contributed towards a common goal.

He said the common denominator was a commitment to each other and to safe working practices.

"I know that you have a good safety programme that was introduced almost 20 years ago, and that it has been added to and improved," Mr Evans said.

Mr Evans said the Department's accident prevention programme was introduced when one person in five sustained a lost-time injury each year.

Each accident tells a story and there were many stories of physical suffering, disruption of family life, and reduced earnings.

Now, nearly 20 years after the programme was introduced, safety practitioners know that the humane and the economic elements in a safety programme are inseparable.

It was clear that substandard and unsafe working conditions were uneconomic, and that improvement in working conditions and safety standards would also improve the efficiency of workers and raise their morale.

Mr Evans said while it was not possible to measure the value of the intangible humanitarian benefits of a safety programme, it was possible to quantify some of the monetary savings.

He said it had been worked out that if the Department's safety performance for 1983-84 had been the same as in 1966-67 then more than 2000 additional working days would have been lost because of injuries.

This would have cost an additional $650,791 in compensation premiums.

While these direct savings represent one year's wages for 51 grade three workers, it was generally accepted that indirect accident costs represent at least four times the direct costs.

Therefore, as an estimate that in 1983-84 the Department employed more than 200 people who were paid by the savings achieved on an effective safety programme.

DAVE EVANS addreses Nannup employees during the safety presentation. Seated are (from left) Steven Quain, Bruce Harvey, Syd Shea, David Meehan, Bill Stretch (MLC Lower Central Province) and Don Sprigging.

DAVID MEEHAN, Syd Shea and Steve Quain celebrate Nannup's award.

MORE FROM MAPS

From page 4

If the dominant plant species in each vegetation type are known, the relative value of each association or formation can be used to predict the importance of that vegetation to granivorous, frugivorous or nectarivorous fauna.

By overlaying maps of the same scale, valuable information on the relationship between topography, geology, soils and vegetation can often be seen.

One must, however, exercise caution here because it is not uncommon to have vegetation maps drawn by interpretation of the geological maps or vice versa, depending on which map was published first.

Reliability can be determined from the abundance of groundtruthing traverses used to compile each map.

Most vegetation maps indicate only the dominant stratum, but if the vegetation is tall, for example, woodland or forest, it may have understorey strata which increase habitat diversity.

Even if this is not so, and understorey is absent, two habitats will exist: the canopy and the ground surface.

In one-storey vegetation, for example. *Triodia* grasslands, only a single habitat is available and hence faunal diversity can be expected to be lower than in multi-storey formation nearby.

A map of phytogeographic regions is of value when the study area, if proposed for reservation, represents part of the region not adequately protected in other reserves.

Similarly the study site may be at the extreme end of a phytogeographic area compared to an existing reserve elsewhere in the same region.

Any other available maps may provide extremely useful information for making decisions.

Some are obvious, such as soils maps, others less so.

Administrative maps which show Local Government and other boundaries may indicate a broader interest in the land in question than otherwise realised.

CALM News is the Department of Conservation and Land Management's monthly staff newspaper.

We hope you will become involved in its publication by sending articles (up to 400 words), letters, photographs (with captions), minutes from meetings and items of interest to:

Richard Grant, Editor, CALM News.

Department Conservation and Land Management Como WA 6152 — or phone 367 6333 — ext 325. HQ OHQ ext 328.

Council seeks research funds

THE Forest Production Council is seeking $4.6 million from the Federal Government to develop new technology for the economic processing of small jarrah sawlogs.

The funding is for four years under the terms of the Department of Industry, Technology and Commerce's Public Interest Projects.

Small jarrah logs will come from the new generation forests which are so little used that productivity from these areas has not been achieved.

The Council believes that while thinning the forest enhances growth, the physical properties of the smaller trees affects their processing in conventional sawmills and the marketing of the timber.

The project will develop technology to produce high grade jarrah from the thinnings.

It was aimed at increasing the State's sawlog yield by 200,000 cubic metres a year and, ultimately, to double this figure.

The long-term benefits to the State could exceed $100 million a year and maintain direct rural employment in the timber industry of 1,000 people.

The improved efficiency of the industry in using thinnings could also reduce the land use conflict between conservation and production forestry.

Four stages of research and development are proposed over the four-year period of the project.

They are the conversion of current sawmills to handle small jarrah logs, seasoning of sawn timber, developing markets, and utilising the wood residue.

The Forest Production Council stresses the urgency of the project because of the timber industry's growing dependence on hardwood from regrowth forests.

Research has started at the Wood Utilisation Research Centre at Harvey, but funding is needed to continue the work and employ qualified staff.

The Council believes that while the research should be carried out at Harvey, there will be a significant input from W.A.'s forest-based industries.

The research was in the public interest and deserved financial support because jarrah was typical of a broad range of commercial eucalypt timbers grown and used commercially throughout Australia.

Jim's a natural

SIX MONTHS ago CALM research officer Jim Goodsell became President of the newly formed Wanneroo and Northern Suburbs Branch of the W.A. Naturalists Club.

The first five monthly meetings of the Branch since then have resulted in a turn-up of some 70 eager members from all working and domestic backgrounds.

To date Jim has co-opted the services of forester Alan Briggs, Wildlife researcher Tony Friend and Wildlife officer Laurie Anderson to talk to the club about their jobs with CALM.

The response by club members and the interest shown by the speakers has reflected the diversity and viability of the Department in improving community understanding of present and forthcoming conservation projects.

At the next meeting on September 10 wildlife researcher Dick Whitford will reveal the complexities in raising rare and endangered marsupials.

Irony of Ranger's verse . . .

by JOHN HUNTER

FOR those who remember and those who should beware — four years ago the National Parks ranger corp lost a fine colleague in the line of duty.

Len left his home in Cape Arid National Park late one afternoon to do a short beach patrol on his motor bike — he did not return.

His bike was found some days later below high water mark in Yokinup Bay — the ignition key still "on".

It was thought that he had struck a soft patch of sand or undetectable rut and while he lay on the beach, the tide came in and carried him away.

Born at Three Springs in WA, Len Otte was one of nature's gentlemen.

He had been a policeman, a farmer, a fireman, an airline pilot and a ranger.

It is ironic that he wrote so often of his beloved Cape Arid National Park, yet the Park claimed his life in the same spot described by him only weeks before.

TO HELL WITH THE TIDE CHARTS

Oh say, have you been on Yokinup Bay,
When the tide was comin' back?
In 4 WD low ratio
Cussing the soft slow track!

The inland track is impossible —
It's two feet deep in mud —
But Yokinup Bay is worse than that,
When the tide is on the flood.

So you hit the beach at 6pm,
Sun sinking down Tagon way —
Hoping the beach would be just right,
For the end of a long hard day.

But at Shelley Beach you know too well,
You made a mistake to come?
You've come too far to go back you fear,
And you're feeling rather numb.

So all that's left is — press on now —
For never a moment flinch!
Feed her the gas — keep the revs up —
Thank God for the Thomas winch.

As the engine screams and the sand it squeals,
Waves lick at the tyre tread —
Keep going! Keep going! you hiss then —
And you think of your warm soft bed.

You're right up against the sandhills,
Fishtailing and sliding the slope.
Fighting the wheel, and trying to feel,
A shiver of dawning hope.

The sweat beads form on your forehead —
Dash 'em aside in the chill.
The salt mist swells with the onshore wind,
You're feeling distinctly ill.

A glimpse of light up ahead there —
On a slope above the Bay.
The Ranger's house is a beacon,
For the traveller on Yokinup Bay.

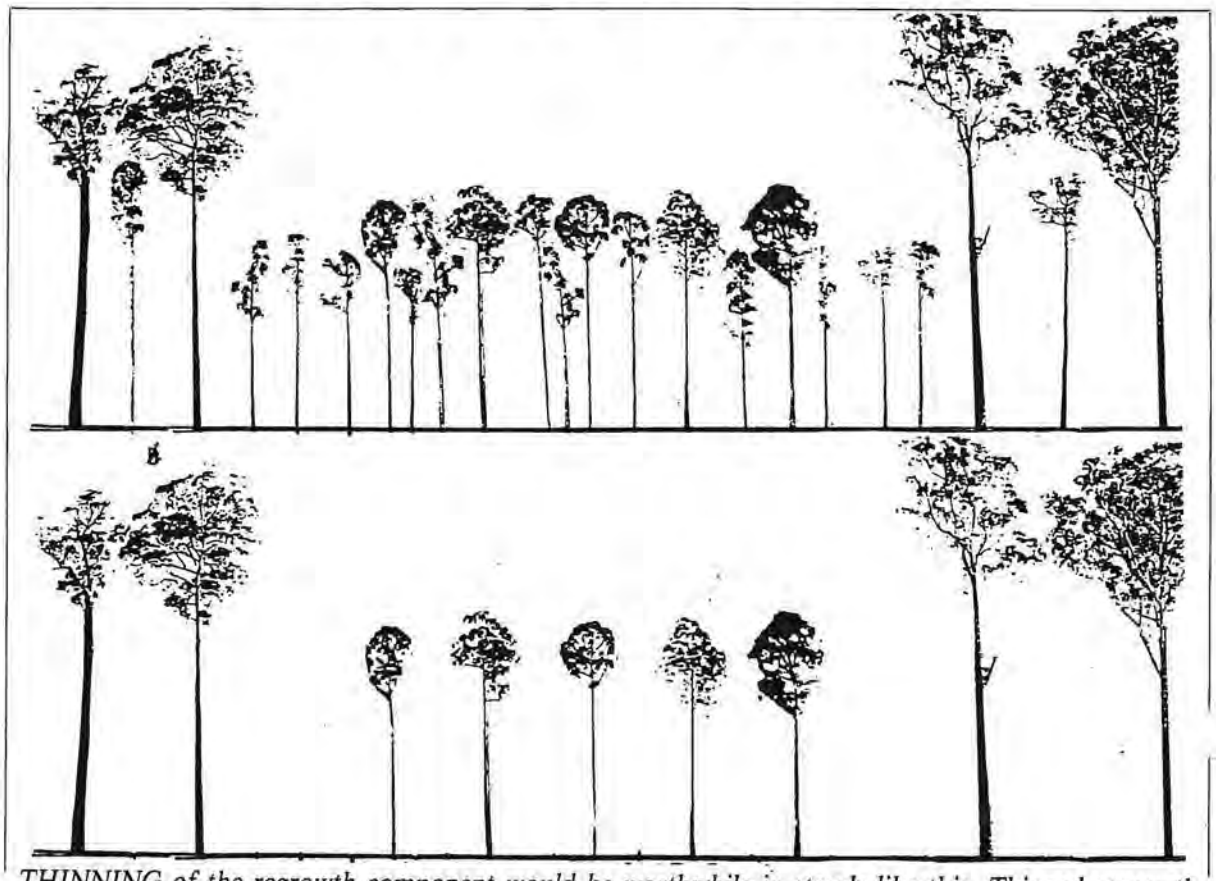
Thomas River slides into view,
— Never again you say —
Headlights slicing the sea mist,
On wide flung Yokinup Bay.

Oh say have you been on Yokinup Bay,
When the tide was goin' OUT?
The sand like a concrete highway,
The pleasure could make you shout!

The warm sun kissing the wave tops,
The breakers curling like cream —
Making the thought of a high tide,
Seem like a distant dream.

Two of the moods of a mighty bay,
On our far flung Southern Border,
Part of a Park for the Nation,
And part of Nature's Order.
— LEN OTTE
Cape Arid National Park

Two-tiered Karri stands—another milestone



THINNING of the regrowth component would be worthwhile in stands like this. Thinned regrowth stems (below) have space to grow to sawlog size before their growth is affected by the surrounding big trees.

OVER the last 20 years, milestones in the development of karri silviculture include the return of the clearfelling system, the development of hand planting as a regeneration option, the establishment of a residue woodchip industry and the commercial thinning of regrowth forest.

Each has meant a significant improvement in management.

The latest development to be added to the list pioneers the treatment of two-tiered stands.

'Two-tiered stands' is something of an "in" phrase at the moment — it simply refers to a stand that contains trees of two very different age and size classes.

Usually, this type of forest is the result of previous selection cutting, but sometimes wildfire which was not hot enough to kill all the large trees creates the same effect.

Uneven aged stands pose particular management problems.

Much of the regrowth is suppressed by the larger trees, and when the large trees are finally felled a lot of the regrowth is smashed or damaged in the follow up regeneration burn.

Now the long term intention is to convert them to even aged stands.

The question is, when and how do we do this while minimizing the waste of existing regrowth (perhaps 30 years old).

In some stands, clearfelling of this regrowth and the older trees is the best course, because the regrowth cannot develop into sawlog sizes after being suppressed by the older trees.

In other stands where the gaps are larger, it would be better to allow this regrowth to develop into sawlog sizes before clearfelling; a process which can be sped up by thinning.

Although the thinning of two tiered stands will not result in major increases in general purpose sawlog yield, it will nevertheless be a worthwhile improvement at a time when it is most needed.

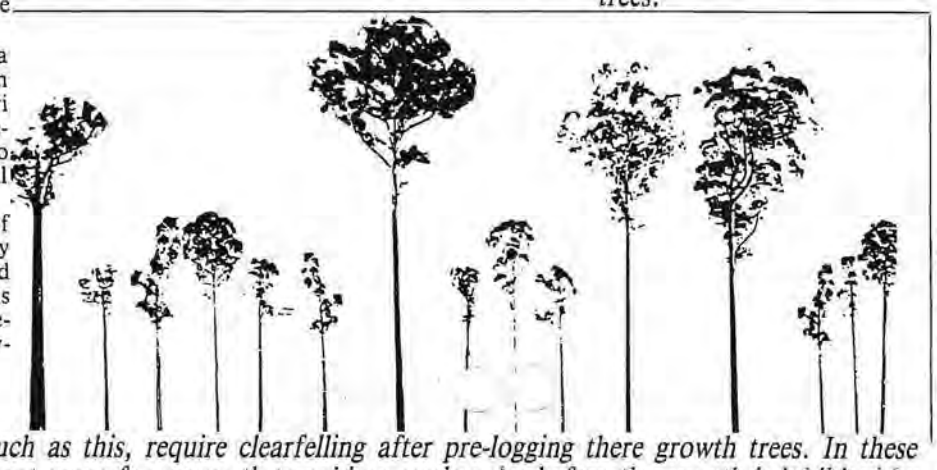
Tenders for a specialized unit capable of working ahead of a normal logging operation are being called to pre-log or thin the re-growth in two-tiered forest.

This operation will make it possible to fine tune the silvicultural prescription to best suit the needs of each particular stand.

An added bonus will be that the harvesting equipment to be used will also be able to debark small marri and enable it to be utilized for chipwood.

Till now this has been a problem with thinning in mixed stands — marri could not be utilized because it was too small to debark with conventional equipment.

In the future many of the small karri logs may be used as sawlogs instead of chipwood — and this will mark another milestone in silvicultural development.



TWO-tiered stands, such as this, require clearfelling after pre-logging there growth trees. In these stands there is insufficent space for regrowth to achieve sawlog size before the growth is inhibited by the surrounding large trees.

Bulletin needs articles

by JOHN HUNTER

THE AUSTRALIAN Ranger Bulletin was first produced by the Australian National Parks and Wildlife Service four years ago to provide a vehicle for communication of ideas and developments affecting Rangers, Wildlife Officers, field officers and others working in government conservation authorities throughout Australia.

Since then, the journal has greatly improved the communication on matters of professional interest and the means for staff to become aware and to make others aware of new techniques, developments and management practices.

Have you contributed an article yet?

Any information peculiar to your area or activity, especially written in your own style in a few paragraphs, is important.

Maybe, a question put to others who have already solved your problem — new ways and means, new observations.

Do you receive ARB?

Drop me a note:- John Hunter, Publications Section — Head office, Como, stating your private address and I will put you on the mailing list.

It is not intended to be a hi-brow document, so if you are not a "writer", tell your story in a simple letter to me and as the WA representative on the editorial panel I will adjust what is necessary.

Remember — the ARB is a forum for ideas sharing, and as the Department of CALM manages its responsibilities in a state one third the size of Europe, featuring all global climates, countless ecosystems and unique species, let's show Australia our expertise, ideas and what we have and what we have learned in looking after such a huge national asset.

The feature topic for the next issue in September is — "Communications with the Public" — rush me

Journal proves popular

The Department's journal, Landscope, has been enthusiastically received to the degree that the Distributions Officer Robyn Weir is "flat out" adding names to the list for the next issue.

Staff and the general public have reported verbally and in letters to the Editor, that the quality of photographs, range of topics and the professional approach to layout and design is indicative of the Department's objectives in providing for all its publics.

. was a year ago that a committee comprising Alan Hill, John Hunter, Marion Lewis, Malcolm Taylor and Chairman Dr John Sharpham first discussed the formula for producing the magazine.

As the "shop window" for the Department of Conservation and Land Management and a successful replacement for Forest Focus and SWANS journals, Landscope Vol. 1 June 1985 has generously embraced the topic of Land Conservation issues which involve Wildlife, Recreation, National Parks, Forest Reserves and the general management procedures.

LANE-POOLE RESERVE PLANNING

By ROGER HEARN

THE WRITING of a draft management plan for the Lane-Poole Reserve is now well under way after about 18 months of formulating ideas and getting public input.

Building on earlier solid ground work laid down by the Northern Jarrah Forest Reserves Advisory Committee and more recently solicited public input by way of questionnaires, submissions and workshops, the Lane-Poole Reserve Planning Group is now resolving issues, making bold decisions and writing the plan.

It should go public within the next few months for comments before a final plan, binding on management is submitted to the Minister.

Public input has been facilitated by both the advisory committee and the planning group.

The first of these was established late in 1983, to advise the then Forests Department, and subsequently CALM on the management of areas of Northern Forest secured with a purpose equivalent to that of a National Park.

The first such area secured was the 55,000 ha Lane-Poole Reserve.

This Committee is made up of a range of people from Government Departments (CALM, W.A.W.A., D.C.E., Sport and Recreation and Tourism Commission), Shires (Murray and Waroona), the environmental movement through the Conservation Council of W.A., and a private land owner.

It has, through its own discussions on matters of recreation, conservation, protection and fire management for the reserve and through discussions with special interest groups and individuals on diverse matters (such as car rallies, bus camps on State Forest, daming the Murray), established a direction for management and succeeded in getting the planning group established to prepare formal management plans for the area.

This group comprises Owen Nichols (on loan from Alcoa), Barry Muir (CALM Planning Group, formerly National Parks), Drew Haswell (CALM Northern Forest Region) and Jim Sharp (for the Department of Sport and Recreation) ably replacing Eugene Herbert in the area of recreation. (Jim is now employed by CALM as the Scientific Advisor to the Director of National Parks and Recreation).

They took on the task of wading through the voluminous minutes of the advisory committee meetings, prepared brochures and questionnaires for distribution, solicited submissions from organizations and individuals, and organized four workshops to involve the public in discussions on issues of conservation, fire management, recreation and other land uses.

They are now in the process of sorting through and extracting materials from these, weighing up arguments, making decisions and writing the draft plan.

The next phase will be the advertising of the plan, presenting it to some groups and waiting on public response.

Implementation of the Management Plan is going to be greatly eased with the appointment to Dwellingup of a National Park Ranger.

Interviews have already been completed and the appointment should be made shortly.

He will be largely responsible for public relations and public control.

With the spending of over half a million dollars in the last two years on site rehabilitation and development work on the Murray River, his role is going to be vital in reducing the incidence of vandalism, littering and general environmental degrade.

SHEEP THRIVE ON PINE DIET

TESTS carried out by the CSIRO show that pine needles and bark are very palatable to sheep.

The tests were carried out during summer at Wanneroo, and Floreat Park Laboratories had found that each sheep could eat up to 200gm of needles a day.

Subsequent tests on wool fibres, following a diet of pine needles and bark, showed no difference in the fibres when compared with sheep feeding on a conventional diet.

The CSIRO report said sheep clean up much of the pruning and thinning debris in established plantation areas, considerably reducing the fire risk.

However, bark-stripping of young trees could be a problem if not checked.

Whether or not the meat is tainted as a result of a pine needle diet has yet to be tested.