

CALM NEWS

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
WESTERN AUSTRALIA

February 1992

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by Verna Costello

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Following a second selection round of the Cooperative Research Centres Program, the Federal Government recently selected a further 20 Cooperative Research Centres (CRCs).

These follow the first 15 announced in March 1990 and are the second step towards fulfilling the Government's 1990 commitment to support up to 50 such centres with annual funding reaching \$100 million by 1994/95.

The 20 centres will undertake research and education in areas including mining, information science, manufacturing and processing, health, agriculture and the environment, and will complement work being undertaken by the 15 centres already established.

All 35 centres are expected to play a major role in Australia's future economic and social development, and greatly improve our understanding of key environmental issues.

The Cooperative Research Centre for Biological Control of Vertebrate Populations, in particular, has attracted Federal Government funding of \$12.42 million to be spread over the seven years it is expected to run (1992 to 1999).

Continued on page 6.

NATURALLY CALM

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Launching the strategy for public comment, the Minister for the Environment Bob Pearce said Western Australia's wildlife was internationally famous for its richness and diversity.

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"However, species extinction is still occurring and there has been a loss of

biological diversity around the State - this strategy will help stop this unwanted trend.

The Minister said CALM would work with rural communities to develop regionally-based nature conservation plans including programs to control introduced species such as foxes and cats.

He said a threatened species unit would be set up within CALM to coordinate all work to protect threatened species, both within Government agencies and by industry and community groups.

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identified, the community as a whole must be aware of the importance of nature conservation and be willing to play its part," Mr Pearce said.

"Formally commenting on the draft strategy would be one way the community could help."

The draft nature conservation strategy is open for public comment for three months after which CALM will produce a 10-year plan for its implementation.

See pages 4 and 5 for extracts from the summary of the draft.

PUBLIC COMMENT INVITED



Protection of wildlife in forest, river and stream covered in new Nature Conservation Strategy. Photo by Jiri Lochman

Forests under review

THE AUSTRALIAN
WA FOREST AGREEMENT MAKES HISTORY
THURSDAY FEBRUARY 6 1992
Printed and published by Nationwide News at the office of the company, 2-4 Holt St., Surry Hills 2010

IMPROVED conservation measures, new national parks and changes to timber harvesting are among recommendations in a major review of Western Australian forest management released recently by Environment Minister Bob Pearce.

The 12 month review by the Department of Conservation and Land Management is published in a draft report, which is open for public comment for the next three months.

Mr Pearce said the review was the most comprehensive examination of WA's native forests since the 1987 Timber Strategy.

"It does not replace that strategy, but updates it, based on the latest information available," he said.

"This includes advances in technology and scientific research and the knowledge gained from implementing the 1987 strategy."

The Minister said two new national parks were among 18 new conservation reserves proposed in south-west forests, totaling 124 000 hectares.

Still to be named, the parks would be created near Collie and north-west of Denmark.

"As well, every stream in the forest would have a corridor of undisturbed vegetation, extending existing river and stream zones by five times their present area," Mr Pearce said.

"A total of 154 000 hectares would be allocated to river and stream zones throughout the forest.

"Despite these massive additions to the conservation reserve system, existing levels of timber yield from the forest can be sustained indefinitely."



Environment Minister - Bob Pearce

Mr Pearce said the estimates of the level of wood production in the 1987 Timber Strategy had been conservative because the jarrah forest had not been inventoried.

He said the inventory, foreshadowed in the 1987 strategy, had now been completed.

Sophisticated technological developments made it possible to make precise estimates of the standing volume of wood, the size class distribution and forest growth rates.

The level of sustainable wood harvest from the karri and jarrah forest was 1 360 000 cubic metres of jarrah, 417 000 cubic metres of karri and 508 000 cubic metres of marri.

The review also recommends important changes to timber harvesting operations.

Mr Pearce said Operation Foxglove was another initiative proposed in the review with CALM setting a 10 year target to make 20 per cent of the forest fox-free.

Joint heritage agreement

ENVIRONMENT Minister Bob Pearce's recent announcement of an historic agreement to protect heritage areas in WA's forests is the first between a State forest manager and the Australian Heritage Commission.

The agreement is expected to become a

model for similar moves around Australia.

Published reports detailing the agreement were launched simultaneously in Perth by Mr Pearce and in Canberra by the Federal Environment Minister, Ros Kelly.

"The Australian Heritage Commission and the Department of Conservation and Land Management have

worked closely to assess the southern forests for heritage values worthy of listing in the Register of the National Estate," Mr Pearce said.

"The Register is a national inventory of places significant to Australia's natural and cultural history and, obviously, many West Australian areas are already listed.

"Both public and private land is included, since listing is not a land use decision. National estate areas, for example, are not the same as national parks.

"What's so significant about the CALM-AHC agreement is that national estate values and forest management have been examined in a comprehensive regional review.



Stands of jarrah such as these are covered in the CALM-AHC agreement. Photo by Tom Leftwich

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COMO RESOURCE CENTRE
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"What's so significant about the CALM-AHC agreement is that national estate values and forest management have been examined in a comprehensive regional review.

Lesueur National Park declared

On January 21, 1992 the Environment Minister, Bob Pearce, announced the declaration of Lesueur National Park.

THIS announcement saw the culmination of many years' hard work by many people and was a major advance for nature conservation in eastern Australia. Importantly, Lesueur is the first national park to be declared since the Government's 'Resolution of Conflict' Policy was announced, and was declared only after agreement by both Houses of Parliament.

Lesueur, located about 25 km northeast of Jurien, has extremely high nature conservation

values and is also an area of great beauty.

It protects 821 species of plants (10 per cent of the State's flora), 132 species of birds, and 49 species of reptiles.

Among the plant species are seven species of declared threatened flora and 111 species of plants endemic to the northern kwongan. Importantly, the new national park is almost free of dieback disease.

The vegetation consists mainly of kwongan - species-rich shrublands - but also

includes some areas of woodland.

Vegetation plots in kwongan average 76 species per 100 square metres with some plots having over 100 species, an incredibly high figure, probably not exceeded anywhere in the world.

There is such a very fine-scale mosaic of vegetation types that vegetation mapping in the traditional way is almost impossible. The species composition of the kwongan changes remarkably. Two vegetation quadrats on



At official opening of Lesueur National Park, left to right: Lance Jackson, Andrew Burbidge, Roger Underwood, Environment Minister Bob Pearce, Andrew Hill, Terry Harrington and David Rose.

the same soil type only 500 metres apart may have only 40 per cent of plant species in common.

Threatened plants include the Pine Banksia (*Banksia tricuspis*), which is restricted to the

Gairdner Range and has a distribution only 13.5 km long and 8.5 km wide. The park will protect 97 per cent of all known plants of this species. The park is also very important for the conservation of Carnaby's Cockatoo.

When he visited the new national park, the Minister was met by protesters who were in favour of a coal mine in the park and were opposed to the cessation of gravel extraction in five years' time.

Controversy about the Lesueur National Park is not new and came to a head in 1989 when mining company CRA proposed to mine coal and generate electric power in what is now the park. CALM prepared a summary of the nature conservation, landscape and recreation values of the Lesueur area for the Environmental Protection Authority, setting up a task force especially for this purpose.

A major undertaking, the report of 148 pages

was prepared in record time, with many staff working, unpaid, for long hours over many days.

The EPA released CRA's Environmental Review and Management Program in May 1990 and another task force, including many of the members of the first one, was set up to prepare CALM's response to it. Because of the great public interest in the Lesueur issue, CALM's Executive Director, Syd Shea, decided that CALM's submission would be published and it came out in July 1990.

The rest is history: SECWA decided that the next power station would be at Collie and the EPA recommended that the coal mine not proceed and the area be declared a national park.

CALM can be proud of its role in the decision. Research carried out by CALM staff and by consultants working for CALM provided the basis for the recognition of Lesueur's nature conservation significance

and the work of the two task forces was of high professional standing. As well, there was much support for the park from local people and from the conservation movement.

CALM acknowledges the dedication and expertise of its staff whose work contributed to this great occasion: among them are Andrew Burbidge who chaired both task forces and edited both reports, Steve Hopper, Steve van Leeuwen, Wayne Schmidt, Peter Bowen, Neil Gibson, Angus Hopkins, Greg Keighery, Jim Armstrong, Neville Marchant, Norm McKenzie, Tom Hill, Bryan Shearer, Andrew Brown, Jeni Alford, Phil Fuller, Mike Lyons, Ray Lawrie, Geoff Mercer, Kelly Gillham and David Rose.

CALM also acknowledges the contribution of botanist Ted Griffin and of local community members belonging to the many conservation groups working tirelessly to achieve a common goal.



Research director Andrew Burbidge looks out over a sea of red feather flowers (*Verticordia grandis*) at Lesueur National Park. Photo courtesy WA Newspapers

Forest management explored in CALM's new videos

Of particular interest to forest managers and politicians, as well as the general public.

TWO new videos have been produced to help make the new Forest Management Strategy much more accessible to the WA public.

The first, a 10 minute summary of the new Forest Management Strategy, is aimed at a general audience.

The second is a joint production with the Australian Heritage Commission.

It explains their agreement to assess forest areas for the National Estate, Australia's heritage list.

As well as being shown to general audiences, the

video will be aimed at other forest managers and politicians. The Heritage Commission hopes the agreement will be a model for similar moves around Australia.

The videos were written, directed and presented by CALM Public Relations Co-ordinator Caris Bailey, using footage from previous CALM productions, as well as new material.

The crew filmed from the specially equipped helicopter used during the jarrah inventory and

spent three days in the forest around Manjimup, Walpole and Mundaring, obtaining footage of regeneration, river and stream reserves, and so on.

CALM staff working at computers analysing the jarrah inventory, maps and other graphics from computer screens and the CALM - Heritage Commission steering committee at work, are also featured in the videos.

Copies of the videos will be distributed to all CALM offices.

Gottstein Award

A STUDY into overseas hardwood fibre projects may ultimately boost Western Australia's timber export industry.

To complete the study, a Gottstein Fellowship was awarded late last year to CALM's Gary Inions.

Gary will assess the State's competitiveness with other sources of hardwood fibre.

He will examine the location, scale of operation, species, future expansion of hardwood ventures which export to the PACRIM and gather information about growing costs, silvicultural techniques, growth

rates, harvesting and transport techniques and costs, wood quality and processing costs.

The project may involve travel to Thailand, Vietnam, Chile, the southern states of the USA and other timber producing countries and will be completed during 1992.

This study will help CALM to attract investments for its hardwood projects.

"Five fellowships were awarded in 1992, the highest number of awards made in any year," said Denis Cullity, Chairman of the Gottstein Memorial Trust Fund. (The National Education

Trust of the Australian Forest Industries).

"This reflects the importance placed by the Trust on the topic of special interest for 1992 - the study of the economics of wood production from Australian plantation and native regrowth forests."

"The information collected will contribute to the development of a plantation-based competitive chip export industry in WA, and it is indicative of the important role the Trust can play in encouraging the growth of world competitive, forest-based industries in Australia," he said.

A Nature Conservation Strategy for Western Australia

What is the Strategy for?

The fundamental objective of the nature conservation strategy is to suggest guidelines by which the Western Australian community can:

conserve in perpetuity the widest possible diversity of indigenous landscapes, ecosystems and species (including their genetic variability), in natural habitats in Western Australia.

Many useful steps towards this objective have already been achieved, and others are in train at present. Nevertheless, losses of species and of other forms of biological diversity are still occurring in parts of the State. Now is an opportune time to review past achievements and present priorities. We need to ensure that the new emphasis on ecologically sustainable development can maintain Western Australia's outstanding natural values, especially the diversity of living things and the ecosystems in which they live, at State, regional and local levels.

The aims of this new strategy are as follows:

TO establish a vision for nature conservation in Western Australia, in which ecologically sustainable management across all lands and waters can ensure that the State's biological diversity is maintained.

TO review the conservation objectives of the Department of Conservation and Land Management (CALM), to ensure that strategies for the maintenance of the State's biological diversity are in place.

TO review the major issues involved in nature conservation in Western Australia, the scientific and social bases upon which it is managed, and the constraints within which it is conducted.

TO act as a resource document for:

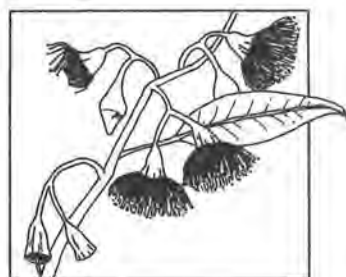
- staff members of CALM who are responsible for protecting the State's biological diversity;
- staff of other government agencies with whom CALM works to pursue the goals of nature conservation;
- the interested public who wish to understand the basis for nature conservation management in Western Australia, and perhaps influence or be involved in that management.

Some achievements so far

Nature conservation has been an increasingly significant factor in the Western Australian community for many years, especially in the last 30 years. At the same time, the State has been growing and developing increasingly quickly and there have been many conflicts between development and conservation interests over that time. There is now considerable recognition throughout the community that development and conservation must go hand in hand for both to be successful.

1 A valuable system of conservation reserves on land, totalling over 19 million hectares (more than 7% of the State) and including many of the State's major ecosystems and outstanding scenic areas, is in place (see map in full summary).

Since the formation of CALM in 1985, eight National Parks (Mt Augustus, Mt Franklin, Lesueur,



Purnululu, Shannon, Tuart Forest, Waychincup and West Cape Howe) have been declared along with many additions to existing parks. Thirty-nine conservation parks proposed in the south-west forest regions are close to gazettal, and an area of over half a million hectares has been added as nature reserves since CALM's formation. Several pastoral leases, including Mt Hart in the Kimberley, have also been purchased to fill recognised gaps in the reserve network. In addition, over 400 nature reserves have been given greater protection by upgrading from B or C class to A class.

2 Seven marine reserves (totalling over one million hectares), including Shark Bay, Ningaloo and Marmion Marine Parks, have been declared in the last five years. An ongoing Marine Parks and Reserves Working Group has been established to make further recommendations.

3 Detailed biological surveys have been conducted in areas within a high proportion of the State's 21 botanical districts, on which further reserve recommendations have been based.

4 Ten regional and 20 district CALM offices now exist throughout the State to provide management of the conservation estate. Amongst other initiatives, CALM has established a Wildlife

Management Branch and is operating a wide-ranging tree establishment program across much of the State.

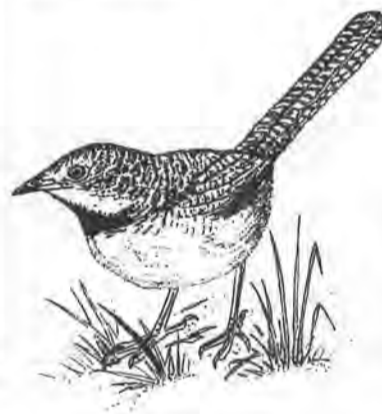
5 The significance of the introduced red fox in eliminating populations of mammals and ground-nesting birds has been established by research conducted by CALM. These findings have generated nationwide interest in fox control. A major coordinated project with State and Commonwealth funding to improve the methods available is under way. Methods of control are being applied and further developed, with spectacular recoveries in mammal populations.

Parallel with this, CALM and the Agriculture Protection Board are partners with the CSIRO and other research institutions in the recently announced Cooperative Research Centre for the control of feral animals, which is receiving substantial Commonwealth funding.

6 The importance to nature conservation of fire regimes originally applied by Aboriginal people living in arid parts of the State has been recognised, and a cooperative research project to develop methods of reintroducing locally extinct mammals has begun in the Gibson Desert. This involves CALM, Aboriginal communities and private enterprise (funding assistance from West Australian Petroleum Pty Ltd).

7 Considerable progress has been made in identifying which species of vertebrate animals and vascular plants are threatened with extinction, and there has been much research carried out on threatened species, such as the numbat, western swamp tortoise, noisy scrub-bird, Wongan trigger-plant, matchstick banksia and grass wattle.

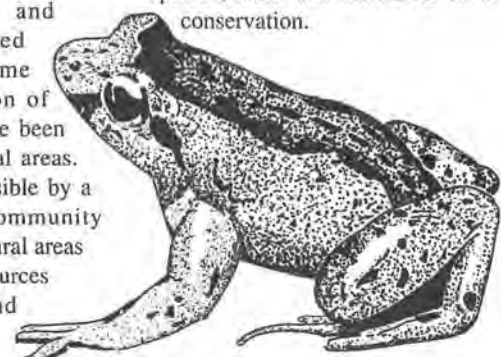
8 New techniques have been developed for managing threatened species and their habitats. Several critically threatened species can now be reintroduced, with a high likelihood of success, to areas from which they have become extinct. Successfully translocated species include the numbat, western ringtail possum, noisy scrub-bird, woylie, and greater stick-nest rat. Captive breeding and propagation of threatened species has also progressed rapidly with breakthroughs in breeding species such as the western swamp tortoise and the chuditch.



9 Most WA islands have very high nature conservation values and these have been recognised by incorporating many of them into the conservation estate. Management techniques have been developed and applied to control introduced animals such as rabbits, black rats and foxes.

10 There is now a representative system of conservation reserves throughout the area of State forest. Procedures have been developed to ensure that the rest of the forest is managed in a way which maintains biological diversity and other natural (and social) values across the whole forest ecosystem.

11 In the last five years many areas of remnant bushland on farms have been fenced, and many catchment-based conservation plans, some including the provision of biological corridors, have been established in agricultural areas. This has been made possible by a combination of high community support for land care in rural areas and the provision of resources from both State and Federal Governments.



Proposed Actions

Nature conservation has progressed rapidly in Western Australia in recent decades, but although much has been achieved, much remains to be done.

The emphasis in the past has been on establishing a system of reserves dedicated to nature conservation (and a valuable system now exists - see map in full summary) and to identifying major threats to species and ecosystems and ways of alleviating their effects.

The major tasks ahead are twofold: to build on the existing system to make it include more of the State's species and ecosystems, and to involve the whole community in land management of a type consistent with nature conservation (i.e. ecologically sustainable management).

In the past, the greatest threat to biological diversity in our State has probably been land clearing. Now that the development of land has almost ceased, the greatest threats are from land degradation, inappropriate fire regimes, and some of the exotic species of animals, plants and diseases that have become established since settlement.

Within the overall objective established at the beginning of this document, CALM's vision for nature conservation in Western Australia encompasses the following achievable goals:

There will be strong and continuing community support for nature conservation.

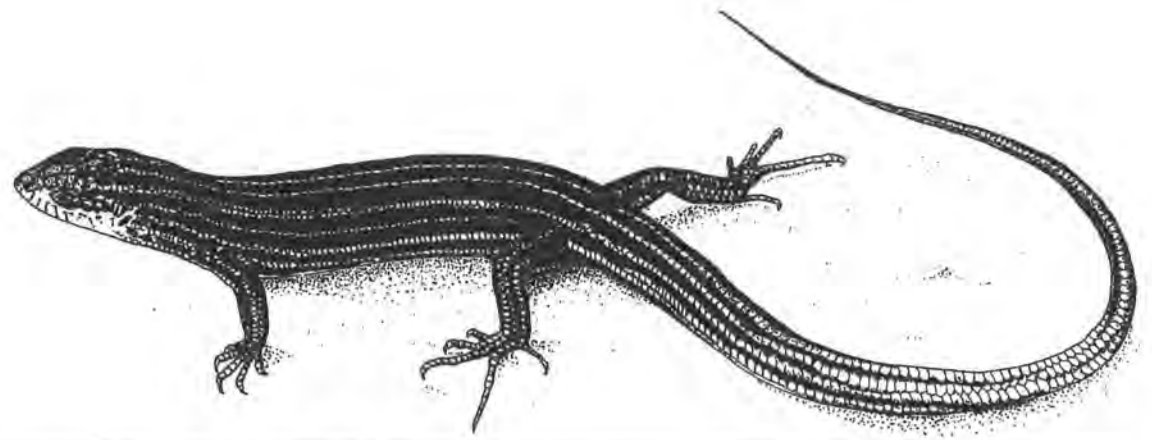
Western Australia will maintain, in perpetuity, viable and significant examples of the whole spectrum of its natural areas and biological assets.

Nature conservation and management will be integrated with all development, industrial and natural resource management activities in the State.

There will be a constructive and mutually beneficial partnership between CALM and the farming and pastoral industries, so that the nature conservation values of private a leasehold land are fully realised.

The resources available to CALM, combined with resources from the wider community (including the Aboriginal community), will enable the proper management of lands and waters for nature conservation throughout the State.

There will be sufficient scientific research conducted to provide the knowledge to properly manage species, lands and waters for nature conservation.



To achieve these goals, the following key actions are required

To complete the conservation reserve system by selecting, reserving and managing viable protected areas broadly representative of the natural ecosystems and species of Western Australia and including areas with special landscape, cultural and educational values.

THIS WILL BE ACHIEVED BY:

- continuing to support the implementation of the EPA Red Book and other existing recommendations for additional conservation reserves;
- undertaking detailed ecological surveys of those parts of the State that are poorly known at present, e.g. the Austin, Carnarvon and Ashburton Botanical Districts and marine areas, and recommending and implementing new conservation reserves where needed; and
- identifying and protecting the most threatened habitats by reservation of public land or, in the case of private land, by land purchase, or by negotiation with landholders as necessary.



- grazing of native plant species, and the protection of ungrazed reference areas; and
- encouraging local government authorities to provide for nature conservation through their town planning schemes.

To protect, conserve and manage threatened species, ecosystems and communities by conducting and applying research and protecting and managing key areas and critically endangered species.

THIS WILL BE ACHIEVED BY:

- continuing to review the lists of threatened species of plants and animals and to develop priorities for research and management through the application of ranking systems;
- reserving or otherwise protecting key habitats of threatened species and managing these areas as needed; and
- conducting research to elucidate the reasons for the decline of particular threatened species and developing ways of preventing further declines through the preparation, implementation and monitoring of Recovery Plans.

To control processes that are threatening large areas of habitat and/or many species.

THIS WILL BE ACHIEVED BY:

- continuing to develop and apply techniques to protect native ecosystems from plant diseases, especially dieback caused by *Phytophthora* species;
- expanding and applying research into the control of exotic (i.e. introduced) animals, especially foxes, rabbits and feral cats;
- developing procedures for the control of important bushland weeds and the prevention of introduction of plants from other countries that have the potential to threaten native plant communities;



To promote, encourage and assist nature conservation on private and other lands and waters outside the conservation estate.

THIS WILL BE ACHIEVED BY:

- helping landowners and managers to protect and manage remnant vegetation as components of regional conservation systems;
- promoting management of rangelands in pastoral areas which is compatible with nature conservation by sustainable

nature conservation aspects of ecologically sustainable development;

- ensuring as far as possible that natural resource managers do not degrade the biological assets of the State; and
- promoting the inclusion of environmental costs in financial planning.

To promote the appreciation and awareness of the natural environment and the role of effective nature conservation in the well-being of human society.

THIS WILL BE ACHIEVED BY:

- preparing and disseminating information on Western Australia's natural heritage and nature conservation;
- involving the public in nature conservation through volunteer programs and participation in policy making and planning; and
- assisting education authorities to teach students about nature conservation.

To develop new ways of attracting resources to nature conservation.

THIS WILL BE ACHIEVED BY:

- seeking funds from sponsorship, philanthropy, partnerships and cost-sharing schemes;
- promoting the application of the user-pays principle; and
- promoting the allocation of appropriate resources from the State, consistent with the degree of public support.



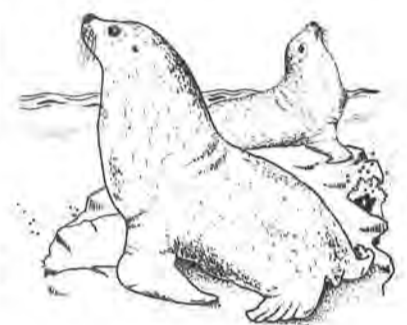
To promote and assist the integration of nature conservation with economic activity according to the principles of ecologically sustainable development.

THIS WILL BE ACHIEVED BY:

- developing appropriate management prescriptions for operations on CALM-managed public lands;
- providing technical advice to other agencies and to industry;
- assisting with the review of environmental impact procedures and environmental impact statements;
- providing information to all sectors of society concerning the

A task for the whole community

Western Australia has a remarkably diverse range of plants and animals, many of which occur nowhere else in the world. It is of global significance in terms of biological diversity.



In order to maintain this biological diversity, we will need to build on the progress that has already been made. We will need the knowledge to manage the ecosystems and the endangering processes on conservation reserves and other land. We will also continue to require some specific actions to prevent the extinction of critically endangered species.

It is a task for the whole community, not just one or a few government agencies.



Nambung National Park bushfire

by Carolyn Thomson

A FIRE caused by lightning burnt half of Nambung National Park in January and resulted in the closure of a popular picnic site.

Moora District Manager Dave Rose said that the fire burnt for three days, through 8 500 hectares of bushland.

The park, a popular tourist destination, was closed as the fire burnt right up to the Pinnacles and along both sides of the Pinnacles access road.

Winds swept the flames to within 500 metres of squatters' shacks in Grey townsite before being brought under control.

Cervantes townsite was also under threat at one stage with the fire being stopped only four kilometres from homes.

Dune vegetation was extensively damaged and some of the areas had not been burnt for 40 years.

A popular picnic site at Hangover Bay was so badly damaged that it will remain closed until spring.

Kangaroo Point will be left open. CALM officers will repair minor damage and shift the barbecue facilities from Hangover Bay to Kangaroo Point.

Emergency units from CALM's Mundaring and Wanneroo Districts were called in to battle the blaze, but volunteers also played a vital role.

Dave thanked local farmers and beekeepers, mining company employees and Cervantes residents for their help in fighting the fire.

"We can't thank these people enough," he said. "Without their help it would have been difficult to bring the fire under control."



Oh, CALM all ye faithful!

THIS SOMEWHAT irreverent pun on the well-known hymn was inscribed on a Christmas cake enjoyed by staff at the Albany District Christmas breakup dinner.

Held at John and Forrest Woodbury's Environmental School, the event saw a sizeable

roll-up of staff who also took the opportunity to farewell Bob and Pam Newlands.

Senior ranger Martin Lloyd thanked Bob and Pam for the great service they had given the public over the past 10 years during which time Bob served first as a mobile ranger and latterly as

resident ranger at East Mount Barren in Fitzgerald River National Park.

According to Terry Passmore, "the evening's repast was a gastronome's delight with mine host Forrest Woodbury adding flavour to the Christmas cake."

In lay terms does this mean the grub was good and that Forrest Woodbury was the flavour (perhaps even leaping from the cake to prove the point) or did she simply slosh litres of brandy into it just like the rest of us do?

Photo by Alan Rose

Federal boost to Wildlife Research

(continued from page 1)

The Centre's partners will be the CSIRO Division of Wildlife and Ecology, the Australian National University in Canberra, the WA Department of Conservation and Land Management and the WA Agricultural Protection Board.

Each centre is required to appoint a board of directors. The general manager Roger Underwood will represent CALM, and with regard to research matters involving fox biology and ecology, CALM will be represented by principal research scientist Jack Kinnear.

The chief aim of the centre is to develop environmentally benign, humane, and species-

specific means of controlling vertebrate pest species, with control of fertility being genetically engineered.

To do this the centre will draw on, and contribute to, developments in the fields of reproductive physiology, immunology, virology, ecology and social behaviour.

Jack said that CALM ecologists had highlighted the need for research on the biological control of foxes.

"At present we can readily control foxes by baiting but this is really only a holding action which is needed in order to protect surviving remnants of fauna, he said.

"We need a method that controls foxes over large areas, and biological control is really the only solution in the long term.

"Already, we have devised methods that are relevant to biological control and were it possible today to release a genetically engineered virus that would make foxes infertile, then research scientist Dave Algar and senior technical officer Tom Leftwich could easily assess the effectiveness of the virus.

"However, much more research is necessary to fill in the gaps and the CRC will help us to do just that."

Through the combined expertise of the scientists taking part, the centre will also develop innovative undergraduate and postgraduate courses in reproductive and developmental biology and in wildlife ecology.

Results are expected to:

- be of great benefit to the Australian pastoral industry, by removing a significant cause of land degradation;
- help to conserve Australia's biodiversity by controlling the rabbit and the fox, which are believed to be principally responsible for rarity and extinction of native flora and fauna;
- provide the basis for developing species-specific methods for controlling a range of other vertebrate pests, control of which is now heavily reliant on poison-baiting
- train young scientists and those already in industry in modern concepts and techniques of molecular biology as they relate to wildlife ecology and population control.

Bush survival

by David Gough

WHEN I was asked to research an article on Bob Cooper's Bush Survival Courses for LANDSCOPE magazine I accepted the assignment with some trepidation - remembering June Ellis' article in this very paper about her gruelling trek through the Pilbara. But after four nights at Como training centre and a weekend near the Icy Creek Bush Camp I'm glad I did accept, because I now have no fear of being lost in the bush - and being a fairly new Pom with a burning desire to explore this vast State, that's a real comfort.

During the four "theory" nights, my 25 fellow course members and I learned over 50 bushcraft skills, and during the weekend camp we put those skills into practice.

We met at the Dwellingup Hotel on the Friday evening for what was jokingly referred to as our 'last supper', and, when we had all been fed and watered, we set off in motor convoy for the camp. On our arrival, the cars were locked and left behind as we walked, without the aid of torches, for just under two kilometres to the campsite itself. This was the first lesson - walking by the light of the stars (the moon was about as pale as it could get). However, within about 20 minutes we could see our way quite clearly as our night vision improved. When we reached the camp it was on with the torches, pitch the tents, and off to bed.

For me, the highlight of the weekend was a five-kilometre triangular trek through fairly dense forest to test our navigation skills. Our team arrived back just 250 metres from the starting point and took just under three hours to complete the course.

Saturday night's entertainment was provided by the course

tutors and was an experience not to be missed, as was the camp cooking.

By Sunday afternoon we had put almost all the 50 or so bushcraft skills into practice. All that remained was to attempt to light a fire with two bits of dry blackboy stem, some hardwood, a shoe lace, a dead tree branch and a trusty penknife. After a quick run through the procedure by Bob, we were let loose - well away from any stray leaf litter! Now I seldom get the chance to blow my own trumpet, but on this occasion I will - in just over 12 minutes the 'green Pom' lit the first fire.

With that exercise completed we sat around the campfire and discussed the lessons we'd learned. The main message of the course was that in an emergency situation bushcraft skills become survival skills, and I am sure I can speak for all those on the course when I say that we left the camp feeling confident about venturing into the wilderness, and with a warm feeling of having achieved something worthwhile.

This was the first of three bush survival courses run by Bob Cooper in conjunction with CALM. The second stage is a week at Cape Range to expand on the skills learned at the first camp, and the final stage is "the walk" through the Pilbara with nothing but the clothes you stand up in and a survival kit the size of a soap tin.

The LANDSCOPE article is scheduled for the autumn 1992 issue and will deal with the growing need for bush skills in a society that is becoming more aware and desirous of the wilderness experiences Western Australia has to offer.

Karri book written

A new book on the conservation significance and management of the karri forest will soon be published.

THE BOOK, *The Karri Forest*, researched and written by CALM scientist Dr Per Christensen, deals with one of the most important and beautiful areas in Australia.

WA's southern forests encompass one of the world's tallest hardwood forests, the karri, and are home to a unique

assemblage of plants and animals.

The book presents and interprets information about the karri forest, which can be used in the ongoing process of review and discussion of difficult forest management issues.

It presents and reviews knowledge about the flora and fauna of the karri and its conservation significance and examines the development of the forest estate and forest management practices, together with the conservation reserve system, in an historical context.

This gives a fascinating insight into the many influences which have helped to shape today's karri forest.

Finally, the adequacy of the present conservation reserve system is reviewed in the light of the scientific and biological values of the forest and their management.

This complements a comprehensive summary of ecological research on the jarrah forest.

Titled *The Jarrah Forest*, and edited by B Dell, J Havel and N Malajczuk, it is available from libraries.





Rowles Lagoon after the "drownpour" - the first in six years.
Photo by Peter Broad

Drupella Workshop

by
Stephanie Turner

WITH financial assistance from the Australian National Parks and Wildlife Service, CALM recently convened a workshop on the coral-eating snail, *Drupella cornus*.

The workshop attracted about 26 people and, apart from CALM managers and research scientists, included scientists from the University of Western Australia, the Department of Fisheries, the Environmental Protection Authority, Le Provost Environmental Consultants and other interested groups from Perth, Exmouth and Coral Bay.

Papers detailing observations on the distribution of *Drupella* at Ningaloo and the Dampier Archipelago were presented.

Other papers discussed the taxonomy, reproduction, early life history, growth, genetics and population biology of *Drupella*.

Ningaloo Marine Park manager Sue Osborne presented the results of a study examining the feasibility of effectively managing *Drupella* at Ningaloo; and University of WA Ph.D student Kelley Holborn put forward a proposal to study the potential of

coral to recolonise areas of reef at Ningaloo which have been damaged by *Drupella*.

Robyn Cumming of James Cook University of North Queensland and Dr Tony Ayling of Sea Research, Townsville, Queensland presented interesting papers on the status of *Drupella* on the Great Barrier Reef.

Recent surveys there suggest that *Drupella* are present on at least some parts of the Great Barrier Reef in sufficient numbers to cause significant coral death.

The workshop was preceded by a three-day field-trip to Ningaloo which included visits to Bundegi Reef, Coral Bay, Lakeside, Cape Range National Park and Milyering Visitor Centre, and was hosted by CALM Exmouth staff.

Participants saw, first-hand, the effects of *Drupella* on the reef at Ningaloo.

Workshop proceedings are available from Stephanie Turner, (09) 447 2350.

Refill for Rowles Lagoon

FOR the first time in six years Rowles Lagoon, located 73 km north of Coolgardie, filled with water following heavy rains late in 1991.

CALM's Goldfields regional manager Ian Kealley said the water reached a maximum depth of 5 metres in one day, following 112 mm of rain in the catchment.

"Due to soakage, it's w down to 4.5 metres at the centre and both the lagoon and surrounding recreation area have once

by
Verna Costello

again become a popular site with numerous visitors," Ian said.

The lagoon was last filled in 1986 and had completely dried up during the summer of 1990-1991.

Rowles Lagoon is a significant nature reserve managed by CALM and its primary use is for conservation of flora and fauna.

The lagoon itself is only part of the larger

nature reserve which includes surrounding wetlands and lakes such as Clear, Muddy and Carnage Lakes.

Due to its historical use for recreation CALM has provided facilities and manages the area for both recreation and conservation.

Rowles is considered a passive recreation site with picnicking, sightseeing, camping and water-based activities permitted.

Passive boating (yachting, sailboarding and canoeing) is preferred, with power

boating discouraged for safety and environmental reasons.

The reserve caters for a range of visitors, from sightseeing day trippers to larger groups on extended camping trips.

An information shelter, picnic tables, barbecues and toilets are located in shaded areas around the lake.

Ian said the lagoon was a unique inland fresh water wetland, ideal for bird watching, mainly waterbirds, although many other species were attracted to the water and surrounding woodland.

"One of the rarest waterfowl in the world, the freckled duck (*Stictonetta naevosa*) which is closely related to the swan, was recorded as breeding at Rowles Lagoon in October, 1973," he said.

"Black swans, mountain ducks, grey teal, coots, galahs, miners and willie wagtails are common.

"A comprehensive list appears in CALM's excellent pamphlet, Birds of Rowles Lagoon Nature Reserve, and is in great demand by bird-watchers," he said.



Bird Meeting

REGULAR educational meetings for all volunteers caring for sick, injured and orphaned native birds are held, usually once a month, on Saturdays at 2.00 pm.

These meetings are among the few opportunities to learn more about caring for birds and to exchange ideas with other carers.

Guest speakers are often thought-provoking, and stimulating discussions always follow.

Cost is 20 cents for tea or coffee.

The calendar of meetings for 1992 is:

- FEBRUARY 22
- MARCH 28
- APRIL (no meeting)
- MAY 23
- JUNE (no meeting)
- JULY 25
- AUGUST 22
- SEPTEMBER 26
- OCTOBER 24
- NOVEMBER 28



All meetings, with the exception of that on February 22, will be held at CALM's training centre, 50 Hayman Road, Como. Just follow the directional signs from the car parks.

The February 22 meeting will be held at the King's Park Education Centre, opposite the restaurant.

For more information, please phone Sue Smith of the WA Native Bird Hospital on 295 1588.

Volunteers at Coral Bay

by
Stephanie Turner

A TRIP to an isolated lagoon just south of Coral Bay, where several hours a day are spent swimming over a beautiful coral reef may seem like a holiday dream come true.

But CALM volunteers know better, as seven of them (who have 'been there, done that') will tell you with great satisfaction - 'there was a lot of hard work to be done.'

The 'magnificent seven' were: George Arnold, Neil Thomson, Murray Fisher, Anita Relo-Fisher, Glenn Willmott, Kelley Holborn and Maxine Dawes who recently joined me on a field trip to Coral Bay, Ningaloo Reef, to assist with a study of the biology of a coral-eating snail, *Drupella cornus*, which has been responsible for extensive coral damage in the Ningaloo Reef Marine Park since the early 1980s.

The primary research objectives of this trip were to study the development of the early larval stages of *Drupella*, using *in situ* larval rearing equipment borrowed from the

Australian Institute of Marine Science and to examine potential fish predation on the adult snails.

The volunteers toiled long and hard, assisting with working the fish traps, the twice daily general maintenance of the larval-rearing equipment (cleaning filters, changing the power supplies, checking anchor lines were still in position, etc.), collecting and processing water samples for chlorophyll analysis and collecting spawning snails to take back to the laboratory in Perth.

One day Neil

accompanied me on a 4.30 am drive to Carnarvon to meet the plane carrying *Drupella* eggs from Perth for the experiments, (while George insisted he would prefer to stay in bed!).

Meanwhile, Anita and Murray spent eight hours in the water just sampling the larvae, (that is collecting larvae from the equipment in order to record growth rates and survival).

At the end of the study, Maxine helped dismantle all the equipment, amid clouds of purple ink released by an angry, unidentified, but undoubtedly very large

occupant of the coral bommie used to anchor the equipment.

Meanwhile, Murray 'volunteered' to release an even angrier moray eel that had strayed into a fish trap being used to examine predation on *Drupella*. (Thanks Murray - I was right behind you, honest!).

To all of you, thanks for your enthusiasm and assistance in the field, and for sharing the pleasures and agonies - mainly related to the camp-beds and my general lack of cooking ability.

Maybe next time, Anita, you'll get to swim with a shark.



Anita and Murray inspecting a fish trap baited with adult *Drupella*.
Photo by Stephanie Turner

Staff exchange

AN EXCHANGE of wildlife officers between South Australian Parks and Wildlife Service and CALM proved to be beneficial to both organisations.

Two South Australian fauna wardens, Frank Dal-Piva and Ian Falkenberg, visited WA for two weeks while CALM wildlife officer Peter Pennings went to Adelaide.

Frank and Ian were exposed to all facets of the Wildlife Protection Branch, including the emu, flora and whale-watching industry, methods of enforcement using DNA fingerprinting, liaison with Police and Customs officers and the educational role of wildlife officers.

In turn, they treated CALM officers to a talk on their role and how they fitted in with their organisation.

In the meantime, Peter was experiencing the South Australian system where, among other things, he accompanied fauna wardens on a patrol to remote parts of the State.

Poster competition challenges Wheatbelt children

SCHOOLCHILDREN in the wheatbelt have been given the opportunity to start the school year with a challenging poster competition.

Wheatbelt regional manager Ken Wallace said the competition would help children understand that in the wheatbelt, because most of the native vegetation had been cleared, it was of the utmost importance that remaining patches, known as remnants, be conserved.

"I believe the poster competition should be more than an opportunity to dazzle and communicate with artistic talent," Ken said.

"It is also an opportunity to provide a stimulating learning experience so that by the time entries have been posted the children will have learned much about the wide range of values that remnants provide.

"It's particularly important that children appreciate the value of remnants to them, personally, ranging from soil conservation and stock protection, through to a special place to play or enjoy nature.

"To achieve this we will help teachers use the poster within a wide variety of classroom contexts, so that the competition is part of a learning experience, rather than the whole experience.

"For example, classes could each 'adopt' a remnant and observe and record the life there.

"Each student could then select one thing to investigate by using library resources, asking a farmer or talking to a CALM officer.

"Reporting their findings to the rest of the class, they'll all benefit from a wider sharing of the new knowledge, much of which will come from the often untapped, rich store of local knowledge.

"They could describe their remnant in a poem, an essay or a drawing.

"Another excellent way to encourage them to think and examine the subject from a number of angles is the informal debate with the topic, for example: 'Should we protect remnants of native vegetation?'"

"A debate is a great

by
Verna Costello

way to discover answers to possible problems that might arise as a result of efforts to preserve the remnants, as well as questions they might be asked in the future.

"These are only a few of the learning possibilities; there are many more."

Four prizes will be awarded - two to high schools and two to primary schools.

Entries may be from individual students or from classes.

Posters should promote their message through pictures rather than words.

The pictorial message of the value of conserving remnant vegetation must be convincing to rural people.

Prizes

First-prize-winning schools will receive a copy of *Greening the West*, the resource book for schools produced by Greening Australia, and a natural history book, selected from a CALM reference list, to a value of \$50.

Where winning posters have been produced by individual students, each will also receive a year's subscription to *LANDSCOPE* (or, if preferred, two CALM posters) and one copy from a selection of CALM publications, such as *Voices of the Bush*, *Wild Places*, *Quiet Places*, *Beating around the Bush*, etc.

Second-prize-winning schools will receive a copy of *Greening the West* and where individual students have produced the poster, each will receive a year's subscription to *LANDSCOPE* or a choice of two CALM posters.

Winning entries will be displayed at CALM's Woolorama exhibit at Wagin in March.

Ken stressed that this poster competition was open to schools in CALM's wheatbelt region only.

"All the schools in this region had information on the competition waiting for them when they returned from holidays," he said.



CALM's Executive Director Dr Syd Shea, presenting the Certificate of Merit to Mr Don Marsh, of the Main Roads Department.
Photo by Len Horne, Main Roads Department.

Main Roads win on the verge

The Main Roads Department has won the 1991 Roadside Certificate of Merit.

THE AWARD was made for two projects: the road verge rehabilitation of Australind by-pass on the Bunbury Highway, and the Toodyay Road embankment rehabilitation near Preedy Road.

Mr Alan Grist, Roadside Management Officer, Bunbury and Mr Don Marsh, Roadside Management Officer, Metropolitan Division oversaw the respective

projects which demonstrated the excellent results that can be gained by direct seeding of endemic native flora species.

The Certificate of Merit is awarded each year by the Roadside Conservation Committee, but because each project was of an exceptionally high standard, the Committee took the unprecedented step of awarding two certificates instead of the usual one.

The Roadside Conservation Committee was formed in 1985 in response to community concerns about deteriorating roadside flora.

The coordination and promotion of effective management of flora on WA rail and road reserves is the prime goal of the Committee which liaises closely with local government authorities, government departments and special interest groups.

The Committee believes the award is a means of increasing public awareness of the value of roadside flora as well as an acknowledgement of effective roadside management.

Entries for the Roadside Certificate of Merit are received in conjunction with



COMPLETING an inventory of the State's jarrah forest was a huge task, involving staff from Inventory, Fire Protection and Land Information Branches.

Those staff (pictured above) recently met in Bunbury to hear how their work had contributed to the success of the project.

Photography crews have now begun the job of keeping the

information up-to-date.

They spent one week in January photographing areas of the forest that have been harvested since the inventory began in 1988.

This is part of a policy to ensure that the

Sealion warning

CALM has warned people to be wary of sea lions, after two men were attacked and injured by six of the animals near Cervantes.

The men were diving in deep water at North Ronsard Rocks in early January.

"One of the men wanted to adjust his diving equipment so they both climbed onto the reef, which was covered in water to about knee height," said CALM wildlife officer Matt Warnock.

"Six sea lions apparently rushed both men without warning and repeatedly attacked them, he said.

"Both men tried to fend the sea lions off using their arms. The remainder of their party was some distance away and charged at the reef with an inflatable Zodiac to drive the animals away."

One man suffered numerous deep lacerations to the scalp, and minor cuts to his arms. The other had a deep puncture wound in one arm and minor cuts to both arms.

Australian sea lions are not generally considered to be aggressive but can be particularly dangerous during breeding season. Mothers especially will go to any length to defend their pups.

However, this attack has baffled CALM wildlife officers, since there were no young pups present and North Ronsard Rocks is not a recognised breeding area. The two men were not carrying fish or rock lobsters in their bags.

"It just goes to show that sea lions, like any wild animals, can be unpredictable," Mr Warnock said. "It's possible that they felt threatened by the men's presence."

Sea lions inhabit offshore islands from the Abrolhos, near Geraldton, to Esperance and can be found on several islands near Lancelin, Cervantes and Perth.

"The public should take care when visiting islands frequented by sea lions, particularly during breeding season, and should avoid going ashore on breeding islands," Mr Warnock said.

People should maintain a safe distance from sea lions. Under no circumstances should attempts be made to touch resting sea lions. Parents should keep a watchful eye on their children near the animals.

"To some people they may appear to be cuddly, but they're still wild animals," Mr Warnock said.

Greening Australia's John Tonkin Tree Award.

To be eligible for this award, entries must demonstrate effective management, preservation or rehabilitation of the natural road or railside environment.

Entries for the 1991 Certificate of Merit were received from individuals, school groups, local government authorities and government departments and came from as far north as the Pilbara and from the south-west.

inventory always reflects the changes that occur in the forest.

Further sampling over a longer period will account for growth.

Photographs were also taken over small areas of forest to provide detailed

information for logging plans and a flight over the Big Brook area was completed to investigate application of the technique to regrowth karri stands.

Story by Paul Biggs
Photo by Ben Davies

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