

Department of Conservation
and Land Management

Annual Report

2001-
2002

2001-
2002

2001-
2002

2001-
2002



Conserving the nature of WA

OUR VISION

A natural environment in Western Australia that retains its biodiversity and enriches people's lives.

OUR MISSION

In partnership with the community, we conserve Western Australia's biodiversity, and manage the lands and waters entrusted to us, for their intrinsic values and for the appreciation and benefit of present and future generations.

OUR VALUES

In working to achieve our Mission, we endeavour to behave with:

- **Honesty and integrity** – acting ethically, legally and treating people with impartiality.
- **Respect** – understanding and respecting individual differences, valuing each other's contribution, and respecting the views and aspirations of co-workers and the community.
- **Openness** – having processes that are transparent and understandable.
- **Commitment** – being responsible, accountable and dedicated in our work.

We will demonstrate:

- **Teamwork** – working collaboratively and cooperatively with co-workers, and in partnership with the community.
- **Leadership** – being progressive, showing initiative and creativity in meeting our objectives.
- **Professionalism** – acting in a professional, courteous and fair manner, and using up-to-date and sound scientific principles and accurate information in our work.
- **Value** – delivering the best possible result for conservation through continual improvement of our efforts.

OUR PRINCIPLES

In making decisions we will be guided by the following principles:

- The diversity and health of ecological communities and native species throughout WA will be maintained and restored.
- Where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a reason for postponing measures which seek to prevent loss of biodiversity.
- Users of the environment and resources will pay fair value for that use.
- Use of wildlife will be on the basis of ecological sustainability.
- Outcomes will be delivered in the most effective and efficient way.
- Cooperation, sharing and integration of resources and knowledge within the Department and between communities and agencies will be promoted.
- We will adopt a flexible and responsive approach to management and operations and be receptive to change.

OUR OBJECTIVES

Conserving Biodiversity – To protect, conserve and, where necessary and possible, restore Western Australia's natural biodiversity.

Creating sustainable community benefits – To generate social, cultural and economic benefits through the provision of a range of services that are valued by the community and are consistent with the principles of ecological sustainability.

Maintaining community involvement and support – To develop community awareness and appreciation of the State's rich diversity of native plants, animals and natural ecosystems, and its unique landscapes, and promote community involvement in and support for their protection, conservation and restoration.

Improving the way we do business – To foster a positive work culture of trust, continuous improvement and anticipation of biodiversity conservation issues and customer needs, and deliver core business activities in the most effective and efficient manner.

OUR RESPONSIBILITIES

The Department of Conservation and Land Management is part of a greater conservation community and has distinct State Government responsibilities for implementing Government policy within that community. Conservation is a collective role.

We have the lead responsibility for conserving the State's rich diversity of native plants, animals and natural ecosystems, and many of its unique landscapes. On behalf of the people of Western Australia, we manage more than 24 million hectares, including more than 9 per cent of WA's land area: its national parks, marine parks, conservation parks, regional parks, State forests and timber reserves, nature reserves, and marine nature reserves.

As an agency with integrated responsibilities, we manage lands and waters for the conservation of biodiversity at ecosystem, species and genetic levels, including management for the renewable resources they provide, and for the recreation and visitor services they can sustainably support.

We assist the Conservation and Land Management Act statutory bodies (Conservation Commission of Western Australia, Marine Parks and Reserves Authority, and Marine Parks and Reserves Scientific Advisory Committee) to carry out their statutory functions.

We work closely with the Forest Products Commission to ensure that all activities in State forests and timber reserves are consistent with the protection of nature conservation, community, recreation, cultural, catchment and physical values.

We also contribute to national and international programs through national Ministerial Councils, the Natural Heritage Trust, the work of organisations such as the IUCN (the World Conservation Union), and to the implementation of international conservation treaties in WA.

HON MINISTER FOR
THE ENVIRONMENT AND
HERITAGE

In accordance with Section 62 of the Financial Administration and Audit Act 1985, I submit for your information and presentation to Parliament the annual report of the Department of Conservation and Land Management.



Keiran McNamara
ACTING EXECUTIVE DIRECTOR
30 August 2002

CONTENTS

WHAT WE DO	opposite
EXECUTIVE DIRECTOR'S REVIEW	4
HIGHLIGHTS OF THE YEAR	5
OUTPUT 1: NATURE CONSERVATION	10
OUTPUT 2: SUSTAINABLE FOREST MANAGEMENT	24
OUTPUT 3: RESOURCES AND SERVICES PROVIDED TO THE CONSERVATION COMMISSION OF WA (refer to page 72)	
OUTPUT 4: PARKS AND VISITOR SERVICES	30
OUTPUT 5: ASTRONOMICAL SERVICES	43
GENERAL INFORMATION	46
Regional Activities	46
Specialist and Service Activities	46
Disability Services	47
Organisation Structure	50
Corporate Executive and Other Senior Staff	51
Lands and Waters (Map, p. 52)	53
Corporate Services	55
Fire Management Services	59
Fire Performance Indicators	61
LEGISLATION AND COMPLIANCE	62
PERFORMANCE INFORMATION	64
FINANCIAL STATEMENTS	79
APPENDICES	97

THE OPINIONS OF THE AUDITOR GENERAL APPEAR AFTER THE
PERFORMANCE INDICATORS AND THE FINANCIAL STATEMENTS.



The Department is committed to developing a range of services that meet the needs of our many customers, and at the same time are consistent with our responsibilities for conservation and land management in WA.

EXECUTIVE DIRECTOR'S REVIEW

Western Australia contains a diverse range of ecosystems and landscapes. The southwest of the State is renowned as one of the world's 25 'hotspots' of biological diversity. A number of native mammal species that were once widespread across Australia are now relegated to remnant populations in the southwest woodlands, native forests or off-shore islands. The north contains some of the oldest landforms on the planet. The coastal environment has remarkable features such as the Ningaloo Reef, one of the closest inshore fringing coral reefs found anywhere. And the Shark Bay area is one of only 17 such areas world-wide that meet all four natural criteria for listing as a World Heritage Property.

Managing these ecosystems and landscapes is part of the Department's mission to conserve the nature of Western Australia.

A key part of this mission is to create partnerships with the community to create awareness of – and support for – conservation initiatives as well as to ensure that the community's aspirations for the natural environment are met.

A major step forward in this regard during the year in review was marked by a small, but highly significant ceremony in the Kimberley region in the State's far north. The ceremony marked the granting of living areas for two groups of traditional owners in the ruggedly beautiful Purnululu National Park, renowned for the beehive-shaped Bungle Bungle massif.

The signing of leases for the living areas with the Kwarre Aboriginal Corporation and Kayiyirriwareny Aboriginal Corporation was the first time that traditional owners in Western Australia had been granted full legal entitlement to live on their traditional lands in the State's conservation estate. But more importantly, it marked a further step in involving traditional owners in conserving the land and the ecosystems it sustains.

This is a partnership that has long been lacking and one the Department looks forward to developing across the conservation reserve network. To this end, the Department has adopted a policy of increasing the number of indigenous Australians on its staff. The Department's vision is that over the next few years, Aboriginal Australians will comprise 10 per cent of its workforce.

By involving Aboriginal people in conservation and natural resource management, we aim to incorporate regimes that date back many thousands of years. We will combine the ancient with the modern so that we better understand the land and how to conserve it for future generations.

Another hallmark for the Department was the opportunity to celebrate the contribution of our many volunteers during the International Year of the Volunteer.

Around 5,600 people volunteer over 200,000 hours a year to the Department's many and varied activities throughout the year. As mentioned elsewhere in this annual report, this reflects an enormous level of enthusiasm and commitment to conservation by the community.

The involvement of traditional owners, and the on-going participation of volunteers and community organisations, is something that will become increasingly important as the conservation estate continues to grow under initiatives such as the State Government's *Protecting Our Old-Growth Forests* policy and the Gascoyne-Murchison Strategy.

There is, of course, one particular section of the community that provides an exceptionally high level of commitment and professionalism to the conservation effort – the Department's staff. It is through their skills and dedication that the Department can muster broader community support and in so doing, conserve the nature of WA.

The contributions and commitment of the Conservation Commission of WA, the Marine Parks and Reserves Authority, the Marine Parks and Reserves Scientific Advisory Committee and other advisory committees are also gratefully acknowledged.



Keiran McNamara
ACTING EXECUTIVE DIRECTOR
30 August 2002

HIGHLIGHTS OF THE YEAR

New national parks, new facilities

Among the Department's priorities has been the implementation of the initiatives under the Government's *Protecting Our Old-Growth Forests* policy. A key element of this is the creation of new national parks in the southwest forests.

During the year, proposed boundaries for three of the new parks and proposed new boundaries for an expanded Wellington National Park were released for public comment.

The proposed new parks are Greater Kingston, north east of Manjimup; Greater Preston, in the Preston River Valley inland from Bunbury; and Greater Beedelup, which includes major extensions to the existing Beedelup National Park near Pemberton.

The Department also began an extensive upgrading of facilities at national parks and other conservation reserves throughout the State. The works were funded through the Department's capital budget, Main Roads WA tourist road programs and an additional \$2 million from the State Government out of a four-year \$25 million national parks works program.

Many of the new works are in areas proposed to become national parks including the Blackwood River Valley and in the Walpole Wilderness Area.

Working with Indigenous people

The opportunity for Indigenous groups to become more actively involved in the joint management of key areas of the conservation estate took a major step forward with the granting of living areas for traditional owners in the Purnululu National Park in the Kimberley.

Leases for two living areas extending over 1,000 hectares were signed with the Kwarre Aboriginal Corporation and the Kayiirriwareny Aboriginal Corporation, two extended family groups that had been seeking the living area leases since 1987.

The signing of the leases meant that for the first time, traditional owners in Western Australia will have full legal entitlement to live on their traditional lands in a conservation reserve. It also opens the way for closer involvement of traditional owners in managing areas in national parks and working in partnership with the Department to conserve their lands – now and for future generations.

Purnululu National Park also was nominated for World Heritage listing during the year. The nomination was put forward by the Commonwealth and is expected to be decided at the World Heritage Committee's meeting in mid-2003.

Purnululu and its adjoining conservation reserve cover 320,000 ha and have exceptional natural values such as the banded 'beehives' of the Bungle Bungle Range, which rise to 250 m above the surrounding plain and are recognised internationally as being among the most spectacular landforms on Earth.

A significant feature of the area is that the traditions of indigenous owners have survived despite the impacts of European colonisation.

Salinity – national recognition for community partnership

Western Australia's innovation in implementing projects to combat land and water salinity was recognised when recovery actions in the Toolibin Lake area east of Narrogin were named the

winner of the prestigious National Salinity Prize sponsored by the Institution of Engineers, Australia.

The award recognises a new technology or other practical outcome to address the major problem of salinity in rural and urban Australia.

Toolibin Lake, 50 km east of Narrogin, is one of the most important wetland systems in the Wheatbelt. It is on the Ramsar Convention List of Wetlands of International Importance and provides habitat for up to 42 waterbird species.

Work at Toolibin also has been a partnership among landholders in the surrounding catchment and several Government agencies, and highlights the progress that can be made in the fight against salinity by combining a range of techniques such as tree planting, diversion drains and groundwater pumping.

Salinity currently has claimed eight per cent of the Lake's catchment and a further 24 per cent – mainly agricultural land – is at risk. As well, significant parts of the vegetation on the lake floor are degraded, although the current water quality and surviving areas of fringing vegetation have enabled the lake to retain much of its nature conservation values.

Since the early 1990s, tens of thousands of deep-rooting oil mallee trees have been planted in the upper parts of the catchment. In 1995, a diversion structure and channel were established to divert low volume, highly saline surface water runoff from Toolibin into a nearby saline lake. It is estimated that about 4,000 tonnes of salt have been diverted from the lake since the system was established. Since 1997, 12 deep bores have been established and now pump more than 700,000 litres of groundwater a day

from Toolibin. While pumping has been slow to take effect in these environments, there now are signs that pumping is having a positive effect at some sites on the lake floor.

... and the combat continues

A biological survey of the Wheatbelt carried out by the Department and other institutions – currently being prepared for publication – has revealed that as many as 450 native plant species are threatened by salinity. There are currently 127 native species listed as ‘critically endangered’, which means they may become extinct within a few years unless recovery actions are implemented in the near future.

Many of the threatened species and ecological communities exist on private and other lands that are not within the conservation reserve system. However, it is particularly encouraging that landowners are showing an increasing keenness to conserve native vegetation. The appointment of permanent flora conservation officers will give landowners better access to the knowledge and skills needed to implement programs.

Threatened species – the recovery goes on

During the year, field survey work, more detailed reviews and conservation efforts resulted in 14 plant species and nine animal species being removed from Western Australia’s threatened species lists. However, while this was encouraging news in relation to conserving the State’s biological diversity, ongoing revision of the State’s flora and fauna resulted in a further 35 animals and 22 plants being added to the gazetted threatened species lists.

During the year, private individuals and scientists rediscovered seven plant species previously thought to be

extinct, bringing to 42 the total number of presumed extinct flora species that have been removed from this category in the past 10 years. There are now a total of 531 wildlife species and subspecies listed as threatened or extinct in Western Australia. This includes 154 threatened animals, 348 threatened plants, 13 presumed extinct animals and 16 presumed extinct plants.

The seven presumed extinct plants rediscovered are:

- *Eremophila vernicosa* ms – a type of poverty bush found during a survey by a rural community group;
- Two salt heaths, *Frankenia parvula* and *Frankenia conferta* found during a survey being conducted as part of the State Salinity Strategy;
- The Cranbrook pea, *Nemcia lehmannii*, found by a Bushcare Support Officer;
- The net-veined gyrostemon, *Gyrostemon reticulatus*, which was found in 1990, but only recently confirmed as the presumed extinct species;
- *Ptilotus fasciculatus*, a mat-like mulla mulla, which had been confused with the similar *Ptilotus caespitosus* which was added to the list in its place; and
- *Haloragis platycarpa*, an annual plant found at Dalwallinu by the Department’s Regional Herbarium consultant, and not collected since the original collection by Government Botanist, James Drummond.

The 14 species of flora removed from the list were found in the South West Land Division. Recent surveys showed that most of these species are now found in sufficient numbers in protected habitats and are therefore no longer threatened with extinction. Two taxa were removed from the list as they were determined to be hybrids that do not meet the listing criteria.

The flora additions include eight species known only from a single population, including the Yellow-leaved Nemcia (*Nemcia luteifolia*) from the Stirling Range National Park, and Club-leaved Synaphea, a new unnamed species from near Pinjarra. Four species known from only two populations – including a bitter pea (*Daviesia glossosema*) from the Stirling Range National Park and the Branched Hemigenia (*Hemigenia ramosissima*) from the Beaufort River – were also added to the list.

The nine fauna delistings include three insect species – Guildford springtail (*Australotomurus sp.*), a native bee (*Leioproctus contrarius*) and Mogumber bush cricket (*Throscodectes xederoides*), the Black-footed tree-rat (*Mesembriomys gouldii gouldii*) and five birds – the Princess parrot, Partridge Pigeon (eastern), Purple-crowned Fairy-wren, Thick-billed Grasswren and Western Whipbird (western mallee).

Two species of small mammal were added as threatened fauna. These are the Boullanger Island Dunnart and the Barrow Island Mouse, each known only from single islands. Ten of the other fauna additions are also only known from very restricted distributions and are small subterranean spiders, crustaceans, insects and a polychaete found in caves or underground water bodies. One trapdoor spider from the tingle forest (*Moggridgea tingle*) was also added.

Four turtle species have also been added to the State list to achieve consistency with national and international threatened species lists. These are the Olive Ridley Turtle, Green Turtle, Hawksbill Turtle and Flatback Turtle.

Seventeen bird species were added to the list following a review of the Action Plan for Australian Birds published in 2000. These birds include a number of

marine species, which may not be located in Western Australia. They include a number of albatross and petrel species. The addition of these species makes the State list consistent with national threatened bird lists.

Western Shield goes from strength to strength

Western Shield – the Department's program that is helping bring native animal species back from the brink of extinction through widespread fox and feral cat control – continued throughout the year with the successful reintroduction of several species in many parts of the State.

New populations of tammar wallabies and woylies were established in areas such as the proposed Boyndaminup National Park, near Lake Muir, south-east of Manjimup; Thames Forest Block (an area earmarked to become part of the proposed Walpole Wilderness Area); the proposed Greater Kingston National Park; and in the proposed Greater Hawke National Park.

All of the animals were sourced from the proposed Tone Perup National Park, which had an abundance of animals due to intensive fauna conservation management during the past 10 years.

Since the start of fox baiting under *Western Shield*, both species have recovered remarkably and have been removed from the State's threatened species list. The Department now lists them as 'conservation dependent fauna'.

Tammar wallabies also were reintroduced into Julimar Conservation Park and Avon Valley National Park as well as to the private Paruna Sanctuary run by the Australian Wildlife Conservancy.

The impacts of *Western Shield* are now being felt beyond the State's borders

and in other parts of Australia where several species once thrived but now have become locally extinct. The Department sent 50 woylies to New South Wales to help that State's conservation agency re-establish the species in areas where feral predator numbers have been controlled.

Dibblers – a species listed as endangered – were successfully re-established in the proposed Peniup Nature Reserve east of Albany.

Western Shield also reached a milestone during the year with the first release into the wild of two critically endangered species. Captive-bred mala (rufous hare-wallaby) and Banded hare-wallabies were released onto Peron Peninsula in the Shark Bay World Heritage Area. It was the first wild release of Banded hare-wallabies on mainland Australia and the first wild release of mala in mainland WA.

Mala previously had been extinct in the wild on mainland WA. It was once common and widespread throughout most of the arid and semi-arid parts of Australia but is now found on the predator-free Bernier, Dorre and Trimouille islands off the coast of WA, on the Peron Peninsula and in the Tanami Desert. The Trimouille Island population was recently established by the Department as part of the species' recovery plans.

Similarly, the Banded hare-wallaby has been restricted to only Bernier and Dorre Islands in Shark Bay although it was previously found throughout the southwest of WA.

The wallabies released were part of a captive-breeding program run by the Department at Francois Peron National Park in Peron Peninsula. It is funded by the Department as well as the World Heritage Program of the Natural Heritage Trust.

Volunteers – a tribute to their contribution

The Department recognised the contribution of volunteers to the conservation of the State's biodiversity at a celebration to mark the International Day of Volunteers on 2 December 2001.

The Department now has around 5,600 volunteers who contributed over 200,000 hours in the past year towards the Department's activities. Five years ago, this contribution was 70,000 hours. This increase reflects the enormous level of enthusiasm and commitment that volunteers have for conservation programs.

Volunteers come from all walks of life – students, retired people, those with full-time jobs and those who work in the home. Their activities include assistance in wildlife management and research, the WA Herbarium's collecting and cataloging activities, information services, interpretation, wildflower management, visitor surveys, participation in park planning and management, coastal rehabilitation, erosion control, historical research and work experience.

The winners of the Volunteer of the Year awards were:

- Eggy Boggs, of Dalkeith, who volunteers at Shoalwater Island;
- Gregg Thorn, of Kalamunda, who writes and publishes the Wildcare Newsletter and assists with shopping centre displays and activities at The Hills Forest Discovery Centre; and
- Jane Scott, of Witchcliffe, who assisted with the Cape-to-Cape Walk Trail.

Outstanding service awards were presented to Reg Bebbington, of Safety Bay; Brenda James, of Yanchep; Alan Compton, of Redcliffe; Denise Gillies, of Dardanup; and Robert and Beth Boase, of Dowerin.

To mark the International Year of the Volunteer, all Department volunteers received a certificate and badge.

New structure for better service

The Department restructured its districts within the southwest as part of its objective to ensure regional and district staffing arrangements can best deliver the key priorities for nature conservation, parks and visitor services and sustainable forest management.

Districts in each of the three southwest regions were amalgamated so that each region now has two districts. The three southwest regions are Swan, headquartered in Kensington; South-West, headquartered in Bunbury and Warren, headquartered in Manjimup.

All the Department's existing work centres remain operational and additional Departmental officers are now based in Northcliffe. The Department will soon establish a presence in Denmark. These will ensure the Department maintains services including its fire management resources in southwest towns and communities.

This restructuring reflects the new direction the Government has set for the Department, particularly in respect to the creation of new national parks and reserves and the reduction in the native timber harvest. It also provides clearly defined career paths for staff with the levels of many Regional and District positions upgraded to reflect the increased responsibilities and in some cases new positions.

Conservation in the rangelands

An historic Commonwealth and State partnership has resulted in nearly 3.2 million hectares being acquired since 1998 for future addition to the conservation reserve system in the Gascoyne-Murchison region. The project – funded by the Commonwealth under the National Reserve System of the Natural Heritage Trust and by the State Government under its Gascoyne-Murchison Strategy – will strengthen the conservation reserve network in the region and provide long-term protection for a range of ecosystems. The region has a high level of biodiversity with many species still unnamed.

During the year, the following pastoral leases were bought: Doolgunna, Narloo, Karara and part of Twin Peaks, Yuin, Boologoroo, Bulga Downs, Cashmere Downs and Wooleen. The leases and part leases cover a combined total area of more than 589,000 hectares.

The purchases mean that in the past four years, the area of conservation reserves and proposed conservation reserves in the region has more than trebled.

Under the Gascoyne-Murchison Strategy it is envisaged that 10 to 15 per cent of the region will need to be in the conservation reserve system to meet national criteria and ensuring greater representation for the region's diverse flora and fauna.

Several of the pastoralists who sold their properties have chosen to remain on the stations.

Dry summer, lightning test fire management

In January, the Department was faced with one of the worst weeks in 10 years in terms of the number of bush fires that broke out on conservation lands. The Department suppressed at least 55 fires in national parks, nature reserves and State forest from the Pilbara to the south coast in a four-day period following a spate of lightning strikes.

In Karijini National Park, the Department faced five separate fires within a week. Three of the fires self-extinguished when they ran into areas that had been burned in the past two years. The total area burned in the Park is estimated at 55,000 hectares.

In the southwest forest areas, the Department, with support from Forest Products Commission officers and local volunteer bush fire brigades, attended 46 fires within a three-day period. This is the biggest number of lightning-caused bush fires in the forest areas in more than a decade. The fact that so many fires were contained to small areas was a significant achievement. The biggest forest fire – 225 hectares – was in State forest near North Dandalup Dam, north of Dwellingup.

The prompt response was due to a combination of a network of fire towers, aerial surveillance by the Department's spotter aircraft and the rapid deployment of waterbombers based in Perth and Bunbury. The bombers were particularly effective in knocking down the headfire on many occasions enabling ground crews to establish containment lines.

The Department also hosted a three-day symposium that looked at the impact of fire on southwest ecosystems. The symposium – attended by 350 fire managers, scientists, fire fighters and community conservation representatives – was part of a three-phased strategy that aims to assist the Department in ensuring its fire management policies and activities are in line with the Department's core objective of conserving the State's biodiversity. Other parts of the strategy have been an internal review of the Department's fire operations and a broader public review to be undertaken by the Environmental Protection Authority.

Partnerships through communication

Working in partnership with the community to conserve the nature of WA requires consistent, programmed and strategic communications. A range of programs were conducted to create awareness, appreciation and motivation for conservation, to advocate for conservation, to create partnerships and alliances, and to encourage appropriate public participation and involvement.

Eco-education school programs were run for more than 23,000 students and teachers at The Hills Forest Discovery Centre in Mundaring and at the Wellington Discovery Forest in the

Bunbury/Collie area. An estimated additional 9,000 students took part in the *Western Shield* Schools program during the year. The aim of these programs, designed for students from Years 1 – 12, is to educate youth on the need for and complexity of conservation management, and to appreciate and become more aware of the natural environment around them. Western Australia's innovative conservation cadet unit, CALM Bush Rangers, involved almost 1,100 students aged from 13 to 17 in voluntary nature conservation work in conjunction with their local communities. Eight new units were established in high schools last year and the CALM Bush Rangers collectively contributed more than 180,000 hours to the study of nature conservation and special projects from as far north as Broome to Albany in the south, and from inland Coolgardie to Kalbarri on the coast.

Because of the steadily increasing community interest in environmental and conservation issues, and in nature-based recreation in the natural areas managed by the Department, 182 publications were produced during the year (see Appendix 10). This included four-issues of the multi-award-winning *LANDSCOPE* magazine; 18 issues of a new publication entitled *Seed Notes for Western Australia*, published in co-

operation with the Perth Branch of the Wildflower Society of Western Australia, to provide the community with information on seed identification, collection, biology and germination for a wide range of seed types for Western Australian native species; and a new series of visitor guides to WA's national parks and reserves.

Three new titles – *Waterbirds of South-West Wetlands*, *Threatened Wildflowers of the Mid-West*, and *Geology and Landforms of the South-West* – were added to the popular Bush Book series during the year. More than 200,000 copies of Bush Books have been sold since the release of the series in 1996.

A range of new information services were added to the Department's Internet site *NatureBase* during the year to meet the community demand for free and easy access to information they want on parks, wildlife, forests, conservation and land management. The site was modified to ensure that it meets accessibility guidelines for people with disabilities and a major revamping of the 'For Schools' section began to increase its effectiveness in delivering conservation education programs to the community. The popular web site received more than 18 million 'hits' during the year.

OUTPUT 1: NATURE CONSERVATION

HIGHLIGHTS

- Twenty-five Western Swamp Tortoises (*Pseudemydura umbrina*) introduced into a newly purchased site at Mogumber Nature Reserve. Further re-introductions of the bilby, tamar wallaby and woylies under the *Western Shield* Program.
- Over 100,000 ha of conservation lands registered under the *Land for Wildlife* scheme.
- The book "*Biodiversity of the Southern Carnarvon Basin*" released summarizing the results of a biological survey of rangelands in the western part of the Murchison/Gascoyne region.
- The removal of seven taxa from the list of presumed extinct flora, primarily due to the rediscovery of populations in the wild during flora surveys.

Outcome achieved by:

The conservation of indigenous plants, animals and ecological processes in natural habitats.

Output description

The development and implementation of programs for flora and fauna conservation, for threatened species and ecological communities and for commercially exploited species according to the principles of ecological sustainability, the acquisition, conservation and

protection of representative ecosystems; and encouraging public awareness, understanding and support for nature conservation services and policies.

Note: The Department uses the National Strategy for the Conservation of Australia's Biological Diversity definition of 'conservation', i.e. 'the protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.'

The Output performance can be best measured in three key areas:

1. Wildlife and habitat management.
2. Wildlife utilisation.
3. Threatened species management.

The Roadside Conservation Committee operates within the overall Nature Conservation Program to coordinate and promote the conservation and effective management of native vegetation on road and rail reserves for the benefit of the environment and the people of Western Australia. The Department meets the cost of servicing the Committee and obtains contributions towards the Committee's operations from Main Roads Western Australia and WestNet Rail.

WILDLIFE AND HABITAT MANAGEMENT

Western Shield – Fauna Recovery

The Department's wildlife recovery program *Western Shield* continues to bait around 3.5 million hectares of lands it manages to control foxes and cats with more than 800,000 poison baits being used annually. Valuable corporate sponsorship has been provided to *Western Shield*, notably

from Alcoa Australia Limited, Cable Sands (W.A.) Pty Ltd, Iluka Resources and TiWest Pty. Ltd.

The objective of *Western Shield* is to facilitate the recovery of native wildlife populations by removing or reducing introduced predators. Native wildlife populations recover naturally or are assisted through reintroductions of fauna back into their natural habitats throughout the southwest.

Monitoring of fauna across the southwest has continued to demonstrate the effectiveness of predator control in fauna recovery.

Further research is being undertaken to develop suitable baits for feral cats. Trials have been undertaken to investigate the most appropriate baiting intensity in areas where alternative prey (eg. rabbits) are present or absent. Feral cats have been removed from Rottnest, Cocos-Keeling and Faure islands. Reconstruction of the mammalian fauna on Faure Island can now proceed and the translocation of several threatened species is planned. Feral cat densities have been significantly reduced on Peron Peninsula, enabling the planned reintroduction of several species of threatened mammals on the Peninsula to proceed.

Much of the Department's work in feral cat control research is generously sponsored by the Wind Over Water Foundation.

The community education program, which includes activities at the Hills Forest Discovery Centre, professional development for educators and field camps for schools, maintained its

successful interaction with the WA public by involving 14,703 students and teachers this year.

Salinity Strategy

Fieldwork and data collation for the State Salinity Strategy biological survey of the Wheatbelt have been completed. Patterns of biodiversity are being analysed to provide the basis for selecting additional Natural Diversity Recovery Catchments in the region with the aim of preserving as much of the Wheatbelt biota as possible in the face of increasing salinisation. More than 530 sites were surveyed for plants and animals, with an additional 450 sites being scored for plants alone, and almost 5,400 species collected.

The Drummond Natural Diversity Recovery Catchment, north of Perth near Bolgart, was established under the State Salinity Strategy. This is the sixth Natural Diversity Recovery Catchment to be established for priority management.

Land Assessment

The Department continued a comprehensive biological sampling of the Goongarrie area in the Goldfields. Collaborative work with the Western Australian Museum, which surveyed the neighbouring Jeedamyia dune areas 20 years ago, has also been undertaken with a scientific paper being drafted comparing fauna assemblages from this survey to the present.

A comprehensive biological survey and monitoring program commenced on Lorna Glen Station. Lorna Glen was purchased through the Gascoyne Murchison Strategy and as part of the State's commitment for management of the area, the Department is determining baseline populations of flora and fauna, and establishing monitoring protocols to evaluate management and recovery processes.

Wetlands

The Department continues to Chair the State's Wetland Coordinating Committee (WCC) and is actively involved in the implementation of the Wetland Conservation Policy for Western Australia (1997) (WCP). The Department is represented on the Working Groups for Classification and Evaluation; Wetland Buffer Zones and Wetland Loss - all of which have been established by the WCC to address Actions of the WCP.

During the year \$159,200 was allocated across nine wetland conservation projects, with projects contributing to the implementation of objectives and actions of the WCP. Projects included the development and implementation of management plans, research, survey, monitoring and education/information (including visitor facilities). Successful projects involved wetlands that are listed under the Ramsar Convention, the Directory of Important Wetlands of Australia, the Register of National Estate, and as threatened ecological communities.

As part of community consultation for the implementation of the Rowles Lagoon Management Plan, the Department facilitated a meeting with stakeholders to establish a Rowles Lagoon management advisory group. Final stakeholder representation on the management advisory group is being negotiated between the Department and the native title claimants for the area.

Land Acquisition

The Department acquired over 591,000 hectares of land of high conservation value during the year for future addition to the conservation estate. Priorities for purchase are those areas containing ecosystems that are not adequately reserved in the existing conservation reserve system, and additions to existing reserves that would greatly improve their diversity or facilitate their management.

Funds for conservation land acquisitions were obtained from four sources: the Department's annual capital allocation; an allocation under the Gascoyne-Murchison Strategy; the National Reserve System Program of the Natural Heritage Trust; and some funding from the Crown reserves component of the State Salinity Strategy. Additionally, a capital appropriation of \$501,000 was provided from State Treasury for the acquisition of 640 hectares adjacent to the Wellington National Park for addition to the Park. The total expenditure from all funding sources for the financial year was more than \$3.15 million.

With funds allocated under the Gascoyne-Murchison Strategy, the following pastoral leases were purchased during the year: Doolgunna, Narloo, Karara and part of Twin Peaks, Yuin, Boologoroo, Bulga Downs, Cashmere Downs and Wooleen. The leases and part leases cover a combined total area of more than 589,000 hectares.

Acquisitions outside the Gascoyne-Murchison Strategy area included the following: 11.5 ha for addition to the Woody Lake Nature Reserve in the Shire of Esperance; 9.5 ha north-west of Bullsbrook supporting an example of the tumulus (organic mound) springs of the Swan Coastal Plain; a 219 ha parcel of remnant vegetation in the Shire of Chapman Valley; 65 ha north-north-east of Eneabba supporting a wetland and a highly restricted vegetation type; five parcels of remnant vegetation in the Wheatbelt totalling 1,538 ha; and 1,355 ha in the Ravensthorpe Range supporting a wide range of vegetation communities.

The Department gratefully acknowledges the significant contribution made by the Commonwealth Government through the National Reserve System Program of the Natural Heritage Trust, which supported most of the above purchases.

The contribution of the National Reserve System Program this year has amounted to more than \$1.48 million. This support will continue to help in making significant progress towards the establishment of a comprehensive, adequate and representative reserve system in Western Australia.

Traditional Landowner Liaison

Significant resources were allocated to the implementation of the signed memorandum of understanding with the Goldfields Land and Sea Council to progress joint management and involvement of Aboriginal groups in reserve management. This has resulted in the following achievements.

- Four full-time Aboriginal trainees were appointed who work primarily for the Department, and at least one week in four working for the Goldfields Land and Sea Council.
- The Goldfields Land and Sea Council appointed a part-time Land Management Officer funded by the Department, to assist with land management liaison between the Department's Goldfields Region and the native title claimant groups.

Gibson Desert Nature Reserve joint management planning continued with significant consultation with Aboriginal communities throughout the Goldfields. There was also continuation of agreements with Ngaanyatjarra people for assistance with operation Warru, bilby monitoring and work in the Gibson Desert.

The Department's Goldfields Region commenced joint management negotiations for Lorna Glen and Earahedy with the Wiluna Native Title claimants through the Ngaanyatjarra Council.

Marine Conservation

The Marine Parks and Reserves Authority (MPRA) met twelve times during 2001–2002. A strategic plan was prepared by the MPRA to provide clear guidelines for the Authority for both operational and strategic matters, and a list of key policy subjects was developed in consultation with the Department and the Conservation Commission of Western Australia. After consultation with relevant stakeholders, the Authority endorsed a *Moorings Policy, Guidelines for Mauds Sanctuary Zone (Ningaloo Marine Park)* and the *Application of the Marine Management Area Reserve Category in a Marine Conservation Reserve Planning Process*. Further advice was provided to the Minister regarding establishment of the proposed Jurien Bay Marine Park. The MPRA also continued to provide advice to the Minister on matters relating to marine conservation reserves vested in the Authority.

Extensive planning activities continued throughout the year for the establishment of new marine conservation reserves. This work focussed on the two Pilbara marine conservation reserve proposals. The Advisory Committee for the proposed Montebello/Barrow Islands Marine Conservation Reserve held two meetings and finalised its recommendations in respect to the draft indicative management plan for the proposed reserve. The Committee recommended that the Department work with the petroleum industry on a number of outstanding general issues related to management targets, environmental approvals processes and regulation of the industry in marine conservation reserves. As a result, a Government/industry working group was formed and met three times to address the issues. Once these issues are resolved, an indicative management plan will be forwarded to the MPRA for consideration and Government will be advised on the release of the proposal for public comment.

The Advisory Committee for the proposed Dampier Archipelago/Cape Preston Marine Conservation Reserve met three times and is expected to finalise the details of the draft indicative management plan during the coming year. This proposal involves a relatively complex planning process due to tenure legalities, the presence of existing major industry and proposals for future industrial development, and there was associated considerable interest from the major stakeholders. The Department conducted extensive consultation to support the Advisory Committee in its consideration of the issues.

Significant foundation work for the planning process to consider a proposal for a marine conservation reserve in the Geographe Bay/Capes/Hardy Inlet area was undertaken. This included preparing environmental and social information on the area, the undertaking of an issues analysis to gauge the community's knowledge about marine conservation reserves and to develop an understanding of the major issues, concerns and expectations of the community. Early consultation was held with key stakeholders in preparation for the expected appointment of an advisory committee and commencement of the planning process in the coming year.

Planning for the review of the Ningaloo Marine Park Management Plan commenced. Background information was gathered to support the planning process and early consultation was undertaken. This review will be progressed in the coming year.

The Indicative Management Plan for the proposed Jurien Bay Marine Park was released for public comment in October 2000. The plan has now been amended following consideration of the public submissions by the MPRA. The Authority has made a recommendation to the Minister for the Environment and Heritage that the marine park now be established.

The inaugural Department of Conservation and Land Management Marine Conference was held in Perth during June 2002 and brought together Department staff and key stakeholder representatives involved in marine reserve planning and/or management of the State's existing and proposed network of marine conservation reserves. Stakeholder participants were drawn from the conservation, industry, recreational and tourism sectors.

A joint MPRA/Departmental moorings policy was adopted. This policy will provide guidance on the management of moorings in marine conservation reserves and addresses such issues as the designation of areas for moorings, licensing of sites and provision of public moorings.

The *Conservation and Land Management Regulations 2002*, gazetted on 3 May 2002, provided for the first time comprehensive regulations for the management of marine conservation reserves. These regulations will facilitate more effective management of lands and waters by providing the Department with the ability to control activities that could impact on the marine environment. Specifically, this enables the implementation of management strategies outlined in management plans for marine conservation reserves.

The establishment of a network of long-term monitoring sites in each of the State's marine conservation reserves was progressed during the year. These were established to monitor potential impacts of human activity and periodic natural, physical and biological processes. The number of monitoring sites in the Ningaloo Marine Park was increased to 78. A total of 58 monitoring sites were established in the Rowley Shoals Marine Park and Mermaid Reef National Marine Nature Reserve. In early 2002, planning commenced for the establishment of a network of monitoring sites in the Marmion,

Shoalwater Islands and Swan Estuary marine parks, to monitor the 'health' of seagrass and macroalgae communities. This work should be completed in 2003.

Research through the Strategic Research Fund for the Marine Environment (SRFME) began with the commencement of three core research projects and 10 doctoral programs, which cover a range of physical and biological topics, and involve both the characterisation and modelling of key ecological processes of the State's marine environment. The Department was closely involved in these initiatives through representation on SRFME's Technical Advisory and Joint Venture Management committees. SRFME is a joint five-year \$20 million initiative being funded equally by the Western Australian Government and the CSIRO.

The first comprehensive summer aerial survey of dugong abundance and distribution within the Shark Bay World Heritage Property (SBWHP) was conducted in February 2002. Satellite-based tracking of the movement patterns of dugongs within the SBWHP also continued during the year under a collaborative program with the Shark Bay Yadgalah Aboriginal Corporation Inc. This program is increasing the understanding of dugong movements and habitat requirements.

Inventories of the State's marine biological resources continued to be augmented through the development of broadscale shallow water marine habitat and wildlife distribution maps for the Rowley Shoals, Ningaloo, Shark Bay, Swan Estuary, Marmion and Shoalwater Islands marine parks. A major series of studies to identify and map the marine natural resources of the Recherche Archipelago began, with projects being undertaken by the Department under collaborative Commonwealth funding (Natural Heritage Trust) and the University of Western Australia under funding from the Fisheries Research and Development Corporation. The MPRA

regards the Recherche Archipelago region as one worthy of high priority for consideration as a future marine conservation reserve under the *Conservation and Land Management Act 1984*.

Departmental officers attended 21 reported whale and dolphin strandings throughout the year, involving both live and dead animals. These strandings involved 21 individual animals, representing six species, including Bottlenose Dolphin, Andrew's Beaked Whale, Gray's Beaked Whale, Humpback Whale, Blue Whale and Sperm Whale. The most commonly stranded cetacean was the bottlenose dolphin.

No mass stranding events occurred this year. Four entanglements of cetaceans, all Humpback Whales, were reported during the year. The Department's response team disentangled two Humpbacks, one escaped contact and one is believed to have died. The Department trained South Australian officers in disentanglement procedures and provided technical advice regarding appropriate equipment.

Officers also attended 16 pinniped strandings throughout the year, including seven Sub Antarctic Fur Seals, three Leopard Seals and eight Australian Sealions. In most cases, these animals were ill or injured. Four Sub Antarctic Fur Seals and one Australian Sealion were taken into captive management, successfully rehabilitated and released. Two Australian Sealions and the Leopard Seal were returned to the sea without the need for captive management.

Fire Impacts

A study was done on the impacts of a wildfire that burnt through the Nuyts Wilderness Area, Walpole Nornalup National Park, recording fire impact on vegetation and fauna, and post fire regeneration and recovery. Particular attention was paid to the fate of the recently translocated Western

Bristlebird population. Those in the wildfire area were killed but others survived in an adjacent buffer.

Off-reserve Conservation

The Department's *Land for Wildlife* Scheme is a voluntary program that aims to increase the area of wildlife habitat on lands under private management. To achieve this, landowners or leaseholders are invited to register their properties in the scheme. An assessment is made of the quality of the wildlife habitat and advice is provided to encourage land management based on sound ecological methods. Advice is also provided to allow landholders to obtain assistance in fencing, replanting and managing wildlife habitats.

During the year, 167 properties were inspected and assessed for registration to the scheme. The total area of the properties visited was 75,583 ha, with a total area of 8,894 ha being dedicated wildlife habitat.

To 30 June 2002, a total of 1,037 properties have applied to join *Land for Wildlife*. Of these, 807 have been assessed, while 230 are awaiting a visit. Those properties that have been assessed cover a total of 578,161 ha, and include 102,691 ha of land whose primary management purpose is nature conservation.

Land for Wildlife staff gave talks to 44 community groups and five school groups during the year, put up 17 displays at shows and organised 15 field-days/workshops. Twenty-two articles appeared in the media, including three radio interviews and a TV segment.

Four issues of the magazine *Western Wildlife* and three new *Wildlife Notes* were produced.

At the State Landcare Conference, a *Land for Wildlife* Officer was 'runner-up' in the inaugural Landcare Professional of the Year Award, and *'Western Wildlife'* won the State section of the Sigma Landcare Media Award.

The Voluntary Nature Conservation Covenant Program was established to encourage private landowners to conserve bushland of high nature conservation value. In the past year, a new Coordinator and Technical Officer have been appointed with three part-time or casual officers based in regional offices. To 30 June 2002, the program established 11 covenants in perpetuity on 20 titles covering a total of 380 ha of land. A further 26 covenants are in negotiation, covering a total of 4,331 ha of land. A Stewardship Program to provide ongoing management advice and assistance to landowners is currently being developed.

The Department continues to manage and lead the Commonwealth's Natural Heritage Trust Bushcare Program. The State Bushcare Program Coordinator, Bushcare Administrator and five Bushcare regional facilitators provided assistance to a range of key stakeholders in building regional and State capacity to deliver nature conservation outcomes. Support is also provided to the Natural Heritage Trust Grants Scheme, including administration support and technical assessment of applications seeking funding. A total of \$7.8 million was provided to 31 new and 39 continuing projects during the year, with 53 per cent of the funds going to community groups.

The WA Bushcare Monitoring and Evaluation Program continued to assess Bushcare funded projects and assist in program management.

Twenty-six projects and around 270 sites were visited during the year to evaluate project outputs and outcomes.

The Bushcare Reference Group (BRG) met two times during the year to provide advice to the Department and Environment Australia on the delivery of the Bushcare program in the State. The BRG includes State Government, non-government organisations and community group representation.

Advice was provided on a range of issues including program priorities, and monitoring and evaluation. On advice of the Commonwealth, and in recognition of the new structure being developed for the second phase of the Natural Heritage Trust, the BRG was disbanded at the end of 2001.

The Department continues to engage with resource development companies regarding collaborative management of lands adjacent to Department-managed reserves. The Department has two Memoranda of Understanding (MOU's) with mining companies who hold land as pastoral leases adjacent to Department-managed reserves: Karijini National Park in the Pilbara, and Wanjarri Nature Reserve in the Goldfields Region. The leases subject to the MOU's cover an area of nearly 1.2 million hectares and are managed in sympathy with the core conservation reserves. Management Advisory Groups for both MOU's meet irregularly to share information on management issues and proposed actions, research and education opportunities. The MOU's will be reviewed during next year with the view to develop more formal cooperative arrangements.

During the year, two programs of the Department of Environmental Protection were transferred to the Department as partial implementation of the Machinery of Government Report.

Ecoplan is a community support program that has been in operation since 1991 and operates through community partnerships. The program supports community conservation volunteers and Friends groups, raises public awareness about bushland and biodiversity values and undertakes education and training programs for conservation volunteers. In February 2002, the program together with one full time staff member moved from the Department of Environmental Protection to the Department.

The Ecoplan Bushland Care Day program operates in conjunction with Conservation Volunteers Australia. During the year there were four bushland care days with a total attendance of 360 volunteers.

The award winning (2001 WA Adult Learners Awards) Skills for Nature Conservation Education and Training Program operates in conjunction with Greening Australia (WA) and the Swan Catchment Centre. Twenty Skills for Nature Conservation workshops and seminars are conducted throughout the year. Eight workshops have been conducted in 2002 with an attendance of 180, participating in over 720 hours of workshops and skills training.

Ecoplan News is published quarterly with a circulation of 1,800. Two copies have been produced since February 2002.

Part of the former Department of Environmental Protection Bioregional Planning Branch was transferred to the Department. This was associated with the Salinity Strategy 2000 task - *working with agencies and communities to develop environmental objectives and criteria for identifying priority environmental assets when planning salinity action at property, catchment, regional and State level scales*. This function will continue within the Department, particularly with respect to bioregional planning.

Weeds

The Department continued to be represented on the State Weed Plan Steering Group (SWPSG) during the past year. The State Weed Plan was released by the Government and provided guidance to government, industry and community stakeholders on weed management. Work progressed on establishing a State Weed Council.

The Department continues to provide support to research being undertaken

by the Cooperative Research Centre on Weed Management to identify and establish an effective biological control agent for Blackberry in the southwest of the State.

The State Herbarium has assisted in the detection and identification of a number of new weed infestations and a potentially serious environmental weed, Canary Island Wort, was detected near Hopetoun and controlled.

Regional community herbaria have continued to demonstrate their value in the early detection and identification of new weeds and weeds that have expanded their historic distribution.

Mining Management

Liaison with the mining industry continued through dealing with Alcoa Bauxite, Worsley Bauxite, Boddington Gold, MELC, Eneabba Mineral Sands operations, the Pilbara Iron Ore Environmental Committee, State Gravel Strategy Management Group and State Lime Strategy Steering Committee. Staff reviewed numerous annual reports for mining operations on Department managed lands and assisted other agencies to review reports and proposals that impacted on conservation values both on and off reserved land.

Environmental Protection Section coordinated and commented on 11 formal assessments by the EPA. A total of 90 mining tenement applications were processed in consultation with the Conservation Commission of WA, and appropriate conditions imposed.

The Department continues to pursue conservation opportunities by identifying land to replace/offset land impacted by mining activity and bringing these to the attention of mining companies. Compensation for loss of conservation values is also sought for operations impacting upon Departmental- managed lands.

BIOLOGICAL SURVEY

In September 2001, the Minister for the Environment released *Biodiversity of the Southern Carnarvon Basin*, a 595 page book that summarized the results of Department of Conservation and Land Management and Western Australian Museum's biological survey between 1994 and 1996 of rangelands in the western part of the Murchison/Gascoyne region. Sixty-three terrestrial and 56 wetland sites were surveyed and almost 1,600 species of plant and animal were recorded. Current patterns of biodiversity were documented and the additional habitats requiring protection to ensure the reserve system is comprehensive, adequate and representative were identified.

In January 2002, a report on the Western Australian component of the First National Assessment of River Health was released. The report described the development of AusRivAS models that use the invertebrate fauna of a river as a measure of its ecological condition and then the use of these models to assess all major rivers in the State. Rivers in northern Western Australia are mostly in good condition, although degradation is evident in some long-grazed areas. In southern Western Australia, only the Shannon River catchment is in good condition, although many forested sections of other rivers are also healthy. Coastal Plain and Wheatbelt rivers are degraded.

Fieldwork for a three-year project on the Ord River (with collaboration from the Geography Department, University of WA and financial support of the Tropical Savannas Cooperative Research Centre) to construct an overview of the bio-physical attributes and processes occurring on the river was completed. An important result was the documentation of change caused by dams, and this information is being used to help formulate Environmental Water Requirements and a Water Allocation Plan for the lower Ord.

THE WA HERBARIUM

The Western Australian Herbarium in Perth added a total of 24,453 specimens to its collection. The number of databased specimens is 528,972. Of the new accessions 1,327 were Priority taxa, and 279 were Declared Rare Flora.

The Public Reference Herbarium continues to attract professional botanist consultants, tertiary students and members of the public. During the year 1,517 visitors used this resource. Only a few specimens were added to the collection, with main work undertaken in maintaining and ensuring that the 12,869 specimens in this collection were updated.

The Community Regional Herbarium project closed on 15 March 2002 due to the expiry of external funding. For the nine months another 2,178 specimens were added to the collection, of which 87 specimens were Priority taxa and 20 were Declared Rare Flora.

The volunteer program continued to provide excellent contribution and assistance to the work at the Herbarium. During the year, 71 volunteers were on the roster, with 65 each giving at least 50 hours or more of their time. The total number of volunteer hours was 16,273 hours, being slightly lower than the previous year. Since 1990, volunteers have mounted 152,138 specimens.

	Number of databased specimens	Per cent increase from last year
Algae	5,586	2.6
Mosses	4,942	7.8
Liverworts	1,295	19.6
Fungi	6,987	1.7
Lichens	5,876	17.1
Ferns	2,902	4.5
Gymnosperms	1,649	5.2
Monocots	83,689	5.0
Dicots	416,046	4.7
Total	528,972	

More than 280 new names were added to WACensus, with lichen names being compiled and undergoing refereeing.

Three thousand nine hundred and seventy one specimens were loaned out from the Herbarium and 2,751 specimens were received on loan from other institutions. Eight hundred and ten specimens were exchanged to other herbaria, and 1,444 specimens were received from other institutions to add to the State collection.

The WA component of Australia's Virtual Herbarium was initiated, with three staff being employed for databasing and curation. A new database server was acquired by the Herbarium, and a new Spatial Database Engine acquired for the WABiota project. The WABiota application has been migrated from a trial phase to pre-production, with a comprehensive testing phase to occur soon.

Production Version 2 of Max, the Herbarium's electronic specimen information download system, was released during the year. This version is a substantial improvement on Version 1, with features including GDA capabilities and enhanced name checking.

Two issues of *Nuytsia*, the Department's taxonomic research journal, were published during the year.

WILDLIFE UTILISATION

The Department ensures that wildlife-based activities are licensed, in accordance with the *Wildlife Conservation Act 1950*, and conducts monitoring and investigations to ensure compliance with legislation and the licences issued.

Management of the commercial harvesting of kangaroos continued throughout the year, with input from the Kangaroo Management Advisory Committee. Kangaroo management operated under management plans approved by the State and Federal

Ministers for the Environment for the period 1998–2002. Under these programs, commercial harvest quotas were set for each species for the 2002 calendar year. During 2001, aerial kangaroo population surveys were undertaken over the northern survey zone as part of the triennial survey program. As euros are difficult to count from the air, a baseline population estimate using air survey estimates corrected by trial ground truthing has been calculated.

The management program for saltwater crocodiles and freshwater crocodiles in Western Australia continued. The management program covers all aspects of crocodile management, including crocodile population surveys and regulation of crocodile harvests, farming, processing and export.

Under the management program, commercial harvests of live crocodiles for farm breeding stock development, and limited harvest of eggs and hatchlings, can be approved. For management purposes, these harvests are primarily restricted to the Cambridge Gulf area, where monitoring ensures that the wild crocodile populations are conserved. Surveys were again undertaken of saltwater crocodile and freshwater crocodile populations in the Cambridge Gulf–Lake Argyle area during the year.

A total of 5,930 fauna (other than damage, but including non-commercial) licences were issued during the year, a reduction of 11.6 per cent from the previous year (see Appendix 7). The decrease was due to a reduction in the number of licences issued for the import and export of fauna and fauna products along with smaller reductions in the number of licences to farm fauna for commercial purposes. The total number of flora licences/permits issued was 1,962, a decrease of 6.6 per cent from the previous year, with the decrease in commercial flora licences being 5.8 per cent. The Department issued 480

Commercial Purposes Licences and 417 Commercial Producer' Licences/ Nurseryman's Licences in 2001–2002.

The Flora Industry Data Management System was updated. The majority of district and regional flora industry staff can now access the database to obtain information on the industry operation in their management areas, and input flora industry endorsements.

Intensive management of *Banksia hookeriana*, *Boronia megastigma*, *Stirlingia latifolia*, *Verticordia nitens*, and eucalyptus stems used for making didgeridoos continued during the year. Monitoring of *Banksia hookeriana* and *Dasyopogon bromeliifolius* continued to determine their regeneration following disturbance/fire and harvesting respectively.

The Western Australian Flora Industry Advisory Committee met once during the year, and provided flora industry management advice to the Department and the Minister for the Environment. The Minister supported a recommendation to ban the Crown land harvesting of *Andersonia caerulea*, as a result of earlier research by the Department demonstrating that commercial harvesting causes death of the plant.

There are currently four flora industry management teams; Southern, Swan Region, Warren Region and Northern Sandplains. These groups meet as is necessary to coordinate the industry and to discuss management issues.

Marine Interactions

A total of 107 whale-watch boat-tour operators are licensed Statewide, an increase of 11 (11.1 per cent) on last year. Licensed operators from various centres around the State carried a total of 22,498 passengers. This is a decrease of nine percent from the previous season. While these tours were primarily based on humpback

whales, southern right whales are the focus of whale watching activities in the Albany area.

There were 43 boat-based dolphin interaction licences, three in-water dolphin interaction licences and five boat-based dugong interaction licences issued. No in-water sealion interaction licences were issued, however 21 boat-based Australian sea lion/ New Zealand fur seal interaction licences were issued.

Twelve Whale Shark interaction licenses were issued for the year. Passenger numbers increased from 3,193 (2000–2001) to 4,332 (2001–2002), a 36 per cent increase.

Problem Wildlife and Offences

Departmental staff provided advice on a wide range of wildlife matters in response to many thousands of inquiries from members of the public. Calls involved sick, injured and orphaned fauna; fauna causing a nuisance, such as possums living in rooves and noise from frogs and ravens; dangerous fauna including venomous snakes and swooping magpies; and fauna, such as kangaroos, ducks and parrots, causing damage to private property and primary production. A summary of licences issued is at Appendix 7.

Officers in the Kimberley and Pilbara received six reports of problem crocodiles. Licences to remove the six saltwater crocodiles from the wild were issued because of the threat they posed to public safety. Other dangerous fauna licences were issued for magpies (74), butcherbirds (2) and galahs (1) at an airstrip that represented a risk of bird strike on aircraft.

Fauna causing damage resulted in 62 licences issued for emus, 927 licences for grey kangaroos, 34 licences for western long-billed corellas, 45 licences for twenty-eight parrots, 20 licences for galahs and 24 licences for Australian ravens.

The total number of damage licences issued for birds was 290, an increase of 17 per cent from 2000–2001.

During the year, Departmental staff provided guidance to many people regarding the legal requirements of conservation legislation. Verbal warnings were issued for minor offences as appropriate. Three hundred and twenty six offences under the *Wildlife Conservation Act 1950 and Regulations* and 152 offences under the Conservation and Land Management Act and Regulations were the subject of written reports. In addition, 18 offences under the Agriculture and Related Resources Protection Act and Regulations were prosecuted for illegally importing and keeping prohibited bird species. To date, action in 131 matters under the Wildlife Conservation Act and 124 matters under the Conservation and Land Management Act has been completed. A summary of reported offences is presented below (see also Appendix 9 for further details of offences).

THREATENED SPECIES MANAGEMENT

The Threatened Species Scientific Committee (TSSC) had previously met in October 2000, but the recommendations for changes to the lists of threatened flora and fauna under the *Wildlife Conservation Act*, whilst having been endorsed by the Minister for the Environment and Heritage, had not been gazetted by 30 June 2001. These amendments were gazetted on 14 August 2001.

The TSSC met again twice during the year, on 30 August 2001 and 14 March 2002. The changes recommended at the August 2001 meeting were endorsed by the Minister for the Environment and Heritage, and were gazetted on 9 April 2002. The recommended changes from the March 2002 were not referred to the Minister, as at 30 June 2002, and consequently were not gazetted at that time.

As at 30 June 2002, the fauna listing has 154 taxa threatened with extinction. Three taxa of mammals were added to the list and one deleted, while 7 subspecies of existing taxa were listed to provide greater definition of the threatened entities. Seventeen bird taxa were added, principally as a result of including a number of seabirds listed under the Action Plan for Australian Birds, and four taxa deleted. Four reptiles, six arachnids, four crustaceans and a polychaete were added, while a cricket, a native bee and a springtail were deleted from the list.

Thirteen taxa of fauna are listed as presumed to be extinct, 30 bird species are specially protected because of their listing under the Japan and Australia Migratory Bird Agreement and the China and Australia Migratory Bird Agreement, and 11 taxa are otherwise specially protected. The Priority Fauna List has 194 taxa.

With respect to flora, there are currently 348 taxa of extant declared rare flora and 16 listed as presumed to be extinct. During the year, 21 taxa were added to the extant list, and 14 deleted from the list due to studies determining that the taxa were either more common than previously thought, or were now adequately reserved. Seven taxa were removed from the list of flora presumed to be extinct. In addition to the five rediscovered last year, *Haloragis platycarpa* was also rediscovered and taxonomic confusion was sorted out between two species of *Ptilotus*, with *Ptilotus fasciculatus* being removed from the list, and *Ptilotus caespitosus* being added to the list. The presumed extinct flora species *Stachystemon nematophorus*, previously known as *Pseudanthus nematophorus*, was rediscovered by Department volunteers at Kalbarri following the TSSC meeting in March 2002. It will soon be transferred to the extant list. A further 42 taxa were added to the

Department's Priority Flora list and 14 transferred from the declared rare flora, and 26 taxa were deleted from the list on the basis of further survey and taxonomic review and 19 transferred to declared rare flora. A total of 2,066 taxa are listed as Priority Flora.

Volunteers continue to make a significant contribution to the survey effort for declared rare and priority flora, accounting for 17 per cent of the year's surveys, an increase of seven per cent from last year. Seven per cent of volunteer reports came through the Regional Herbarium program. Department staff accounted for 75 per cent of the reports received. Of the 1,704 populations inspected during the year, 148 were new declared rare flora populations, and 436 new priority flora populations.

Flora and Fauna and Ecological Communities Recovery Teams

During the year implementation of recovery plans continued for the following species of threatened fauna: Gilbert's potoroo, numbat, dibbler, southcoast threatened birds (noisy scrub-bird, western bristlebird, western whipbird and western ground parrot), Muir's corella, Carnaby's black-cockatoo, western swamp tortoise, Lancelin Island skink, orange-bellied and white-bellied frogs. Implementation of the National Recovery Plan for the malleefowl continues, with the involvement of the

Department and many members of the rural community.

Regional and District Threatened Flora Recovery Teams coordinated the recovery of threatened flora, and in some cases Threatened Ecological Communities, in the South West, Warren and Swan Department Regions, and the Geraldton, Merredin, Albany, Moora, Katanning and Narrogin Districts. Recovery teams also operate for particular threatened ecological communities: Toolibin Lake, sedgeland in Holocene dune swales, thrombolites of Lake Richmond, thrombolites of Lake Clifton, aquatic root mat community of caves of the Swan Coastal Plain and montane thicket and heath community (Stirling Range). The North West Cape Karst Management Advisory Committee oversees the preparation and implementation of recovery plans for Camerons Cave and Cape Range remipede (Bundera Sinkhole) communities, and the Lake Bryde Recovery Catchment Team covers two occurrences of the *Muehlenbeckia* and *Tecticornia* lakebed community.

The project to identify and conserve threatened ecological communities (TECs) in the agricultural southwest of Western Australia, (previously funded by Natural Heritage Trust) is now being funded by the State Salinity Strategy and concentrates on TECs threatened by salinity and water-

2000-2001 Reported Offences			2001-2002 Reported Offences	
	30-6-2001	Revised		As at 30-6-2002
Total Offences Reported	305	315	Total Offences Reported	478
Convictions	23	59	Reported Convictions	39
Dismissals	0	0	Dismissals	0
Letters of Warning	120	138	Letters of Warning	129
No Further Action	51	87	No Further Action	87
Pending	111	28	Pending	111
Total Fines	\$11,450.00	\$20,250.00	Total Fines	\$6,050.00
Total Costs	\$1,943.00	\$5,897.35	Total Costs	\$2,141.90

Note 1: Figures for 2000-2001 reported offences are updated from those included in last year's report under the Revised column.

Note 2: See Appendix 9 for details of 2001-2002 offences. In the 2001-2002 figures above and in Appendix 9 Conservation and Land Management Act and Regulation offences are shown for the first time and accounts for the large increase in the number of total offences.

logging. Two other TEC projects funded by the NHT, one identifying and conserving TECs in the rangelands and the other implementing Interim Recovery Plans for critically endangered TECs, continue.

Ecological Communities Recovery

Threatened communities of native plants and animals are given additional protection under new arrangements announced recently by the Minister for the Environment and Heritage. The Minister has adopted a list of 68 threatened ecological communities maintained by the Department and will consider future recommendations from the Department of such communities for inclusion on the Ministerial list. The list identifies threatened ecological communities as being Critically Endangered, Endangered or Vulnerable, these categories being arrived at by scientific appraisal against criteria based on those used internationally for threatened species.

The list approved by the Minister includes such well-known ecological communities as Toolibin Lake near Narrogin and Lake Clifton in Yalgorup National Park, both of which are Wetlands of International Importance under the Ramsar Convention. Less well-known threatened ecological communities include remarkable assemblages of cave dwelling animals on the Leeuwin Naturaliste Ridge, at Yanchep National Park and in the limestone caves and sink-holes of the Cape Range Peninsula.

Many plant assemblages are also on the list, and include some like the 'Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)' and 'Montane Thickets and heaths of the eastern Stirling Range' that contain many threatened species of plants. In both cases dieback disease caused by *Phytophthora cinnamomi* is a major threat to both the threatened species and the threatened ecological communities.

Recovery Plans and Interim Recovery Plans

One Recovery plan was published during the year:
Wildlife Management Program No. 35
Sunset Frog Recovery Plan 2001–2006.

The Western Australian Threatened Species and Community Unit celebrated the approval of the 100th Interim Recovery Plan (IRP) during the year. IRPs are mostly written for critically endangered species and ecological communities in order to prescribe urgent recovery actions needed to address the threatening processes most affecting their ongoing survival. Since the last Annual Report, 13 Interim Recovery Plans were approved, including eight for threatened flora and five for threatened ecological communities.

Those flora IRPs approved were:

Lonely Hammer Orchid, *Drakaea isolata* ms (No. 81)
Bancroft's Symonanthus, *Symonanthus bancroftii* (No. 84)
Butterfly-leaved Brachysema, *Brachysema papilio* (No. 85)
Whorled eremophila, *Eremophila verticillata* (No. 99)
Vein-leaf Grevillea, *Grevillea phanerophlebia* (No. 100)
Silky eremophila, *Eremophila nivea* (No. 101)
Foote's Grevillea, *Grevillea calliantha* (No. 102)
Pythara Grevillea, *Grevillea pythara* (No. 103)

Threatened ecological community IRPs approved were:

Unwooded fresh water lakes of the southern Wheatbelt of Western Australia, dominated by *Muehlenbeckia horrida* subsp. *abdita*, and *Tecticornia verrucosa* across the lake floor, and *Muehlenbeckia horrida* subsp. *abdita*. IRP 2001-2006. (replaces No. 48 and includes *Muehlenbeckia horrida* subsp. *abdita*) (No. 92)
Plant assemblages of the Moonagin System (No. 105)
Lesueur-Coomallo Floristic Community A1.2 (No. 106)
Plant assemblages of the Inering System (No. 107)

The following interim recovery plans for Western Australian threatened species and communities have now been adopted under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999:

Wongan Gully Acacia, *Acacia pharangites*
Western Woolly Cyphanthera, *Cyphanthera odgersii*
Blunt Wattle, *Acacia aprica* ms
Orange-flowered Wattle, *Acacia auratiflora* ms
Spiral Fruited Wattle, *Acacia cochlocarpa* subsp. *cochlocarpa* ms
Spreading Grevillea, *Grevillea humifusa*
Green Hill Thomasia, *Thomasia* sp. Green Hill
Gingin Wax, *Chamelaucium* sp. Gingin
Rough Emu Bush, *Eremophila scaberula*
Hinged Dragon Orchid, *Drakonorchis drakeoides* ms
Giant Andersonia, *Andersonia axilliflora*
Prostrate Flame Flower, *Chorizema humile*
Pungent Jacksonia, *Jacksonia pungens* ms
Trigwell's Rulingia, *Rulingia* sp. Trigwell Bridge
Abba Bell, *Darwinia* sp. Williamson
Winged-fruited Lasiopetalum, *Lasiopetalum pterocarpum* ms
Western Prickly Honeysuckle, *Lambertia echinata* subsp. *occidentalis*
Cunderdin Daviesia, *Daviesia cunderdin*
Milky Emu Bush, *Eremophila lactea*
Dwarf Spider Orchid, *Caladenia bryceana* subsp. *bryceana*
Pinnate-leaved Eremophila, *Eremophila pinnatifida* ms
Scott River Boronia, *Boronia exilis*
Split-leaved Grevillea, *Grevillea althoferorum*
Mallee Box, *Eucalyptus cuprea*
Shrubland Association on Southern Swan Coastal Plain Ironstone (Busselton area) (Southern Ironstone Association)
Cinnamon Sun Orchid, *Thelymitra manginii* ms.
Small-flowered Snottygobble, *Persoonia micranthera*
Scaly-leaved Featherflower, *Verticordia spicata* subsp. *squamosa*
Quartz-loving Synaphea, *Synaphea quartzitica*
McCutcheon's Grevillea, *Grevillea maccutcheonii*

Montane Thicket and heath of the South West Botanical Province, approximately 900 m above sea level

Aquatic Root Mat Communities numbers 1-4 of caves of the Leeuwin-Naturaliste Ridge

Ironstone Grevillea, *Grevillea elongata*

Thick-billed Grasswren (western subspecies), *Amytornis textilis textilis*

Community of Tumulus Springs (organic mound springs) of the Swan Coastal Plain

Shrublands and Woodlands on Muechea Limestone

Eastern shrublands and woodlands (Swan Coastal Plain community 20c)

Corymbia calophylla - *Kingia australis* woodlands on heavy soils

Corymbia calophylla - *Xanthorrhoea preissii* woodlands and shrublands

Shrublands and woodlands on Perth to Gingin ironstone

Elegant Spider Orchid, *Caladenia elegans* ms

Phalanx Grevillea, *Grevillea dryandroides* subsp. *dryandroides*

Narrow Curved-leaf Grevillea, *Grevillea curviloba* subsp. *incurva*

Blue Babe-in-the-cradle Orchid, *Epiblema grandiflorum* var. *cyaneum* ms.

Wongan Cactus, *Daviesia euphorbioides*

Curved-leaf Grevillea, *Grevillea curviloba* subsp. *curviloba*

Aquatic Root Mat Community of Caves of the Swan Coastal Plain

Gillham's Bell, *Darwinia oxylepis*

Late Hammer Orchid, *Drakaea confluens* ms

Albany Cone Bush, *Isopogon uncinatus*

Stirling Range Beard Heath, *Leucopogon gnaphalioides*

Information Posters

Information Poster were produced for 11 flora species as follows:

Quartz-loving synaphea (*Synaphea quartzitica*)

Spiral fruited wattle (*Acacia cochlocarpa* subsp. *cochlocarpa*)

Split-leaved grevillea (*Grevillea althoferorum*)

Spreading grevillea (*Grevillea humifusa*)

Tufted plumed featherflower (*Verticordia plumosa* var. *ananeotes*)

Abba bell (*Darwinia* sp. Williamson)

Blunt wattle (*Acacia aprica*)

Butterfly-leaved brachysema (*Brachysema papilio*)

Hook-point poison (*Gastrolobium hamulosum*)

Ironstone petrophile (*Petrophile latericola*)

Mt Lesueur grevillea (*Grevillea batrachioides*)

The five threatened ecological communities featured in such posters are:

Plant communities on ironstone and Muechea limestone (near Perth)

Woodlands of the Swan Coastal Plain (eastern side)

Thrombolites of Lake Clifton and Lake Richmond

Monsoon thickets of the coastal sand dunes of Dampier Peninsula

The species-rich fauna community of the Roebuck bay intertidal flats

Translocations

Translocations (including reintroductions, introductions and restocking) continue to be very valuable in conserving threatened species. Translocation proposals for threatened and conservation dependent fauna and declared rare flora approved during the year are listed opposite.

Monitoring of previous translocations is demonstrating that reintroduced populations of threatened or priority species are establishing sustainable populations where predator control is maintained. Examples are presented in the Performance Indicator section of this and previous annual reports.

Western Everlasting

The Department's Threatened Flora Seed Centre continues to provide an important focus for flora recovery programs. The Centre's gene-bank currently holds collections from 1,001 populations of rare and threatened flora with 84 of the 119 critically endangered flora represented.

Research conducted in the Centre has shown that seeds from rare and threatened species from the southwest of Western Australia can be stored under low temperature and low moisture conditions, with seeds of

several critically endangered species being successfully regenerated for recovery work more than five years after initial storage.

In September 2001, the Western Australian Millennium Seed Bank Flora Conservation Project was launched between the Department of Conservation and Land Management, the Botanic Gardens and Parks Authority, and the Royal Botanic Gardens, Kew, United Kingdom. The project will be funded by the Royal Botanic Gardens, Kew, for up to ten years and will involve the collection of seed from more than 1,400 rare and threatened Western Australian plant taxa with storage of the seed to take place jointly at Department's Threatened Flora Seed Centre and the Botanic Gardens and Parks Authority seed storage facility and at the Royal Botanic Gardens Kew Millennium Seed Bank facility in the United Kingdom.

During the year 101 collections of seed were collected under the Millennium Seed Bank Flora Conservation Project, and 34 collections forwarded to the Royal Botanic Gardens at Kew. The remaining collections are being cleaned, counted and databased prior to being sent to Kew.

A three-year collaborative study between the Department of Conservation and Land Management, Land and Water Australia and CSIRO Plant Industry commenced in October 2001 to investigate the genetic and ecological viability of plant populations in remnant vegetation. The study will quantify the factors that influence the viability of plant populations in two contrasting agricultural landscapes in NSW and WA and explore how these are affected by characteristics of remnants such as size, disturbance and landscape position. Three species with contrasting life-histories have been selected for study in the Kwongan shrublands and heathlands

of the Dongolocking area in the Wheatbelt. Work is currently underway to identify thresholds of population size and landscape context required for genetic and ecological viability of contrasting life-history classes. The project is unique in combining molecular genetic and demographic approaches to identify key biological processes affecting population performance and determining under what remnant vegetation conditions they limit viability and remnant conservation value.

Ongoing flora recovery research includes the use of DNA based molecular markers to identify conservation units, resolve systematic problems in threatened flora, and to assess the effects of recent fragmentation and reduction in population size on genetic diversity levels in populations of critically endangered *Acacia*, *Banksia*, *Eucalyptus*, *Grevillea*, *Verticordia* and *Dryandra* species. These markers are also being used to determine patterns of mating and inbreeding within populations of critically endangered species, and how significant these

events are in relation to pollinator behaviour, reproductive output and recruitment.

Experimental translocations of critically endangered plants have continued, with 15 taxa completed to date. Apart from the successful establishment of new populations of critically endangered plants these translocations are also aimed at developing appropriate translocation techniques for a range of site conditions such as soil type, landform, vegetation and climate. A second important outcome is the development of protocols for assessing and predicting translocation success based on monitoring and population modelling of each experimental translocation. To date all taxa translocated during the last four years have flowered and set seed, and one species has naturally recruited second generation plants. Translocations are currently underway for a further three taxa and more are planned for 2003.

Research has also continued on populations of critically endangered *Acacia*, *Grevillea*, *Synaphea* and *Verticordia* taxa to investigate the

physical and biological interactions which influence the dynamics within populations. It is expected that this work will allow the construction of demographic models and population persistence probabilities, and provide guidelines on how many individuals and how many populations are necessary for taxa to persist. It will also provide practical guidelines and experimentally derived techniques for increasing population size in these critically endangered plants.

Phosphite Program

Nineteen sites covering 165 hectares were aerially sprayed with phosphite during 2001–2002, comprising 126 hectares in Stirling Range National Park and 39 hectares on road reserves, nature reserves and private property south of Busselton. Twelve *Phytophthora* – susceptible declared rare flora species were treated in the Stirling Ranges and three species treated near Busselton.

Three new sites were added to the program, two in the Stirling Range (for *Daviesia pseudaphylla*), and one south of Busselton (*Grevillea mccutcheonii*).

Translocation Proposals Approved for threatened flora and fauna 2001–2002

Species	Source and destination
Rough emu bush	From seedlings derived from seed from population 2 to Bulbarnet NR (introduction)
Western Swamp Tortoise	Perth Zoo to Mogumber
Dibbler	Re-introduction from Perth Zoo to proposed Peniup Reserve
Bancroft's Symonanthus	Botanic Gardens & Parks Authority to Reserve 12985 and Reserve 23187
Shark Bay Mouse	Perth Zoo to Faure Island (Shark Bay WA)
Burrowing Bettong	Heirisson Prong, (Shark Bay WA) to Faure Island (Shark Bay WA)
Norseman pea	From seed sourced from populations around Norseman and Southern Cross and introduced to sites located nearby in a water catchment reserve and Common land
Butterfly brachysema	Extension to translocation proposal approved in 2001
Abba bell	Extension to translocation proposal approved in 2001
Maccutcheon's grevillea	Extension to translocation proposal approved in 2000
Foote's grevillea	Extension of original translocations approved 1998 and 1999
Woylie	From Perup State Forest to Thames, Flybrook and Boyndaminup Forest Blocks
Tammar Wallabies	From Perup State Forest to Thames and Boyndaminup Forest Blocks, and from Tutanning Nature Reserve to Julimar State Forest and Avon Valley National Park

ROADSIDE CONSERVATION COMMITTEE

The Committee's Terms of Reference are "To coordinate and promote the conservation and effective management of native vegetation on road and rail reserves for the benefit of the environment and the people of Western Australia". The Roadside Conservation Committee (RCC) has no powers to regulate for, or enforce, the protection of roadside vegetation. Achievement of its Terms of Reference is based on cooperation, liaison and the voluntary acceptance by all who work in the roadside environment, of management practices, which maintain a safe and efficient road system while ensuring the sustainability of the many values present within the roadside.

The care, control and management of most public road reserves in this State are vested in local government authorities under the Local Government Act or Main Roads Western Australia under the Main Roads Act. The management of the rail network is privatised, and is under the control of the Australian Railroad Group.

The past year has seen some changes to the membership of the RCC, namely the resignation of Water Corporation from the RCC and the addition of the Conservation Council of Western Australia. Also this year the representatives from local government resigned from the RCC and have yet to be replaced. It is expected that two new local government representatives will take up positions on the RCC in the near future.

Current membership of the RCC is:

- Department of Conservation and Land Management (Chair)
- Main Roads Western Australia
- Australian Railroad Group
- Western Australian Local Government Association
- Western Australian Wildflower Society
- Department of Agriculture
- Fire & Emergency Services Authority
- Greening Australia Western Australia
- Western Power
- AlintaGas
- Telstra Corporation
- WA Conservation Council

The Department of Conservation and Land Management and Main Roads Western Australia each pay 50 per cent of the Executive Officer's salary. However all other costs associated with servicing the RCC are met by the Department.

During the past year the Roadside Conservation Committee continued to meet on a quarterly basis. The increasing public awareness of the value of roadside vegetation has resulted in a noticeable increase in public complaints about alleged excessive clearing of remnant vegetation in transport corridors. Continuing education of agencies working in the transport corridor environment of the values associated with this vegetation is necessary.

GIS Mapping and Roadside Surveys of Conservation Values

This project commenced in 1987 and involves organising local community groups to survey the roadsides within their local area. Training and support is provided for the volunteer data collection. A feature of current roadside surveys has been the desire by local community groups to map the

occurrence of environmental weeds on roadsides. This is now an integral part of all roadside surveys and provides a useful picture of the individual species present as well as an overview of the extent of weed infestation. Data from these surveys is used to generate a series of maps that indicates roadside conservation value, remnant vegetation on adjoining landscape and weed infestations of roadsides. The Department's Geographic Information Section of the Information Management Branch now processes this data for map generation.

Liaison and Public Relations

The RCC has continued to liaise with State, local government and community groups, e.g. Greening Australia WA, landcare groups, Main Roads WA, FESA and the Department on roadside conservation issues. Information regarding roadside conservation has been disseminated by a variety of mediums, such as written material for print media, displays at country shows, response to public complaints regarding roadside conservation matters and requests from the public for information.

Training

During the past year the RCC collaborated with Main Roads WA in providing a series of two-day workshops for Main Roads staff and staff of term network contractors. To date, workshops were held at Northam, Bunbury, Albany, Kalgoorlie and Geraldton. Additionally the RCC provided training workshops for a number of Shires and community groups as requested.

Performance Measures**Output 1**

	2001–2002 Target	2001–2002 Actual	Explanation of significant variation
Quantity			
Nature Conservation area managed (hectares)	24.5 million	24.2 million	Less land acquisition than expected in 2001–2002
Quality			
Threatened species	472	502	Two threatened species notices gazetted.
Change in number of	+18	+48	Two threatened species notices gazetted.
Timeliness			
Completion of management plans within specified timeframes	100%	100%	
Cost			
Cost per hectare managed	\$2.63	\$2.28	

OUTPUT 2: SUSTAINABLE FOREST MANAGEMENT

HIGHLIGHTS

- Implementation of the Government's *Protecting Our Old-Growth Forests* policy.
- Preparation of a discussion paper for the Conservation Commission of Western Australia to provide stakeholders and the public with an early opportunity to comment on aspects of the next forest management plan.
- Provision of data to an independent consultant for the assessment of other high conservation value areas in the southwest forests to be considered for inclusion in the reserve system.
- Formulation of indicative boundaries for new conservation reserves proposed in the Government's forest policy.
- Review of sustained timber yield within the context of ecologically sustainable forest management.
- Provision of integrated forest management, monitoring and planning services.

Outcome achieved by:

The development and implementation of management plans and systems for sustainable management of State forest and timber reserves.

Output description

The sustainable management of State forest and timber reserves while maintaining or enhancing nature conservation, water, recreation,

landscape and other values in the long term, and encouraging public awareness, understanding and support for sustainable forest management, services and policies.

This Output was created in the 2000–2001 Budget Statements (May 2000) in anticipation of the legislated establishment on 1 July 2000, with their respective statutory functions, of the Conservation Commission of Western Australia and the Forest Products Commission (FPC). The enabling legislation for these Commissions came into effect on 16 November 2000.

Consistent with the statutory purpose of State forests and timber reserves as defined in the *Conservation and Land Management Act 1984*, this Output provides for the management of the forests and timber reserves on an ecologically sustainable basis, including:

- implementing the *Protecting Our Old-Growth Forests* and other Government policies;
- ensuring that the values of multiple use forests and woodlands are maintained on an ecologically sustainable basis; and
- providing for the harvesting, regeneration and growth of forest products from State forest and timber reserves in accordance with approved forest management plans and in line with the principles of ecologically sustainable forest management.

The Sustainable Forest Management Output addresses five key areas of activity:

1. Implementation of approved forest management plans and Government policies and programs.
2. Inventory and assessment of forest resources.
3. Maintenance and enhancement of biodiversity and other values.
4. Provision for harvesting, regeneration and growth of forest products in accordance with approved management plans and in line with the principles of ecologically sustainable forest management.
5. Partnerships.

Working Arrangements

Following the separation of the commercial timber production functions of the Department from its conservation functions in November 2000, work to consolidate the working arrangements between the Department and the FPC has continued. This included the identification of key planning and information services that are provided by the Sustainable Forest Management Division to a range of clients, including FPC, other branches of the Department and external agencies.

IMPLEMENTATION OF APPROVED FOREST MANAGEMENT PLANS AND GOVERNMENT POLICIES AND PROGRAMS

Protecting Our Old-Growth Forests policy

Following the State Election in February 2001 the Government implemented its policy to end logging in nearly 99 per cent of Western Australia's old-growth forests by reserving approximately 340,500

hectares of the remaining old-growth forests, and placing a moratorium on harvesting in the remaining one per cent of old-growth forests, pending a review of the forward timber harvest plans and timber contracts to determine whether contracts could be honoured without harvesting this area. Immediately after the election, action was taken to cease timber harvesting in old-growth forests. On 4 November 2001, the Government announced that the remaining one per cent of old-growth forests that had been placed under a moratorium from harvesting, would be permanently set aside.

The Government also placed an immediate moratorium on timber harvesting in Palmer and Leach blocks near Collie, Helms block near Nannup and the proposed expansion of the Wellington National Park to undertake an assessment of the scientific, economic and community values, and the impact of harvesting on salinity in those areas. The assessment, conducted by URS Australia Pty Ltd, was completed in August 2001. Subsequently the Government announced proposed additions of 14,500 hectares to Wellington National Park. The forest blocks endorsed by the Government for addition to the park are Lennard, Gervasse, most of Davis and part of Lowden. The URS report commented that these blocks in particular were *'able to contribute to the conservation of vegetation complexes heavily impacted by clearing for agriculture'*. The area of Westralia block placed under moratorium will be set aside from timber harvesting. Of the remaining areas that were originally placed under moratorium Arcadia, Yabberup, Leach and parts of Lowden, Mungalup, Palmer and Helms blocks will be retained as multiple use State forest.

As part of its forest policy the Government has committed to create 30 new national parks, including the 12 new national parks proposed under the Regional Forest Agreement (RFA), and two new conservation parks. Work

on the indicative boundaries for the new conservation reserves is progressively being undertaken by the Department. During the year, indicative boundaries were announced for the proposed Greater Preston, Greater Beedelup and Greater Kingston National Parks, as well as the extension to Wellington national park. Final boundaries for the new national parks to be created under the *Protecting Our Old-Growth Forests* policy will be established in consultation with the community. Community-based advisory groups will be formed to help with the preparation of management plans for the new parks. The committees will represent the community's conservation recreation and cultural aspirations in each area.

The forest policy commits to the reinstatement of the 17 reserve proposals revoked by the then Government during the RFA. Twelve of the reinstated reserve proposals will proceed unchanged, however, five of the earlier reserve proposals would limit access by Alcoa Australia and Worsley Alumina Pty Ltd to known bauxite deposits or high levels of mineral prospectivity on their State Agreement Act mining leases. State Agreement Acts protect the companies' access to their lease areas and the agreement of both the State and the mining companies is required before land use changes can be made. Alcoa and Worsley have agreed to relinquish their rights to some alternative areas within their leases that will meet the Government's conservation objectives without jeopardising access to high value mineral resources. Negotiations have been held with the companies to find alternative areas that have similar conservation values to the earlier reserve proposals. These areas are included in the draft of the next forest management plan.

The policy commits to the creation of 130 new jobs in the Department of Conservation and Land Management and the Forest Products Commission,

with priority given to displaced timber workers. Up to June 2002, 127 displaced timber workers have been contacted and 75 declined interview. Of the 52 interviewed 35 have been employed by the Department, of whom 6 have since ceased employment. The Department has created 35 new positions with funding provided to manage the new national parks, and 25 of these have been filled.

New Forest Management Plan

The Forest Management Plan 1994–2003 will expire on 31 December 2003. As part of the Government's restructure of the timber industry an accelerated process of preparation of the next forest management plan continued during the year.

The Department is preparing the new forest management plan for the Conservation Commission. A discussion paper, *A new forest management plan for Western Australia*, was also prepared for the Conservation Commission during the year. It was released in January 2002 to provide stakeholders and the public with an early opportunity to comment on aspects of the new forest management plan that were well developed. Submissions received were taken into account during the formulation of the draft forest management plan, due to be released for public comment in August 2002. The principles of ecologically sustainable forest management, as described in the CALM Act, are the focus of the draft plan, consistent with the old-growth policy commitment to manage the forests in line with the principles of ecologically sustainable forest management. The plan will detail the additions to the conservation reserve system set out in the Government's policy, and strategies for the protection of remaining old-growth areas within State forest. The draft plan will put forward two management scenarios for public comment as part of the process of determining final sustained timber yield figures.

The following reviews and inquiries were undertaken as part of the development of the new forest management plan and implementation of the old-growth forests policy:

- the assessment of moratorium areas by URS;
- a review by the Water and Rivers Commission of the adequacy of stream buffers;
- an assessment by an independent consultant of 106 forest blocks and four more general areas in the southwest forests for areas of high conservation value for possible inclusion in the reserve system;
- a report by an expert panel to assist the Department with its final compliance reporting requirements to the Environmental Protection Authority in relation to Ministerial Condition 11.1 attached to the Forest Management Plan 1994-2003; and
- a review of forest structural goals to determine the continuing relevance of the existing whole of forest goals and recommend a mechanism for developing structural goals for the new forest management plan.

An update of silvicultural guidelines for jarrah, karri and wandoo forests with an emphasis on specific practices to be applied in the field was also commenced during the year.

Forest Management Plan 1994-2003 Progress and Compliance Report

A report to the Environmental Protection Authority in respect of Ministerial Conditions on the 1994–2003 Forest Management Plan for 2000, 2001 and the first six months of 2002 is being finalised. Preparation of the combined report has been deferred after consultation with the Department of Environmental Protection to allow progress to be made on the new forest management plan.

Implementation of the Regional Forest Agreement

The RFA, signed in May 1999, included a number of commitments by the State which are the responsibility of the Department. As a result of the series of policy changes, the intended timelines for implementation of RFA commitments have been altered. Nevertheless, substantial progress has been made.

Further to the commitments completed and reported in the 2000–2001 Annual Report, substantial progress has been made for the following commitments:

- development of an environmental management system conforming to international standards;
- assessment, data-basing and integration of cultural heritage resources into forest planning;
- addressing improvements related to the calculation of sustained timber yields;
- external review of the sustained yield estimating process;
- preparation of a forest management plan to implement the commitments in the RFA;
- updating processes to allow more efficient consideration of social, economic and environmental implications in the development, approval and on-going audit of compliance with forest management plans; and
- development of a set of sustainability indicators.

INVENTORY AND ASSESSMENT OF FOREST RESOURCES

Throughout the year the Forest Management Branch of the SFM Division performed a diversity of tasks relating to the maintenance, analyses and provision of datasets for the southwest forests, and softwood plantations on behalf of the FPC, other Divisions, and external clients. This included:

- the provision of data, analysis, technical and policy advice to various committees, review panels, independent consultants and Government;
- the ongoing maintenance of inventory and growth datasets: monitoring of harvesting data, update of bluegum growth data measurements on behalf of the FPC and industry, establishment of permanent sample plots, initiation of a new timber inventory for two-tiered karri forests;
- the maintenance of spatial reference sets for the condition and history of management activities for southwest forests, including the extension of databases summarising the occurrence of *Phytophthora cinnamomi* on lands vested in the Conservation Commission of Western Australia and prescribed fire extent;
- assistance with mapping the density of forest in inland areas for the Goldfields forest classification project (GOLDFOR project);
- survey and demarcation of sensitive boundaries (e.g. conservation reserves) adjacent to harvest areas on behalf of the FPC;
- the design and execution of inventories and resource mapping in FPC softwood plantations to assess sustainability, audit requirements and to assist harvest planning and asset valuation;
- validation of sharefarm contract areas, plantation survey for the 2001 planting season and stratification of timber resource by productivity classes on some plantations were undertaken on behalf of the FPC;
- services such as resource inventory, photogrammetry, GPS survey and *Phytophthora cinnamomi* disease mapping services were also provided to other Government departments, private companies and individuals on a recoup basis; and

- specific projects to progress the estimation of sustained timber yields and the preparation of analyses for the draft forest management plan.

MAINTENANCE AND ENHANCEMENT OF BIODIVERSITY AND OTHER VALUES OF FORESTS

The SFM Division arranges the delivery by Regional Services staff of a wide range of programs that aims to maintain or enhance the biodiversity and other values within the forests. These include the provision of threat abatement programs (weed control, pest animal control, disease management) and the delivery of fire management regimes that integrate with silvicultural programs.

Disease in native forests

The mapping of the presence of dieback (*Phytophthora cinnamomi*) disease symptoms was carried out to determine protectable areas and specify hygiene requirements for activities likely to result in soil movement on lands managed by the Department.

Approximately 36,400 hectares were mapped to assist the planning of roading and harvesting operations undertaken by the FPC. This included 8,960 hectares of previous mapping that was rechecked for further spread. Aerial photography covering approximately 1,780 hectares was acquired in full cloud, shadowless conditions for future *Phytophthora cinnamomi* disease mapping requirements. This was less than the targeted area due to lack of suitable weather conditions and constraints with contractor services.

Mapping of the occurrence of *Phytophthora cinnamomi* and hygiene planning was also undertaken by accredited interpreters for the Tourism and Recreation Output (360 hectares), Nature Conservation Output (1,940 hectares) the SFM Output (1,120 hectares) and for external requests.

Silviculture

The Jarrah Forest

Harvesting in the jarrah forest is undertaken using a variety of silvicultural objectives (silviculture is the art and science of establishing and tending forests). Where there is a predominance of vigorously growing trees, the stand is thinned; where this is not the case the stands are harvested with the object of regenerating them. This is achieved either by harvesting in a way that will release existing lignotubers to grow unimpeded into saplings; or, where there are inadequate lignotubers, harvesting to create a shelterwood under which seedlings are established. The proportion of each area that is harvested to each of these objectives, and the degree of intermixing, vary according to the existing stand structure and condition.

In many areas the desirable silvicultural objective is achieved completely or nearly completely by the harvesting operation itself. A proportion of the remainder is completed by silvicultural tending operations one or two years after harvesting. In more marginal forest types harvesting is done by selective cutting. In some areas harvesting precedes clearing for mining or the construction

of public utilities such as reservoirs or power lines. Cleared areas are not regenerated immediately but where possible are rehabilitated later.

The Karri Forest

Karri forest harvesting is also dependent on the structure and age of the existing forest, though it is less complex than jarrah harvesting. Patches of even-aged and vigorously growing forest which are greater than two hectares in size are identified for thinning. When the stand is old enough to yield saleable products, it is thinned to an appropriate density by commercial harvesting. No further tending is necessary.

Mature forests and forests of mixed structure created by past logging activities are harvested under a clearfelling system. Regeneration following harvesting is achieved within the following year or two by means of temporarily retained seed trees, by planting with nursery raised seedlings, or by broadcast seeding. Seed trees are the preferred method, but planting is used in the years when there are inadequate seed crops available in the karri forest. Broadcast seeding is only used to a limited extent.

Environmental Management System

Work on an Environmental Management System (EMS) for the Sustainable Forest Management Output of the Department continued during the year.

Cultural Heritage

A comprehensive review of the Department's management of cultural heritage was undertaken and a suite of new and revised documents was prepared for consideration by the Department's Corporate Executive.

PROVISION FOR HARVESTING, REGENERATION AND GROWTH OF FOREST PRODUCTS IN ACCORDANCE WITH APPROVED MANAGEMENT PLANS AND THE PRINCIPLES OF ECOLOGICALLY SUSTAINABLE FOREST MANAGEMENT

Monitoring of timber harvesting and treatment activities

Forest Management Branch undertook the monitoring of harvesting, silvicultural treatments and land disturbance activities carried out by the FPC or other organisations during the year.

In 2001, 15,760 hectares of jarrah forest were harvested with the following silvicultural or management objectives:

	Hectares
Thinning	2,420
Release of regeneration	1,490
Establishment of regeneration	7,920
Single tree selection	1,270
Selective	2,030
Other (mining and utilities)	630
Total	15,760

Silvicultural objectives for approximately 250 hectares of the above area were achieved through the commercial harvesting operations. Silvicultural objectives for a further 9,850 hectares harvested in this or previous years were achieved by follow-up treatment during 2001.

In 2001, 1,380 hectares of karri forest were clearfelled or partially cut, and 120 hectares were thinned. Regeneration was completed on 1,340 hectares harvested in either this or previous years.

Review of sustained yield within the context of ecologically sustainable forest management

Work continued by an independent expert panel, chaired by Professor Ian Ferguson from the University of Melbourne, to assess the management practices, data and calculation methods that estimate the sustained yield of timber for their conformity with the principles of ecologically sustainable forest management. Stage two of the project required assessment of whether proposals associated with the calculation of sustained yield in the draft forest management plan conform to these principles. A preliminary stage two report was provided to the Conservation Commission, however, as the draft plan will include a range of timber yields, the terms of reference have been varied by deleting the requirement to complete the stage two review. Under the variation the panel will be required to review and report on the final forest management plan towards the end of 2002. The report will assist the Environmental Protection Authority in developing recommendations to the Minister for the Environment and Heritage for the final plan.

Regional indicative harvesting plans

The Division was involved in the preparation of the 2002 Indicative Timber Harvest Plan, which was released in October 2001 and identified areas for detailed planning and coupe design. The plan, which included parts of 52 forest blocks, formed the basis for regional consultation and has been prepared for a one-year rather than three-year period, so as not to pre-empt land use decisions, sustained

yield and public consultation processes that will result from the development of the new forest management plan.

Indicative Timber Yields

To assist the timber industry restructure as a result of the cessation of harvesting in old-growth forests (and without pre-empting the outcome of the new Forest Management Plan), advice on indicative timber yields for the post-2003 period was previously provided to the Government. The indicative yields announced by the Government on 1 June 2001 were 140,000 cubic metres of first and second grade jarrah sawlogs and 40,000 cubic metres of first and second grade karri sawlogs. In light of subsequent decisions by the Government in respect of areas to be reserved and areas that will be available for timber harvesting, these figures were revised during the year to 182,000 cubic metres and 42,000 cubic metres respectively.

FORESTCHECK

Implementation of the FORESTCHECK monitoring system commenced in September 2001 with the establishment of 10 monitoring sites in jarrah forest within the Department's Warren Region. FORESTCHECK is an integrated monitoring system that has been developed to provide information to forest managers about trends and changes in key elements of forest biodiversity associated with a range of forest management activities. Monitoring is recognised as an essential part of adaptive management. FORESTCHECK has been developed to meet a range of compliance conditions placed on the Forest Management Plan 1994–2003 through Ministerial Conditions and the Codd Report of 1999. Outputs from monitoring will also contribute to responsibilities for reporting against Montreal process

criteria and indicators for ecologically sustainable forest management, and the RFA. Monitoring sites were established in forest subject to shelterwood and gap creation silvicultural treatments, as well as in retained mature forest. Attributes studied at each site include soil disturbance, stand structure and regeneration status, vertebrate and invertebrate fauna, vascular plants, cryptogams and fungi.

Two projects evaluating the application of indicators for ecologically sustainable forest management were finalised during 2001. Both projects were financially supported by the Forest and Wood Products Research and Development Corporation using funds made available from the Commonwealth Government's Wood and Paper Industry Strategy. One project addressed the development of standardised measures of regeneration success for sustainable management of Australia's native forest, and involved close collaboration with silvicultural research colleagues in Victoria, Tasmania, New South Wales and Queensland. Regeneration reference sites were established and used to compare existing regeneration survey techniques and stocking standards employed in each state. Methods for comparing and aggregating information gathered by different techniques were developed. A second project evaluated indicators of sustainability relating to soil physical properties and organic matter. Studies were undertaken to quantify the extent of disturbance during forest harvesting operations and to compare the practical application of several different measures of soil disturbance. Three existing long-term fire effects study sites provided the basis for an investigation of the relationship between fire frequency and soil organic matter.

PARTNERSHIPS

Throughout the year effective communication and interaction continued with:

- the community and stakeholders;
- other State agencies and authorities; and
- Commonwealth agencies.

The SFM Division contributed to the work of the Primary Industries Ministerial Council, the Natural Resource Management Ministerial Council, the National Forest Inventory and to other national forums on ecologically sustainable forest management.

Performance Measures		Output 2	
	2001–2002 Target	2001–2002 Actual	Explanation of significant variation
Quantity			
Forest area managed (hectares)	1,870,000	1,871,000	
Quality			
Compliance with management	100%	100%*	
Timeliness			
Satisfaction of programmed management	100%	100%*	
Cost			
Average cost per hectare managed	\$20.94	\$17.82	
<p><i>*Note: These measures relate to output performance in relation to the application of forest management standards and the auditing of those standards, the preparation of detailed discussion information for the Conservation Commission for the next forest management plan and compliance with the scheduled completion of a draft forest management plan.</i></p>			

OUTPUT 4: PARKS AND VISITOR SERVICES

HIGHLIGHTS

- Draft management plans released for Beeliar Regional Park and Carnac Island Nature Reserve.
- Living area leases issued for two Aboriginal corporations in Purnululu National Park.
- Site development plans prepared for Leeuwin and Naturaliste Lighthouses.
- Interpretive activity programs run by the Department reach 3,000,000 visitors.
- 5,683 volunteers contributed 217,000 hours to help the Department care for the environment.
- New regulations for the management of national parks, nature reserves, State forests and marine reserves come into force.
- Planning and development for proposed new parks in the southwest.

Outcome achieved by:

Community enjoyment of wildlife, lands and waters without compromising conservation and other management objectives.

Output description

Dealing with public involvement, visitation and appreciation of the natural environment on lands and waters managed by the Department, including preparing and implementing management and recreation site development plans; providing, managing and maintaining appropriate access, recreation opportunities and

visitor facilities; protecting natural areas, visitors and facilities from wildfire; training Departmental staff and volunteers, working with local tourist bureaux and commercial tour operators; involving Aboriginal people in park management and the provision of visitor facilities and services; providing visitor information and designing and initiating educational and interpretive activity programs which enrich visitor experience and help develop greater community awareness and support for parks, natural areas, nature-based tourism and recreation services and policies.

The output performance of the Department can best be reported in eight key areas:

- Planning for management;
- Acquisition and administration of protected areas;
- Park presentation and resource protection;
- Visitor communication and management;
- Community involvement;
- Liaising and working with indigenous people;
- Business management; and
- Legislation and policy for parks and visitors services.

There are several other significant projects that such as the Bibbulmun Tracks, Regional Parks and Regional Services that merit reporting separately.

PLANNING FOR MANAGEMENT

Section 33 of the CALM Act requires the Department to manage all land to which the Act applies according to a 'management plan.' A management plan contains a statement of the policies or guidelines proposed to be followed, as well as a summary of the proposed operations. The CALM Act also specifies that the public be given an opportunity to contribute to the content of management plans. The Department achieves this through public workshops and meetings, advisory committees, newsletters and inviting comments on draft plans.

Priorities for plan preparation are guided by the assessment of each proposed management plan against the delivery of strategies outlined in the Department's Corporate Plan (2002–2005). Priorities for terrestrial areas are determined for a three-year period but reviewed annually by the Conservation Commission of WA. Management plans are prepared for a period of 10 years after which they may be replaced by a new management plan.

Areas Covered by Management Plans

Tenure classification	Area covered by plan (ha)	Total tenure area (ha)	% covered
National Park	1,751,553	5,095,200	34.4
Nature Reserve	361,031	10,825,039	3.3
Marine Reserve	1,115,125	1,145,940	97.3
Other Recreation/ Conservation Reserves	93,710	850,193	11.0
Total CALM Conservation Estate	3,321,419	17,916,372	18.5

Forty-four management plans have been approved by the Minister for the Environment, with a further 32 in various stages of completion. The Conservation Commission of WA assists in determining priorities for the preparation of management plans, as well as revising and approving plans before submitting them to the Minister. The Commission is also

responsible for auditing the Department's performance in implementing management plans five and 10 years after plan gazettal.

The Marine Parks and Reserves Authority has a similar role for marine reserves (see Output 1 Marine Conservation).

During 2001–2002, draft management plans were completed and released for Beeliar Regional Park and Carnac Island Nature Reserve. Five public meetings and 50 advisory committee meetings were held to facilitate community input into the planning process (excluding marine reserves—see Output 1 Marine Conservation).

Management Plans as of 30 June 2002

Final Management Plans (completed and approved)	Region	Effective from
Mooradung Nature Reserve	Swan	21/2/86
Nature Reserves in the Shire of Wyalkatchem	Wheatbelt	21/2/86
Forrestdale Lake Nature Reserve (5 year term)	Swan	10/7/87
Nature Reserves in the Shire of York-Northam	Swan	10/7/87
Lane Poole Reserve	Swan, South West	14/12/90
Shannon and D'Entrecasteaux National Parks	Warren	8/1/88
Benger Swamp Nature Reserve (5 year term)	South West	12/2/88
Cape Range National Park	Pilbara	23/3/90
Northern Forest Region	Swan	12/2/88
Central Forest Region	South West	12/2/88
Southern Forest Region	Warren	12/2/88
Ningaloo Marine Park	Pilbara	24/11/89
Leeuwin-Naturaliste National Park	South West	21/4/89
Yanchep National Park	Swan	29/9/89
Fitzgerald River National Park	South Coast	19/7/91
Dampier Archipelago Nature Reserves	Pilbara	31/8/90
Waroona Reservoir and Catchment Area	South West	16/3/90
Logue Brook Reservoir and Catchment Area	South West	16/3/90
Shoalwater Islands Nature Reserves	Swan	20/10/92
Walpole-Nornalup National Park	Warren	3/7/92
Marmion Marine Park	Swan	15/5/92
South Coast Region	South Coast	13/3/92
Matilda Bay Reserve	Swan	21/5/93
John Forrest National Park	Swan	19/8/94
Goldfields Region	Goldfields	24/2/95
West Cape Howe National Park	South Coast	4/8/95
Yalgorup National Park	Swan	15/8/95
Dryandra Woodland	Wheatbelt	14/11/95
Lesueur National Park – Coomallo Nature Reserve	Midwest	13/10/95
Two Peoples Bay Nature Reserve	South Coast	7/6/96
Purnululu National Park and Conservation Reserve	Kimberley	5/3/96
Shark Bay Marine Reserves	Midwest	7/3/97
Wanjarri Nature Reserve	Goldfields	2/7/96
Canning River Regional Park	Swan	5/12/97
Nambung National Park, Wanagarren,	Midwest	11/9/98
Nilgen and Southern Beekeepers Nature Reserves		
Leschenault Peninsula Conservation Park	South West	8/1/99
Esperance Lakes Nature Reserves	South Coast	11/5/99
Karijini National Park	Pilbara	15/6/99
Swan Estuary Marine Park and Adjacent Nature Reserves	Swan	7/4/00
Stirling Range and Porongurup National Parks	South Coast	3/12/99
Jurabi, Bundegi Coastal Parks and Muiron Islands	Pilbara	25/08/00
Serpentine National Park	Swan	3/10/00
Shark Bay Terrestrial Reserves	Midwest	3/10/00
Rowles Lagoon Conservation Park and Clear and Muddy Lakes Nature Reserve	Goldfields	19/1/01
Final Management Plans (being prepared)	Region	Submission Period
Shoalwater Islands Marine Park	Swan	27/10/95–29/12/95
Yellagonga Regional Park	Swan	17/4/00–31/7/00
Herdsmen Regional Park	Swan	5/6/01–5/9/01
Jurien Marine Park (Indicative Management Plan)	Midwest	5/10/00–5/1/01
Turquoise Coast Islands Nature Reserves	Midwest	19/12/00–28/2/02
Beeliar Regional Park	Swan	14/11/01–14/2/02
Carnac Island Nature Reserve	Swan	24/12/01–24/5/02

Management Plans as of 30 June 2002 (continued)

Draft Management Plans (in preparation)	Region
Darling Range Regional Park	Swan
Yanchep and Neerabup National Parks	Swan
Woodman Point Regional Park	Swan
Jandakot Regional Park	Swan
Rockingham Lakes Regional Park	Swan
Forrestdale Lake Nature Reserve	Swan
Thomsons Lake Nature Reserve	Swan
Dampier Archipelago	Pilbara
Millstream-Chichester National Park and Mungaroona Range NR	Pilbara
Montebello/Barrow Islands Marine Conservation Reserve (Indicative Management Plan)	Pilbara
Cape Range National Park (Revision)	Pilbara
Ningaloo Marine Park (Revision)	Pilbara
Dampier Archipelago/Cape Preston Marine Conservation Reserve (Indicative Management Plan)	Pilbara
Wellington Forest National Park	South West
Leeuwin Naturaliste Ridge and Scott National Park	South West
St Johns Brook Conservation Park	South West
Kimberley Region	Kimberley
Rowley Shoals Marine Park (Indicative Management Plan)	Kimberley
Kalbarri National Park	Midwest
Gibson Desert Nature Reserve	Goldfields
Esperance Coastal Parks and Reserves	South Coast
Shannon-D'Entrecasteaux National Park (Revision)	Warren
Walpole Wilderness	Warren
Wheatbelt Region	Wheatbelt
Forest Management Plan	South West, Swan & Warren

'Have Your Say' brochures were released for the Dampier Archipelago; Parks of the Leeuwin Ridge and Scott National Park; Yanchep and Neerabup National Parks; Forrestdale and Thomsons Lake Nature Reserves; Wellington National Park, Proposed Park Additions and the Proposed Westralia Conservation Park; and Esperance Coastal Parks and Reserves. Issues papers were also released for all of the above except the Esperance Coastal Parks and Reserves.

A major initiative of the Management Planning Section, in conjunction with the Department's Strategic Development and Corporate Affairs Division, was an upgrade of the 'Managing Our Parks and Reserves' webpage. This included creation of an electronic platform for public submissions via the internet and placement of downloadable issues papers and 'Have Your Say' brochures on the web. The success of this strategy was demonstrated with the release of the Carnac Island and Turquoise Coast Island Nature Reserves management plans in

December, when more than 4,400 hits were recorded for the month compared to 3,442 in the previous 11 months. Downloadable versions of existing management plans were also placed on the webpage.

The two tables list the area of each tenure category managed by the Department for which plans are completed, and the status of plans in preparation or already approved as at 30 June 2002.

ACQUISITION AND ADMINISTRATION OF PROTECTED AREAS

To assist in the management and conservation of Western Australia's protected areas, the Department licenses commercial tourism activities in accordance with Section 101 of the *Conservation and Land Management Act 1984*.

The issuing of licences enables the Department to monitor and manage visitor access and use of lands and waters vested in the Conservation Commission and Marine Parks and Reserves Authority.

In the first quarter of 2002, the Department announced the introduction of new licensing procedures that provide benefits to commercial tour operators who achieve industry-based accreditation programs. The Department can now issue licences for up to five years to operators who achieve accreditation from the Tourism Council of WA and the Ecotourism Association of Australia. Further information can be found on the Department's NatureBase website.

Staff completed the initial stage of an on-line training program aimed at educating tour operators and guides of the Department's policies and licensing conditions. Staff will introduce the program next financial year as a component of the new licensing procedures.

As of 30 June 2002, a total of 390 commercial tourism licences were current, with a further 87 applications under assessment. This represents 8 per cent growth in the number of tourism licences. Of the total licences

issued, 340 were unrestricted and 55 were issued as restricted licences. Two hundred and ninety commercial tour operators were licensed to conduct land-based or terrestrial activities, and 71 licensed to conduct marine activities. Thirty-four were licensed to operate both.

The Department of Conservation and Land Management has 188 current formal arrangements for a wide range of purposes. The majority of such arrangements are in the form of leases for uses including grazing, utilities, dams, rubbish disposal, gravel extraction, tourism and recreation. Other arrangements include permits for sawmills and licences for other activities where exclusive use is not appropriate, such as agencies co-locating on Departmental communication towers.

During the year 27 leases and licences were issued. These included a new lease for a telecommunication regenerator site and five licences to authorise the use of Departmental towers for communication purposes. Three leases were granted to replace expired leases for sporting groups: the WA Rifle Association, the Walpole Yacht Club and the Mounts Bay Sailing Club.

A new lease was finalised for the operation of the Wellington Dam Kiosk. Four leases were granted to Shires, two for waste transfer stations and two for purposes associated with local Bush Fire Brigade requirements. A new lease was granted to replace an expired agreement for a dam site, a new licence was granted for an infiltration drain, and a lease was issued to formalise access across a small portion of State forest. Two leases were issued to two Aboriginal Corporations for living areas located within the Purnululu National Park.

In addition to the above, the Department formally renewed a lease for a camping ground at Broome, with the lessee exercising the option to

renew, and as a lessee, the Department entered into an agreement for a depot site as part of a District office's infrastructure requirements.

Separate to the 27 arrangements discussed above, the Department managed the issuing of a further nine leases at Point Peron. The land is managed by the Department as part of the Rockingham Lakes Regional Park although the land is vested in another government agency (the Recreation Camps and Reserves Board). Although the Department manages the leases, the agreements themselves were executed by the other agency.

As at 30 June 2002 there were 2,849 current apiary site permits issued on Department managed land and other Crown land throughout Western Australia. During the year, the Department continued to administer the apiary site permit system involving the granting of new permits, cancelling sites as requested, transferring permits between beekeepers, and relocating sites as necessary. Most of the available beekeeping resource is covered by permits issued to 94 beekeepers.

During the year the Department merged the Pastoral Lease Conditions, Water Catchment Conditions and the Beekeepers Code of Practice into a new document called 'Standard Apiary Site Conditions'. A condition paper on the future administration of apiary sites on Crown land and State forest was released for public comment.

The Department has emphasised the need for all permit holders to hold a Public Liability insurance policy for not less than \$10,000,000 cover while they hold sites on Crown land.

The Beekeepers Consultative Committee (BCC) provides a forum for communication between the Department, other land managers, the beekeeping industry groups and the Department of Agriculture. The BCC met on two occasions and dealt with a range of policy and operational issues.

PARK PRESENTATION AND RESOURCE PROTECTION

The Department aims to achieve high quality visitor services and facilities that are planned, designed, developed and properly managed in a sustainable way.

Master plans, site development and/or concept plans were completed for many projects around the State. These plans are prepared to assist with funding applications and to ensure capital works projects are undertaken according to plan. Some examples include plans for the lighthouse precincts at Cape Leeuwin and Cape Naturaliste in the Leeuwin-Naturaliste National Park, Rowles Lagoon Conservation Park, Bluff Knoll in the Stirling Range National Park, Waychinicup Inlet Campground in Waychinicup National Park, recreation sites in Stockyard Gully National Park, Dingo Beach in West Cape Howe National Park and Savannah Campsite in Karijini National Park.

Design and/or construction documentation drawings were prepared for many projects, including Walyunga Pool in Walyunga National Park, Canal Rocks and Lefthanders in Leeuwin-Naturaliste National Park, small structures at Bluff Knoll in Stirling Range National Park, toilets at Mt Chudalup in D'Entrecasteaux National Park, Turquoise Bay in Cape Range National Park, Dales in Karijini National Park and Canal Rocks and Hamelin Bay in Leeuwin-Naturaliste National Park. Other structures such as boardwalks and lookouts were designed and prepared for construction at Alfred Cove, the Loop Lookout in Kalbarri National Park and Lake Toolibin.

Planning, training and design advice was provided as needed throughout the year. Informal training in recreation and tourism planning and design was provided to Department staff on a project basis throughout the year.

Formal training was provided through two Advanced Recreation Planning and Management Courses held in June 2002. Advice was given on numerous projects associated with the Department and representation occurred on working groups including the Carnarvon Coastal Strategy and the Coastwest/Coastcare Technical Assessment Group.

Concept, site and documentation plans/drawings were prepared as part of the Government's *Protecting Our Old-Growth Forests* policy. Projects included new day use facilities at Circular Pool, the Knolls and Valley of the Giants in Walpole-Nornalup National Park, camping sites on the Warren River and on Carey Brook near Pemberton, recreation facilities in Giblett block on the Karri Forest Explorer, new day use facilities at Lake Muir near Manjimup, safe river access deck at Honeymoon Pool in the proposed additions to Wellington National Park, new day use facilities at King Jarrah near Collie and at Barrabup Pool in St John's Brook Conservation Park.

Visual impact assessment, recommendations, guidelines and specialist advice were provided for numerous proposals throughout the year. Other impacts commented on included telecommunications towers, mining, gravel extraction, infrastructure development, housing and tourism developments.

Native forest harvest and regeneration plans and impact assessments (including community consultation) were prepared for a number of harvest coupes including Warner Block.

Visual landscape management processes and operational guidelines for a wide range of impact and development types continue to be developed between the Department, the Department for Planning and Infrastructure, Main Roads WA and the Swan River Trust.

Training programs and publications are being considered including the development of awareness training and lectures. Delivery will commence as resources allow.

VISITOR COMMUNICATION AND MANAGEMENT

Interpretive Planning

Visitor communication planning is an essential component of the Department's management planning process. Officers provided interpretive perspectives into the preparation of management plans, recreation site development plans and interpretive projects such as the Monkey Mia Visitor Centre. Interpretive planning is in progress for Perth's regional parks and the Shark Bay World Heritage Area.

The Government's *Protecting Our Old-Growth Forests* policy has funded a number of key projects within a broad interpretive communication strategy to enrich visitors' value of the biodiversity of our southwest forests. A shopping centre display, multi-media exhibit, guides to interpreting the southwest and guided activity programmes in national parks are new initiatives that commenced in 2001.

Interpretive design

The Unit's Sign Design Studio continued to meet regional demands for signs and displays in managing visitors to Department estate. Designs were prepared for more than 110 projects, eight of these were for new parks.

Interpretive products of particular note were the Vasse-Wonnerup Ramsar Wetlands shelter and bird hide interpretation signs, the sign system for Regional Parks in Perth, interpretive signs for a number of granite outcrops in the Wheatbelt region, the Esperance Wetlands and in proposed new parks such as Blackwood, Boorara and Margaret River.

Risk and dieback signs continued to be in demand as part of the Department's

Risk Management program. Professional advice was given to a number of shires and community groups towards developing interpretive facilities, services and sign products. Of note is the concept planning for an environment centre within the Shire of Dalwallinu and consultation with the National Trust (WA) on the Golden Pipeline Project between Mundaring Weir and Kalgoorlie, the Kalgoorlie-Boulder Urban Landcare Group for Karlkurla Park signs and interpretive signs for the Blackwood River in Nannup Shire.

Guided Interpretive Activity Programs

Interpretive activity programs are conducted in many parks and reserves throughout Western Australia. Participants enrich their experience while learning to support sound management of our heritage. Regular activity programs attract more than 300,000 participants. Major interpretive activity programs are at Yanchep National Park, The Hills Forest Discovery Centre, Perth Observatory and Penguin Island in the metropolitan area; at Geikie Gorge, Mirima and Purnululu National Parks in the Kimberley; Karijini and Millstream-Chichester National Parks in the Pilbara; Monkey Mia in the Midwest and the Valley of the Giants in the Southwest.

The Government's *Protecting Our Old-Growth Forests* policy supported the redevelopment of guided activity programs at Walpole, Pemberton, Margaret River and Leeuwin-Naturaliste National Park in summer and during school holidays at Easter and April/May. The Big Bush Heritage Celebration at Wharnccliffe EcoDiscovery Centre in Margaret River on Easter Saturday was an exciting new initiative that attracted more than 300 people. Local community involvement, employment of local guides, resident and visitor participation, and local businesses benefited from this special event celebrating the natural and cultural values of the area.

Training and Professional Development

The nationally accredited Designing Ecotour Interpretive Activities Workshop was conducted again in collaboration with the University of Notre Dame Australia in Fremantle. Students, Department staff and others interested in ecoguiding participated. Students then presented the Footloose in Freo Guided Activities Program to residents and visitors to Fremantle.

Visitor management through communication strategies of information, interpretation, community involvement, consultation and public participation are a core component of the Advanced Recreation Planning Course.

COMMUNITY INVOLVEMENT

The contribution made by volunteers to the Department's Community Involvement program continues to remain an effective means of enlisting the support of the general public into the Department's management programs.

The International Year of the Volunteer 2001 saw many functions held throughout the State to celebrate and honour the Department's volunteers. The Volunteer of the Year and Outstanding Service Award function was held last December and attended by the Minister and senior Department staff and volunteers. All volunteers who contributed to Department projects in the International Year of the Volunteer 2001 received certificates and badges commemorating their commitment and dedication to Western Australia's environment and biodiversity.

Volunteers continued to participate in several major ongoing projects such as the Bibbulmun Track and Cape to Cape maintenance, the campground host program, flora and fauna surveys, plant curation, the Nearer to Nature Environmental Activity Program and Friends of Parks groups.

New projects registered this year included the Lorna Glen Biological survey, (a recently purchased pastoral lease), planting of critically endangered plants in the Wheatbelt, and the weeding and rehabilitation of regional parks, which has resulted in an increased output of this successful program.

Many four-wheel-drive (4WD) clubs are working closely with the Department's field staff to enhance and improve the natural landscape. Additionally, wildlife carers and wildlife officers attended the 4WD and Caravan, Camping and Park Home Shows to inform and educate the general public about caring for our unique wildlife.

This program continues to provide many opportunities for students to gain work experience throughout the year, and receives valuable feedback from the public, through managing parks in partnership with community based advisory committees and Friends of Parks groups.

Year	No. registered	New projects	Hours contributed
1998-99	2,400	19	108,630
1999-00	3,800	12	121,000
2000-01	4,499	26	190,000
2001-02	5,683	20	217,000

Bush Ranger Cadet Program

The Department's Bush Ranger Cadet Program, now in its fourth year, caters for young people with a range of different physical and intellectual abilities from a variety of cultural backgrounds.

Year	No. school units	No. of Cadets	No. of hours
2000-01	21	800	105,600
2001-02	29	1100	180,000

Liaising and working with Indigenous People

During 2001-2002 there was a greater focus on joint management with

Indigenous people through the Indigenous Heritage Unit (IHU).

Stage one of a new Mentored Indigenous Training Employment Program began and is expected to lead to the development of remote location training. The program will be funded with the assistance of the Commonwealth Department of Employment, Workplace Relations and Small Business to provide assistance under Structured Training and Employment Projects (STEP). Under this program eight trainees have joined the Department – four in Kalgoorlie, two in Shark Bay, and two in Yanchep.

A very successful new partnership has been forged with Balga TAFE, with eighteen Indigenous students spending two days a week studying Cultural and Eco Tourism at Yanchep National Park.

Staff from IHU were invited to visit Mulan (Lake Gregory), and Wila Gutharra (Geraldton) to advise Aboriginal Community members on the identification and development of tourism products, and the concept of ranger training.

Cross cultural awareness has received a higher priority within the Department and several workshops have been conducted with more planned for the future. The Cultural Heritage Education program is still very successful.

Business Management

The Department attempts to combine elements of social, ecological and traditional marketing to craft messages, services and products that encourage responsible use and promote realistic images of parks and services.

Staff designed and developed three new brochures promoting the Northern, Central and Southern regions of Western Australia. The new brochures replace the single State-based guide and aim to assist visitor decision making by delivering a regional overview, encouraging responsible

behaviour, and providing a more detailed summary of the region's parks and reserves.

The Department distributed brochures and promoted National Park Passes through many consumer events. In November 2001, the Department joined Tread Lightly Australia and staffed a cooperative display at the 4WD and Adventure Show. In March 2002, Department staff from Regional Parks, Marine Conservation, Wildlife, and Park Policy, partnered with the WA Raptor Society and Tread Lightly Australia to cooperatively build the public's awareness and appreciation of nature conservation, marine parks, national parks and services.

Brochures and park passes are also distributed and sold through 40 independent retail outlets. As of 30 June 2002, the Department had distributed 20,000 park passes. This represents a nine per cent sales increase and approximately \$570,000 reinvested into new park facilities and services during the financial year.

Breakdown of Pass Distribution	
Holiday Park Pass (4 wks)	37%
Annual Local Park Pass (1 park, 12 mths)	34%
Annual All Park Pass (All parks, 12 mths)	23%
Gold Star Park Pass (All parks, 12 mths, 1yr <i>LandScope</i> Subscription)	6%

To assist future sales, staff designed and developed awareness building point-of-sale promotional material, issued park pass renewal letters, and advertised in the *Western Australian Tourism Commission's Winter Breaks* and *\$100 Million Holiday Sale* catalogues, and *AAA Tourism's WA Experience*. The potential advertising reach totalled more than 7.2 million visitors.

The Department's annual *Tourism Information Exchange* was celebrated

as Western Australia's major event for the International Year of Ecotourism 2002. The Forum Advocating Cultural and Eco-Tourism chose the event for its success in promoting sustainable nature and ecotourism. The aim of the expanded two-day conference and trade expo was to encourage the industry to discuss and plan how Western Australia can lead the world in innovative and sustainable nature tourism experiences. More than 150 people attended the well-publicised and effective event. Partners included the Western Australian Tourism Commission, Western Australian Indigenous Tourism Operator's Committee, Department of Fisheries, Ecotourism Association of Australia, Edith Cowan University, Rottneest Island Authority, Council of Australia's Secondary Tourism Teachers, Murdoch University, Curtin University, Regional Tourism Associations, and Aquarium of Western Australia.

The Department continues to work with and inform the industry. Department staff continue to produce the quarterly *Touring Western Australia* newsletter and discuss major issues with key industry representatives at the Department's *Tourism Industry Reference Group* meetings. An e-mail database was also developed that instantaneously broadcasts information to operators and important industry information providers.

For commercial activity (tourism licences) new procedures were introduced in April 2002 to allow for longer term unrestricted 'T Class' licences linked to the licence holder achieving a certain level of tourism industry based accreditation. This supports Government's commitment to assisting industry to raise the standards of their operation and promote greater awareness of the impact of commercial visitation upon the conservation estate.

Legislation, Policy for Parks & Visitor Services

The *Conservation and Land Management Regulations 2002* were published in the *Gazette* on 3 May 2002 and provide a consolidated set of regulations applicable to the management of visitors and other users of the land and waters that the Department manages. These regulations repealed and replaced Part 6 of the *Wildlife Conservation Regulations 1970* (which applied to nature reserves), all of the *National Parks Authority Regulations 1977*, all of the *Conservation and Land Management Regulations 1992* and those regulations in the *Forest Management Regulations 1993* that addressed the activities of visitors to forests. The new regulations address visitor and other activities in marine conservation reserves for the first time. There is a continual review and update of existing policies impacting parks and visitor services.

During the year, a review of Policy 18 – Recreation, Parks and Visitor Services, was completed. The Policy outlines the Department's policy on a range of issues from commercial concessions and visitor fees to off-road vehicles and sand-boarding, and provides much of the policy detail in support of the *Conservation and Land Management Regulations 2002*.

A Leases Policy was also developed, setting out the Department's framework for entering into a wide range of leases on the lands that it manages.

Bibbulmun Track and Munda Biddi Trail

Department of Justice work crews from Karnet prison and the Walpole Work Camp continued to work on Department trails construction, maintenance and improvement projects.

A major project also commenced to provide a standardised methodology

that will provide reproducible data to satisfy auditing, strategic planning and management requirements. Some results from this study obtained for the Mundaring area of the track indicate an annual visitation of 29,000 people.

Sales of Bibbulmun Track publications continued to increase. Guidebook sales average 3,400 per year and maps more than 6,000 per year. There is a steady demand for souvenir items. The Friends of the Bibbulmun Track continue to be the biggest retailer of track publications. The Northern Guidebook sold out in September 2001. A revised 2nd edition was published in April 2002. Revised editions of the maps and the Southern Guide are planned for the 2002–2003 financial year.

The track receives very high usage from non-commercial groups such as recreation clubs, scouts, schools and other education groups. It is proving to be a very valuable resource for the recreation and education sectors.

A crew comprising displaced timber workers was employed to upgrade track and water crossings in Donnelly Valley and carry out maintenance of track and campsites throughout the Warren region – 245km of trail in total. This project was very successful for both the track and crew members.

Major improvements to the track and facilities during the past year include:

- addition of two more composting toilets in sensitive stream zones and drinking water catchments;
- completion of a new suspension bridge over Deep River near Walpole;
- weather proofing of two shelters in exposed coastal locations; and
- the completion of a lookout in an old fire tower at Mt Wells.

Tourism, marketing and interpretation projects have continued in partnership with the Friends of the Bibbulmun Track (FOBT) along with continuation

of the 'Eyes on the Ground' volunteer maintenance program with FOBT's major sponsor Alphawest 6. FOBT completed a major tourism and employment generation project funded by a Federal Regional Tourism grant through the Great Southern Development Commission. Survey design, data, processing and analysis were provided by the Department's Tracks and Trails Unit to support this work. Key outcomes and findings of this project are available from the Department.

Detailed planning was completed for the first stage to Collie of the Munda Biddi long distance bike trail (formerly known as the Hardwood Trail) that will eventually extend from Mundaring to Albany. Extensive consultations were conducted with Water Corporation, and Water and Rivers Commission to negotiate trail routes through water supply catchments. Consultations also occurred with other stakeholders including Alcoa Australia, the Aboriginal Land and Sea Council and the Nyoongar claimants of the southwest and Metropolitan Council of Elders. The Member for Armadale launched the trail development project in December 2001.

Five campsites have been selected and detailed site plans and designs have been completed. A contract construction supervisor was appointed and, with the help of Perth Hills District staff and a work crew from Karnet Prison, construction of most of the trail between Mundaring and Dwellingup was completed by June 2002.

A non-profit community group, the Munda Biddi Foundation continues to work closely with the Department's Tracks and Trails Unit to secure funding and develop marketing opportunities.

REGIONAL PARKS

Perth's regional parks are Yellagonga, Herdsman Lake, Canning River,

Woodman Point, Beelihar, Jandakot, Rockingham Lakes and Darling Range.

The Department's role in regional parks encompasses a number of facets:

- It has taken over the management of lands within regional parks owned by the Western Australian Planning Commission which were formerly managed by the Department for Planning and Infrastructure;
- It manages reserves vested in the Recreation Camps and Reserves Board formerly managed by Sport and Recreation Western Australia; and
- It is responsible for coordinating the management of regional parks. This involves preparing management plans for each of the parks and ensuring an integrated management approach to works within the parks.

The Regional Parks Unit continues to co-ordinate the management tasks within the parks.

Works within the parks are accomplished by purchasing services from the private sector and from the employment of 14 staff through the Department's Swan Coastal and Perth Hills Districts. The Department also acknowledges and appreciates the volunteer groups who are dedicated to tasks and areas within the regional parks. Support is provided to the volunteer groups as required.

Community advisory committees for each of the regional parks have been established and continue to provide valuable advice to the Department in managing the parks. The advisory committees comprise a range of people from local communities who are capable of advocating on behalf of community views.

During the past 12 months, the Department has consolidated the management of the eight regional parks. Some of the major

achievements for the parks are as follows:

- Preparation of the Beeliar Regional Park Draft Management Plan, which was released for public comment by the Minister for the Environment and Heritage.
- The commencement of a review of lease management procedures and rent reviews for relevant tenants.
- A review and update of the jointly prepared (Department/ Fire and Emergency Services Authority) Fire Response Plans for the Coastal Plain Regional Parks.
- The Regional Parks brand image and award winning sign system was completed. The signs and brand images are expected to greatly enhance public recognition and enjoyment of the parks.

Year one works of the Jervoise Bay Conservation and Recreation Enhancement Plan are complete. The works, coordinated by the Department, have resulted in major improvements to John Graham Reserve, the Headland and Woodman Point View in Woodman Point Regional Park.

Major upgrades of paths were completed in Herdsman Lake Regional Park and new paths were constructed at Yellagonga Regional Park and Beeliar Regional Park.

Weed Control and Revegetation Plans were completed for Yellagonga, Woodman Point and Herdsman Lake Regional Parks.

An Aboriginal Heritage Trail was developed at the Spectacles within Beeliar Regional Park in partnership with traditional custodians. The Trail interprets the natural features of the area from an Aboriginal perspective.

Recreation Training

During the year, Departmental staff conducted two week long training courses on recreation planning and management in natural areas for

recent graduate officer recruits and other Department staff at the Ministry for Sport and Recreation's Point Walter Conference Centre. A number of second and third year students from the University of Notre Dame also participated in this nationally accredited training program as one of the University's Environmental Science Units.

Involvement with the WA 4WD Association, Track Care WA and Tread Lightly! Australia

As part of the International year of the Volunteer celebrations, the Department in conjunction with Track Care WA and the WA 4WD Association helped to organise and co-host a volunteer recognition weekend in October at the Icy Creek Bush Camp near Dwellingup. The main purpose of this function was to celebrate and acknowledge the work of the many volunteers from Track Care and the numerous 4WD clubs who have contributed their time and expertise to various track restoration and other environmental rehabilitation projects on Department managed lands. More than a hundred Track Care members and their families joined in the weekend activities, which included a presentation of certificates of appreciation by the Department's Director of Parks and Visitor Services.

Staff in a number of centres also continued to promote the 'tread lightly' message and to actively work with the WA 4WD Association, member clubs and Track Care WA on various track rehabilitation projects primarily in the southwest of the State. The Department also participated in the annual WA 4WD Show in South Perth in association with representatives from Tread Lightly! Australia

Nature-Based Recreation and Tourism Research

The Department operates a cooperative nature-based recreation and tourism research program with Western Australia's major tertiary institutions.

This partnership seeks to utilise and apply the universities' expertise and knowledge in the social and environmental sciences on various field-based recreation and tourism projects. Students can gain valuable field experience and the Department can benefit from the results of these studies.

A Research Reference Group that facilitates the coordination of students and projects has been operating since 1998 and comprises academic staff from the five West Australian Universities as well as Department staff. The main functions of the Reference Group are to:

- identify potential research studies of relevance and importance to the planning, development, management, monitoring, marketing and financing of sustainable recreation and tourism opportunities in natural areas;
- act as 'research brokers' by finding and allocating these studies to tertiary students and/or faculty members who are interested in pursuing a particular topic or field of inquiry;
- assist in disseminating the results of these studies to the Department's regions, districts and specialist units and to other interested parties.

A wide range of potential research topics have been identified and listed on the Department's website NatureBase. A number of these projects are currently being undertaken by students as honours, masters and PhD studies while others have already been completed. The Research Reference Group also hosted a one-day research forum in conjunction with the Department's annual Parks and Visitor Services Workshop. Several students who have either completed or were undertaking nature based recreation and tourism research projects presented the results of the field research at this forum.

Visitor Information and Statistics

The aim of the VISTAT Program is to provide accurate information on visitor use, needs and expectations and on levels and patterns of use throughout lands and waters managed by the Department. The VISTAT and Visitor Survey databases contained within the Recreation & Tourism Information System (RATIS) provide an effective and efficient means of collating and storing visitor use monitoring data and visitor feedback form results. The Department has continued to upgrade hardware required to monitor visitor use.

Visitor Use Monitoring

The visitor use-monitoring program continued, with 185 sites monitored by traffic classifiers and counters, observation surveys and ticket sales in national parks, State forest areas and reserves throughout the State. The total visitation to lands and waters managed by the Department during the year was 9.8 million visits. This represents an increase from the 9.7 million visits recorded during 2000–2001. This increase reflects a continuing interest by the public in visiting natural areas managed by the Department.

Year	No. Data collection sites	Total No. visits (million)
1996–1997	137	6.4
1997–1998	144	8.1
1998–1999	149	8.7
1999–2000	158	8.9
2000–2001	226*	9.7
2001–2002	185	9.8

** This figure includes 68 sites that contributed only marginally to the overall total annual figures for 2000–2001, as most of these sites are part of numerous small reserves in remote areas with limited access and use and therefore not included in the 2001–2002 data collection sites.*

Visitor Survey Program

The revised visitor satisfaction survey program was implemented for a third year, with feedback provided from survey results used to assess visitor needs and expectations as well as satisfaction with recreation and tourism facilities and services.

Those parks and recreation areas surveyed represent a broad range of recreation settings based upon visitor use levels, access to the site and presence of facilities. The survey provides feedback from visitors' regarding the management of these areas, their overall level of satisfaction during their visit, their main purpose of visit and the activities undertaken. This information aids in the planning and management of these recreation areas by providing vital information for site planning and design, visitor communications, business and marketing plans and performance evaluation.

REGIONAL SERVICES

The Department's nine regions have entered into Service Provider Agreements with the Director of Parks and Visitor Services to provide a full range of management, maintenance and development services required to effectively and efficiently implement actions under the Parks and Visitors Services Output. Highlights from the regions include:

Kimberley

- Certificates to commemorate a commitment to a new and just relationship between the Government of Western Australia and the Kwarre and Kayiyirriwareny Aboriginal Corporations in Purnululu National Park were signed. These certified that the Western Australian Government is committed to the development of a new and just relationship with the families and members of the Corporations. The Government

concurrently issued leases over some 3,661 hectares of Purnululu National Park to the Corporations for the use and benefit of their members. The act of issuing the leases symbolized the Government's commitment to forming a strong and enduring relationship with the Corporations and their members.

- Upgrade of camping facilities including new composting toilets at Mitchell Plateau.

Pilbara

- On-ground roadworks for the Savannah campground at Karijini National Park were completed. The Department is currently working through securing a lease with the local Aboriginal corporation.
- Work was completed on the Dales Day Use Area at Karijini National Park and funding was secured for the upgrade of Karijini National Park airstrip.
- Significant progress was made towards the full upgrade and restoration of the Mt Herbert-Python Pool Cameleer's Trail at Millstream-Chichester National Park and the extension of the Turquoise Bay carpark at Cape Range National Park.
- Work commenced on the development and implementation of the Coral Bay Boating Strategy. The Departmental presence increased from .5 FTE to 1.5 FTE.

Goldfields

- Planning commenced for the Goldfields Woodlands National Park and surrounding conservation areas; and a recreation master plan was developed for the Goldfields.
- Site development plans were also prepared for Rowles Lagoon, Cave Hill, Burra Rock.
- There were tenure changes and extensions to Cave Hill and Wallaroo Rocks and the disposal of Niagara and Malcolm Dams continues to progress.

- Work continued on Rowles Lagoon recreation site upgrade including access facilities upgrade, interpretive information and shelters, toilet block construction. The implementation of Rowles Lagoon Management Plan is in consultation with the newly appointed management advisory group made up of local stakeholders.
- Liaison continued with indigenous groups, particularly the Goldfields Land and Sea Council, the representative body and native title claimants, by contact, consultation and forming partnerships to develop understanding, joint management and input to reserve management including:
- Traineeships – employed four Aboriginal trainees in conjunction with Curtin University and Goldfields Group Training in Certificate 11 in Land Management.
- Cultural tourism initiatives including a southwest tour for Goldfields key Aboriginal individuals.
- Finalised, installed and continued to promote the new biogeographical panels of the Goldfields Region, developed through strong links to corporate sponsorship eg existing arrangement with AurionGold.

SouthWest

Significant activities this year include the implementation of the *Protecting Our Old-Growth Forests* policy through the New Parks program, which has resulted in the appointment of four National Park rangers and five park workers to work specifically in the proposed new parks.

Wellington District: the program focused almost entirely on works within Wellington National Park and its proposed extensions. Maintenance of existing facilities across the District continues to be a major activity.

- Significant progress was made with the 4WD movement and the WA Trail and Enduro Club (T&E). The 4WD movement is actively involved in volunteer work in both the Wellington National Park and Leschenault Peninsula Conservation Park. The T&E Club is working closely with District officers to plan events so they are more environmentally acceptable and better managed.
- The Leschenault Peninsula Conservation Park entry was upgraded with improvements to the carpark, installation of a composting toilet, construction of a 500m access for all footpaths through tuart forest and along the fringe of a small wetland, and the development of the JB O'Reilly memorial interpretive shelter. Interpretive information is provided about the park, its Aboriginal history and the life of Irish humanitarian JB O'Reilly. The facility is fully wheelchair accessible.
- Commencement of management planning with community consultation, forming of an advisory committee, appointment of a planning officer and team, and preparation of issues paper and discussion papers for Wellington National Park.
- Renovation works on the buildings at Wellington Discovery Forest including upgrade on storeroom, public toilets and veranda, which will enhance the increasing use by school groups for environmental education.
- Commencement of consultation with the Aboriginal community regarding Honeymoon Pool. Plans were prepared for the further improvement of the camping and picnic area.
- A major road upgrade program commenced with the sealing of steep sections of Lennard Drive completed and survey and engineering commenced on River Rd.

- The redevelopment of the viewing area at King Tree in the Ferguson Valley with new parking areas, walkway, viewing platform and interpretive signs installed. The facility is wheelchair accessible.
- Upgrading of the walk trail network has commenced with sign posting, erosion control and minor realignment of the Sika trail, construction of Potters Gorge link trail and a trail to the lookout east of Honeymoon Pool.

Blackwood District: Works focused on the proposed Margaret River and Blackwood national parks, and St John's Conservation Park and the Leeuwin Naturaliste National Park.

- Management Planning for Leeuwin Naturaliste National Park in progress.
- The commencement of an interpretive activities program at Margaret River Eco Discovery Centre, Conto's and Hamelin Bay during the summer period and long weekends.
- The upgrading of Warner Glen day visitor and camping facilities at Blackwood National Park.

Major works at Leeuwin Naturaliste National Park included:

- A major carpark upgrade, surface drainage and access at Lefthanders and Canal Rocks.
- Construction of a camper's kitchen with gas cooking facility at Conto's campground.
- Several new stairways and walkways were installed as part of an ongoing program to improve public safety and protect cave features at Calgardup Cave.
- A beach lookout and paved pathway were completed at Ellensbrook permitting views of the coast and surf breaks while protecting the fragile coastal vegetation.

Major works at Tuart Forest National Park included the upgrade of the

birdhide and access path and construction of parking areas. Interpretive information was designed and will be installed next year.

Mid West Region

Moora District:

- Commenced the Expression of Interest process associated with the Grey and Wedge Master Plan and met with Native Title Claimants in relation to Grey and Wedge Squatter areas.
- Heritage surveys in Lesueur, Stockyard Gully and Nambung National Parks as well as Coomallo Nature Reserve were completed in readiness for implementation of Recreational Development Plans.
- Liaison with Ministry of Justice resulted in mutually beneficial working arrangements, including fabrication, installation and maintenance of recreational sites.
- Visitor Risk Assessments at all recreation sites within the District were completed and recommendations were implemented.

Geraldton District:

- Kalbarri National Park– developed new lookouts over the river gorge at Hawks Head and the Loop, and constructed new paths associated with these lookouts at Kalbarri National Park; defined safe viewing platforms on coastal cliffs at Eagle Gorge and Grandstand; prepared a Park Interpretation Plan; produced Park information panels for display in information bays built by the local tourism association; and liaised with Nanda Working Group in drafting the Aboriginal Heritage section of the draft management plan.
- Kennedy Range National Park– initiated consultation with the Gnulli Working Group, to assist in preparing Interim Management Guidelines and a Recreation Plan; redefined the camp ground to improve environmental protection, in association with Australian

Conservation Volunteers and with Western Australian Tourism Commission funding assistance.

Shark Bay District:

- Redeveloped Monkey Mia carpark and boat trailer parking and implemented new educational and interpretive programs at Monkey Mia to enhance the dolphin interaction experience.
- Commenced an Aboriginal traineeship program in partnership with Yadgalah Aboriginal Corporation.
- Participated in planning with the Shire of Shark Bay for the World Heritage Centre and Management Precinct.
- Produced posters, displays and brochures to better interpret World Heritage values.

Swan Region

- Work focused on Stage one of development on five proposed new national parks. A major clean up resulted in 400 dumped cars and hundreds of tonnes of illegally dumped building rubble, garden waste, tyres and asbestos being removed from the proposed parks. Signage erected and initial inventory undertaken.
- The Margaret Forrest Centre was opened after being refurbished at a cost of \$60,000. It is a premier facility for interpretation and school programs in John Forrest National Park.
- The high use education facility in Lane Poole Reserve Icy Creek site was converted from diesel generated power to solar.
- The Plunkett Road entrance to Avon Valley National Park was upgraded to allow better access to the northern section of the park.
- Lesmurdie Falls National Park's main access path to the low section of the park was upgraded.
- Universal and public access on Penguin Island has been improved.

- Visitor Risk Management systems are now in place at all recreation sites within the Region. Many of the higher risks have now been ameliorated, thus improving the safety of our visitors.
- Yanchep National Park has exceeded its visitation targets.
- Two Aboriginal trainees were appointed bringing the total number of Aboriginal employees in Yanchep National Park to six full time equivalent staff. Additionally, 16 Aboriginal students from West Coast College of TAFE are studying tour guiding in the park.
- The lessee of Yanchep Inn has begun renovations and developed improved accommodation facilities in accord with strict heritage guidelines.

South Coast Region

- Fitzgerald River National Park - installation of a new toilet at Four Mile Beach and the construction of a new platform/boardwalk lookout for whale watching at Pt Ann.
- Stirling Range National Park - Planning for new facilities at Bluff Knoll car park, and installation of temporary quarters for volunteers at Moingup Springs.
- Porongurup National Park - Planning stages for Castle rock access platform. Several Green Corps programs were implemented.
- Development of day use/ campsite at Waychinicup.
- Community Volunteer work at recreation sites, rehabilitation and track closures at Gull Rock Reserve.
- Redeveloped Cape Le Grand beach ablution block and redevelopment of the tenting area at Lucky Bay campsite. Site Plan prepared for Hellfire carpark and road redevelopment. and Thistle Cove carpark.
- New park office erected at Stokes National Park.

- Construction of wooden walkway onto Skippy Rock Beach.
- Woody Island–Shearwater Viewing Platform constructed by Local Environmental group

Wheatbelt

- The construction of the \$340,000 Barna Mia facility at Dryandra Woodland over two years was completed. The facility includes new access road and parking area, lighted pathways, an interpretive educational building with auditorium, and a fenced enclosure. Funded through the State Government and a grant from the Commonwealth Regional Tourism Program, the strawbale building is designed to complement the natural environment.
- Visitor facilities at several reserves in the Merredin District – Wongan Hills, Korrelocking, Yorkrakine Rock and Totadgin – have been upgraded in the past two years. More than \$100,000 has been spent at these sites upgrading access roads and parking areas, constructing walk trails, providing new picnic furniture and installing interpretive signs.

- Toolibin Nature Reserve east of Narrogin received new visitor facilities including access road and parking area and picnic furniture.
- At Dryandra Woodland, new interpretive signs providing visitors with information about Sandalwood and the history of the railway between Dwarda and Narrogin were installed. The road network throughout Dryandra continues to be upgraded with a section of Kawana Road re-aligned away from the Village accommodation area.
- A Departmental sponsored ‘Bushrangers’ cadet program was commenced with the Katanning High School. The students are participating in a range of nature conservation and landcare projects.
- A significant investment was made in developing and managing a strong wildlife carer network throughout the Katanning District that is able to care for and rehabilitate injured fauna. The carer network has increased from 20 to 40 registered carers.
- The Dryandra Woodland Focus Group with the support of the Department was successful in obtaining a grant to employ a

Tourism Development Officer to promote and develop tourist product in the Greater Dryandra area.

- The upgrading of facilities at selected reserves in the Merredin District coincides with an increase in interest and willingness by members of the local community to be involved in managing the visitor use sites on reserves. Cooperation with catchment groups across the region continues to receive a high focus by staff.
- Liaison with the National Trust of Australia (WA) in developing the Golden Pipeline Project continues across Merredin District. Infrastructure will be provided across the District mostly on Shire reserves. Totadgin Conservation Park near Merredin will have a walk trail constructed with interpretive signs provided.
- Another successful Dryandra Woodland Ecology Course was held this year with 22 American students from Oregon and some members of the Blackwood Catchment Group participating.
- The ‘Wonders of the Woodland’ schools program continues to be a popular activity with many different groups participating.

Performance Measures

Output 4

	2001–2002 Target	2001–2002 Actual	Explanation of significant variation
Quantity			
Visits to sites managed	10,300,000	9,821,000	While there was an overall increase in visitor numbers from the preceding year, the actual increase was smaller than predicted. This may have been due to a combination of factors including the effects of the events of September 11 on world travel.
Quality			
Mean level of visitor satisfaction with their visit overall	85%	85%	
Timeliness			
Visitor services/activities delivered within advertised timeframes	100%	100%	
Cost			
Average cost per visit	\$4.68	\$5.12	

OUTPUT 5:

ASTRONOMICAL SERVICES

HIGHLIGHTS

- New record for annual attendance at star-viewing nights.
- Donation of the rare and important historical astronomical book, 'Atlas Coelestis'.
- Perth Observatory Volunteer Group awarded over \$19,000 in grants.
- Hosting of international astronomy workshop.

Outcome achieved by:

Astronomical information and services for the benefit of the community.

Output description

Providing public information and awareness directly beneficial to the Western Australian community, and contributing to scientific research in astronomy by co-operating with national and international institutions in the acquisition, analysis, interpretation and dissemination of information.

Perth Observatory activities in the past year remained focussed on its three core functions of education, information and research. Some areas experienced significant improvement while others continued with relatively steady output or an increase in capability.

Star viewing nights continue to be the main focus of the education/public access programme at Perth Observatory. They are extremely popular with the public and a new annual attendance record of 6,107 was set in 2001–2002. The increase in

attendance was due to the Observatory's new initiative of providing a computer-based astronomy presentation with expert commentary as an alternate activity on cloudy nights. This initiative was well received and resulted in only a few sessions where star viewing was impossible. Only 17 sessions were cancelled this year, compared with 48 last financial year. Monthly attendance records of 989 and 1,004 were also set in January and March 2002, respectively.

The 2001–2002 attendance for daytime guided tours and Sunday daytime guided tours totalled 3,213 and 394 respectively – an increase of around 300 on last year's total attendance. Visitors' satisfaction remained high as in previous years; with more than 94 per cent both satisfied with their visit and the educational quality of services in which they participated.

Formal education activities provided by the Observatory included the continuation of a second-year practical astronomy course at Curtin University and participation in a new multi-disciplinary first-year course containing a large component of astronomy at the University of Western Australia. Six university students were supervised in their research projects. Two had Summer Studentships involving tracking asteroids and comets, and working toward automating astrometry processing. Another two students constructed and operated an all-sky camera. Longer duration projects include upgrading and testing of the 16" telescope for scientific observations and the use of a supercomputer to simulate the effect of binary orbits on pulsar signals.

Public awareness of the Perth Observatory remains high. In 2001–2002 the number of people who visited, phoned for information (11,080 calls), attended talks or attended an astronomy field night totalled 28,119 (31,144 in 2000–2001). Observatory staff informed the public of astronomical events in 82 radio and two television interviews, and 65 newspaper articles.

Astronomy services were also delivered off the Observatory site to rural and metropolitan areas. Staff provided telescope viewing at many schools and actively participated in the Western Australian Astrofest and Astrofair. In total, more than 2,833 people viewed the stars with Observatory telescopes transported to their locality for one of 27 'astronomy field nights' conducted during the financial year.

In August 2001, the Observatory was the beneficiary of the donation of an important historical astronomical book – 'Atlas Coelestis' by the first Astronomer Royal of England, Rev. John Flamsteed (1646–1719). This work is rare and is one of about ten known in existence. It is now on permanent and secure display in the Observatory's museum area.

The book was inherited and donated by Mrs Win (Ethelwin) Frances Flamsteed Moffatt of South Australia, a direct descendant of Flamsteed's brother. The aim of the donation was to share the beauty and significance of this book with a wide audience, at an appropriate place. In honour of her donation asteroids 5542 and 4987 discovered by Perth Observatory were named Moffatt and Flamsteed, respectively.

Another significant donation to the Observatory was a brass, 3"-aperture solar telescope constructed by Mudd of Liverpool. The donor's father, Rev. Barnacle, used it in a 19th Century eclipse expedition. The telescope has been carefully restored by Observatory staff and added to the Museum display.

Perth Observatory Volunteer Group has been extremely successful in fundraising after becoming an incorporated body. The group has been awarded the following grants.

- A National Bank CommunityLink Volunteer Award of \$1,000.
- A \$3,600 International Year of the Volunteer grant from the Commonwealth Department of Family and Community for the provision of equipment that will make the volunteers' work easier, safer or more enjoyable. The Group used the funds to purchase jackets for all volunteers to use during star viewing nights.
- A \$14,829 grant from the Lotteries Commission of WA Gordon Reid Fund. This has been used to purchase a 'parallelogram' mount that is fixed atop an outside pier, which is fitted with an 8" Schmidt-Cassegrain telescope. This design enables people in wheelchairs to view the stars unimpeded by the need to reach a high eyepiece. A 'colour camera' was also purchased, which will facilitate the viewing of the brighter objects such as the Moon and planets by people in wheelchairs and the visually impaired. In addition a more sensitive camera and display unit was purchased to provide a view of fainter objects.

Archiving activities by volunteers continued. In October 2001 an unused colour-processing darkroom was set up with basic equipment dedicated to this

activity. Volunteer assistance totalled 1.57 FTEs and continues to make an important contribution.

The Supernovae Search programme continues to operate but has not detected any new events in this period. The system is working at its nominal sensitivity and has detected events discovered by others. This lull in progress is the result of the changeover to the new AP7 camera on the 24" Lowell Telescope and the need to compile new galaxy library images. Astronomer Ralph Martin completed a significant milestone with the submission of his MSc thesis concerning the Supernova Search system.

In September 2001 a new AP7 CCD camera was purchased and put into immediate use in addition to a new image pre-processing 'pipeline' that dramatically improves the system noise level.

Automation of the Lowell Telescope continues to advance and the system has been successfully left running unattended overnight. The use of a cloud sensor (from University of Adelaide Physics Department) and its integration into a simple system to communicate the presence of cloud and rain across the Observatory's computer network facilitates its safe operation in unattended mode.

Perth Observatory astronomers organised the 2001 workshop for the PLANET (Probing Lensing Anomalies NETWORK) microlensing group in Fremantle last November. A Major National Research Facilities International Collaboration Grant of \$2,895 supported the workshop.

PLANET members are based in more than 10 countries in six continents.

Despite Perth's isolation, 10 attendees from Europe, Africa, New Zealand, North America and Australia participated out of 16 members at the time (the total membership now is 19).

The PLANET homebase (team coordination and data management) was also hosted by Perth Observatory last July. Publications in the current interval concerned the search for the signatures of planets in intensively monitored microlensing events. It appears that less than one-third of stars with mass approximately 30 per cent of the Sun have Jupiter mass companions with semi-major axes in the range of 1.5 to 4 AU.

Perth Observatory's minor body astrometry programme using the Mike Candy Telescope (MCT) continued to be productive. The number of useful observations increased to 662, compared to 520 in 2000–2001. Thirteen of these positions were published in discovery announcements for four Near Earth Objects (NEOs) and a further 294 positions for 38 known NEOs were also published. The long-term monitoring of the brightness of comets also continued.

Work on characterising the atmospheric seeing conditions around WA continued. Observatory astronomers, along with six volunteers on a LANDSCOPE Expedition, took a Differential Image Motion Monitor to a site in the Murchison area for four nights of observations. A portable weather station was used to record basic meteorological conditions at the site.

None of the Perth Observatory achievements would be possible without the on-going hard work, creativity and dedication of the Observatory's full-time and volunteer staff.

Performance Measures

Output 5

	2001–2002 Target	2001–2002 Actual	Explanation of significant variation
Quantity			
Tour visitors.	8,700	9,714	Introduction of new capacity.
Enquiries.	19,000	18,405	
Refereed scientific papers.	5	5	
Quality			
Positive responses to 'quality' measures in customer surveys.	99%	98%	
Submitted research papers published in international refereed journals.	100%	100%	
Timeliness			
Satisfaction of information requests as they occur.	95%	98%	
Timely publication of research papers in international refereed journals.	100%	100%	
Effective study of astronomical targets of opportunity as they occur.	57%	68%	Increased telescope capacity.
Cost			
Cost per tour visitor.	\$18.50	\$20.42	This increase is mainly due to an increase in the number of more night sessions conducted.
Cost per enquiry.	\$32.90	\$31.54	
Cost of research activities per refereed research paper.	\$85,000	\$81,836	Improved efficiency with increased telescope capacity.
Cost of research activities per 1,000 head of WA population.	\$190	\$213	

GENERAL INFORMATION

The Department is in the portfolio of the Minister for the Environment and Heritage and is headed by an Executive Director.

In keeping with the varied interests of the Department there is also a Corporate Executive, which consists of seven directors working with and reporting to the Executive Director. Regional, branch and other specialist officers often attend meetings of the Corporate Executive.

The Department gives responsibility to its staff whenever possible, depending on skills and potential. Provided there is opportunity, there is no impediment to the progress of a capable individual in the organisation.

The detailed structure of divisions, regions and branches is shown in Figure 1. The names and qualifications of the officers occupying senior positions are shown on the page opposite the figure.

REGIONAL ACTIVITIES

The Department is committed to regionalisation. There are nine regions which, according to the intensity of activity, are subdivided into districts. Accordingly, the Department is spread over many locations. The map shows regional boundaries and the location of regional offices, as well as the types of lands and waters the Department manages.

Management structures are in place at nine regional, 15 district and nine local offices. Within the regions there are national park rangers at 39 other locations, and a district wildlife officer at one location and operations officers at three others.

Because of community concern for protection of the natural environment and an increasing desire to experience its values, the roles of regional managers and their staff are most important.

Satisfactory experiences for the 9.8 million visits (2001–2002 estimated figures) to lands and waters managed by the Department, drawn from interstate and overseas as well as from all over Western Australia, are largely in their hands. Regional staff are also responsible for the conservation of native flora and fauna within regional boundaries.

Regional managers are responsible under corporate direction for developing the region's annual works program, and for managing the region's budget allocation. Liaison with local groups, especially Aboriginal communities, other Government agencies and the community in general, is extensive. There are often advisory committees established with a focus on parts of Department-managed lands and waters. The committees make input into the preparation of management plans and, after their approval, advise on management. It is mostly the regional managers and their staff who are responsible for this important interface with the local community.

SPECIALIST AND SERVICE ACTIVITIES

The Department's operations are directed by the Corporate Executive and supported by specialist and service staff. Their responsibilities are as follows:

Science Division provides up-to-date, scientifically sound information to uphold effective conservation and land management in Western Australia. Three science groups address the Department's scientific needs: to discriminate and document the biota, ecological processes and biological resources of the State; to conserve threatened species and ecological communities by minimising inimical processes; and to ensure that lands, waters and biological resources are used sustainably.

Perth Observatory is a group within Science Division. It has three astronomy-based core functions: research, information services and educational services.

Strategic Development and Corporate Affairs Division is responsible for corporate planning and organisational development, and internal and external communications, marketing, advertising and community education. The Division initiates, develops and implements communication strategies to address major issues of conservation and land management, produces publications, displays and multimedia productions, designs and stages special events, coordinates the Department's media activities, provides the community with an information service, and coordinates internal communication and develops and implements school and experience-based education programs.

Fire Management Services sets fire management standards, coordinates the preparation and implementation of fire prevention and suppression plans, provides detection, communications, aircraft, fire trucks and equipment and other fire support services, and conducts training.

People Services Branch provides strategic planning, policy development and formulation, advice and coordination in the management of the Department's people. Services are provided by the Branch in the functional areas of personnel, payroll, labour relations, training and development, and risk management.

Environmental Protection Section prepares guidelines and procedures for protection from dieback, weeds and feral animals, evaluates mining and development proposals, and advises on rehabilitation of Department-managed lands and waters, and on environmental protection generally.

Financial Services Branch provides advice to operational managers on purchasing and fleet management, manages accounts receivable and accounts payable processes, and asset records, coordinates remote area housing, consolidates Department budgets, maintains core financial software that is shared by all parts of the Department, and produces management, tax and statutory reports.

Forest Management Branch carries out resource inventories, disease mapping and database maintenance for the Department's Sustainable Forest Management output and the Forest Products Commission. It maintains corporate resource information and GIS databases relating to forest areas in the south west and prepares strategic resource plans.

Information Management Branch plans, coordinates and implements the Department's information systems support, and is responsible for corporate document and records management. The Branch maintains the Department's Geographic Information System, and provides a land-related information service.

Management Audit Branch reports to the Executive Director, providing audits of management systems to advise on their effectiveness, efficiency, economy and compliance with legislation, policies and procedures.

Marine Conservation Branch provides policy, strategic and scientific advice for marine conservation and management, and advises marine reserves planning teams.

Park Policy and Tourism Branch develops policies and strategies for recreation and tourism, including business development, leases and licences, external funding and community involvement. It coordinates policies and programs concerning Aboriginal and other special interests, and visitor research and surveys.

Planning and Visitor Services Branch incorporates land administration, management plans, recreation planning and design, landscape management, and visitor interpretation.

Threatened Species and Communities Unit coordinates and assists with Departmental programs for threatened species and communities, including preparation and implementation of recovery plans.

Wildlife Branch develops policies and provides information and advice on wildlife protection and management throughout the State, administers wildlife licences and permits, enforces the Wildlife Conservation Act and Regulations, maintains and manages databases on wildlife resources and conservation status, and ensures compliance with legislation and licence conditions.

CUSTOMER SERVICE

While fulfilling our conservation and land management responsibilities, the Department places a great deal of importance on community and customer relations. We aim to increase our customer focus and provide a range of services that meet customer needs. Our customers can expect:

- positive, courteous and friendly service;
- competent and efficient assistance;
- timely and accurate information; and
- confidentiality where commercially sensitive issues are concerned.

More specifically, our customers can expect that:

- Department staff will be well trained, competent and helpful; will wear name badges when in direct contact with the community; and will identify themselves by name when answering the telephone.
- Requests for information or assistance will be met directly or referred to the appropriate person for answering as soon as possible.

- Telephone calls to our main offices will be answered on average within six rings. Telephone messages will normally be returned by the next business day.
- A contact name, address and telephone number will be given in all correspondence for future enquiries. Where it is not possible to respond to correspondence fully, an acknowledgement will be sent, advising of the current situation and when a reply may be expected.
- Brochures and other information materials will be easily understandable, accurate and up-to-date.
- Recreational facilities in national, conservation and marine parks, reserves and State forests will be well maintained and kept clean.

DISABILITY SERVICES

The Department's current Disability Services Plan covers the period 2001 – 2006 and is based on a policy of "universal access". The outcomes of this plan reflect a focus on improving access to existing Departmental buildings, facilities, information, public participation mechanisms and employment. The plan has been published on the Department's web page *NatureBase* and can be accessed through the Register of Disability Discrimination Act Action Plans on the Human Rights and Equal Opportunity Commission website.

In accordance with the plan, the Department has continued its ongoing program of improving visitor access at a number of recreation areas and facilities around the State. Some of the more noteworthy access improvements impacting on people with disabilities and their families completed during the year include:

- the further upgrading of pedestrian access around the Peron Homestead in Francois Peron National Park in the Shark Bay World Heritage Area;

- the development of new wheelchair accessible walkways and lookouts over the Murchison River Gorge at Hawks Head and The Loop in Kalbarri National Park;
- the construction of a new wheelchair accessible walk trail at Moolah Hill Lookout in Beekeepers Nature Reserve;
- the construction of a 500-metre fully accessible walkway, interpretive shelter and toilets at the site of the J B O'Reilly Memorial in Leschenault Peninsula Conservation Park near Bunbury;
- the provision of a sealed access path and boardwalk to improve access to the birdhide at Malbup Creek in the Tuart Forest National Park;
- the provision of a new wheelchair accessible walkway and viewing platform as part of the redevelopment of the viewing area at the King Tree in the Ferguson Valley;
- the partial upgrading of the existing trail system in Rotary Park adjoining the Margaret River National Park and the sealing of a short circuit walk so that it is wheelchair accessible;
- the completion of a major upgrade of the Lefthanders site in Leeuwin Naturaliste National Park including the provision of a wheelchair accessible lookout and composting toilets; and
- the construction of a universal access toilet at Mt Chudalup in D'Entrecasteaux National Park near Windy Harbour.

A Disability Access Audit Online Information Program, currently being developed in conjunction with the Disability Services Commission, is due for completion by the end of 2002. This will provide managers in the Department with readily accessible information on how to conduct a disability access audit in work areas, including checklists for access to

buildings, access to information, staff awareness and public participation. An access audit of the information on NatureBase is almost complete. Once finished, the site will meet all Priority 1 key accessibility standards developed by the World Wide Web Consortium Accessibility Initiative, and many Priority 2 and Priority 3 standards.

With regard to employment, an audit on the work experiences of people with disabilities in the Department has recently commenced. This includes collating data on the number of people in the Department with a disability, their work experiences, and the perceptions of managers on employing people with disabilities.

External Funding

This report focuses mainly on revenue to the Department from grants or funding programs by the Commonwealth or State governments, from sponsorship or donations. Other operating revenue (including royalties, national parks and recreation) are detailed elsewhere in the report.

Grants or funding programs provide a major source of financial support for the Department. Most Commonwealth funding is supplied through grant programs under the umbrella of the Natural Heritage Trust. The Trust provides grants for programs that relate to the environment, natural resources or sustainable agriculture and is administered jointly by Federal government agencies Environment Australia (EA) and Agriculture, Fisheries and Forestry Australia (AFFA). Programs fall mostly under a 'one-stop-shop package', which includes terrestrial programs (including Bushcare, National Reserve Systems, Farm Forestry) and Coast and Clean Seas initiative (including Coastcare and Marine Species Protection). The Department is the lead agency for several of these programs (including Farm Forestry and National Wetlands), and for these

has the responsibility of administering other State Government and community projects. Phase One of the Trust will conclude in 2002. The Natural Heritage Trust Extension (NHT2) will continue for a further five years. Important support is received also from other Commonwealth sources including Cooperative Research Centres, Research and Development Corporations and the Department of Industry, Science and Resources (DISR).

Commonwealth funding in 2001–2002 totalled \$7.7 million, a decrease from the previous year due mainly to the conclusion of a number of projects funded under Phase One of the Natural Heritage Trust. Programs that continued to be funded included the National Reserve System, Bushcare, the National Moorings Program and Farm Forestry.

It should be noted that the figures below include several programs and/or projects for which the Department is a joint proponent.

Support from the State Government continued, with recurrent funding being provided through programs that included the Salinity Strategy (\$4.6 million), Main Roads Western Australia (\$2 million), Management of Perth's Regional Parks (\$2.35 million) and the Gascoyne/Murchison Strategy for targeted land acquisition (\$1 million). Government funds were also provided for new national parks and their staffing (\$2.5 million).

Year	Amount (million \$)
1995–1996	4.80
1996–1997	5.14
1997–1998	8.67
1998–1999	9.71
1999–2000	7.55
2000–2001	11.96
2001–2002	7.71

The 'Western Australian Millennium Seed Bank Flora Conservation Project' was established in September 2001 between the Department, the Botanic Gardens and Parks Authority and the Royal Botanic Gardens, Kew, United Kingdom. The Royal Botanic Gardens, Kew, will fund the project for up to ten years, with total funds estimated to be about \$1.2 million. It will involve the collection and storage of seed from more than 1,400 rare or threatened Western Australian plant taxa.

The Green Corps Grant Program, administered by Conservation Volunteers Australia (CVA), continued to provide support for conservation projects of high priority. Work was conducted in Stirling Range National Park and Porongurup National Park. CVA crews also assisted the Department with the rehabilitation of Mickalurrup Reserve, south of Boyup Brook.

The BankWest *LANDSCOPE* Visa card raised about \$11,700 for the conservation of endangered species and ecological communities. Projects funded during the year included the application of phosphite to a threatened Southern Ironstone Community and the 'subterranean aquatic fauna' survey, adjacent to Fortescue Marsh.

The Department continued to receive valued support through corporate sponsorship for conservation, education and infrastructure projects. Ongoing sponsors include Aurion Gold (Delta Gold/Kanowna Belle Gold Mine)(Kalgoorlie Arboretum interpretive panel display), Pacific Waste Management (Kalgoorlie Arboretum waste management) and Edison Mission Energy Company (Leda Nature Reserve conservation). The Western Shield campaign received major support from TiWest Joint

Venture, Cable Sands, Iluka Resources Limited and Alcoa World Alumina Australia.

The Department also benefits through assistance in small ways provided by all sectors of the community. These include small donations of cash into the Department's collection-boxes, assistance with carting materials to offshore islands, the loan of specialised tools, the donation of recycled conveyor belting for stabilizing tracks, help with relocating animals and participation in biological surveys.

The Friends of the Bibbulmun Track continued to support the Department strongly in meeting its management obligations for the Bibbulmun Track. Their sponsors include AlphaWest, BP, Mountain Design, Paddy Pallin, Ranger Camping, Peregrine and Snowgum.

PUBLIC SECTOR STANDARDS AND CODE OF CONDUCT COMPLIANCE STATEMENT

In the administration of the Department of Conservation and Land Management, I have complied with the Public Sector Standards in Human Resource Management, the Western Australian Public Sector Code of Ethics and the Code of Conduct.

The Department of Conservation and Land Management has adopted guidelines and processes supporting the public sector standards in human resource management. I am pleased to say that there were no breach findings made against any standards for the reporting period 2001 – 2002.

Policies and supporting procedures are in the People Services Manual, which, like the Code of Conduct is accessible to most staff on-line via the Department's intranet. Hard copy or CD-ROM versions can be made available to those staff in remote areas who have difficulty accessing the intranet at present.

Individual managers are responsible for ensuring compliance with the Departmental policies and the Code of

Conduct, with the Manager, People Services Branch undertaking a monitoring and advisory role. In addition, staff in Workforce Services and Planning section monitor all transactions for recruitment, selection and appointment, secondment, transfer, temporary deployment, redeployment, performance management and grievance resolution to ensure current Departmental policy is adhered to. Staff in the Employee Relations section are responsible for termination and disciplinary cases.

A system audit was undertaken in June/ July 2002 by the Department's Management Audit Branch and found the Department's policies and procedures identified with and reflected the standards requirements. The audit identified the Department's compliance with the standards is satisfactory and there is no evidence of non-compliance with any of the standards.

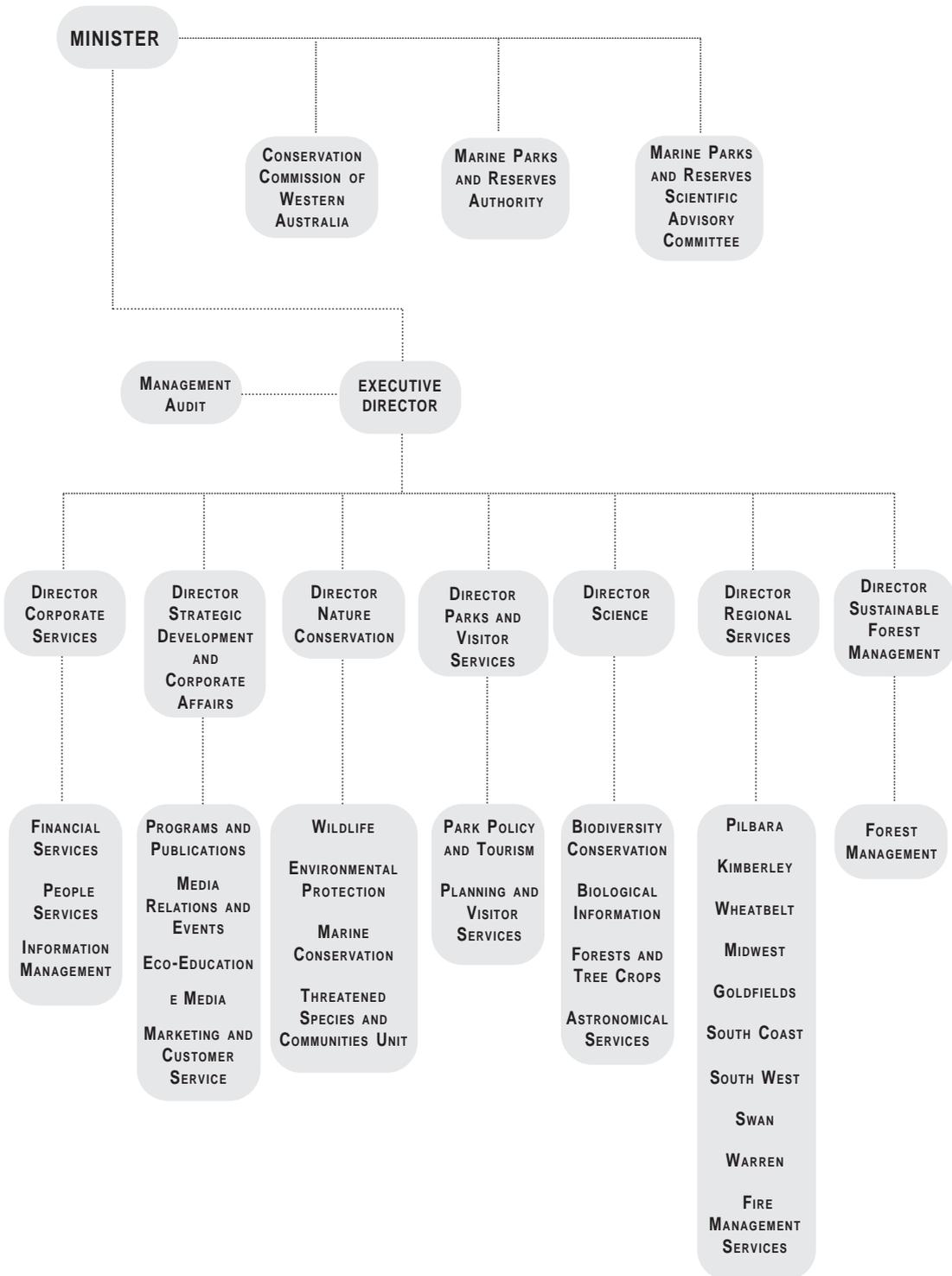
The Department's Management Audit Branch will undertake an annual review of the Department's compliance with all the standards with an emphasis on a complete compliance audit of three standards each year.

Following the recent review of the Public Sector Code of Ethics the Department's Code of Conduct was reviewed in March 2002, appropriately amended, copied to all cost centre managers and placed on the Department's intranet. A memo was sent to all employees advising that the Code had been updated, and detailing where they could access it. The Code of Conduct is made available to all new staff through a comprehensive induction package accessible on the intranet.

The Department's Good Working Relations online training package for Grievance Contact Officers has undergone significant redevelopment and redesign so that it is now an information and education program aimed at employees, managers and Grievance Investigation Officers, as well as Grievance Contact Officers. The expanded program was launched Department-wide on the Department intranet and at the Perth Hills District, Mundaring in March 2002.


Keiran McNamara
ACTING EXECUTIVE DIRECTOR
30 August 2002

FIGURE 1 ORGANISATIONAL STRUCTURE



CORPORATE EXECUTIVE *(as of 30 June 2002)*

EXECUTIVE DIRECTOR

K J McNamara* B Nat Res (Hons)

DIRECTOR, CORPORATE SERVICES

J C Byrne MBA, PhD, FCPA

DIRECTOR, NATURE CONSERVATION

G J Wyre* B Nat Res (Hons)

DIRECTOR, PARKS AND VISITOR SERVICES

J R Sharp B Ed, Dip PE, M Ed

DIRECTOR, REGIONAL SERVICES

A W Walker BSc For (Hons)

DIRECTOR, Science

N D Burrows BSc For, PhD

DIRECTOR, STRATEGIC DEVELOPMENT AND CORPORATE AFFAIRS

R A Kawalilik BA, FPRIA

DIRECTOR, SUSTAINABLE FOREST MANAGEMENT

C Bailey*

DEPUTY DIRECTOR, BIODIVERSITY CONSERVATION

A A Burbidge BSc, PhD

OTHER SENIOR STAFF

REGIONAL MANAGER, GOLDFIELDS

I G Kealley BSc

REGIONAL MANAGER, KIMBERLEY

C C Done BSc

REGIONAL MANAGER, MIDWEST

K Gillen BSc (Hons)

REGIONAL MANAGER, PILBARA

C Muller Dip For, BSc For

REGIONAL MANAGER, SOUTH COAST

J R Watson BSc, Grad Dip Rec, PhD

REGIONAL MANAGER, SOUTH WEST

R Chandler BSc

REGIONAL MANAGER, SWAN

A Sands BAppliedSc, Grad Dip Nat Res

REGIONAL MANAGER, WARREN

P Keppel Cert For Mngmt

REGIONAL MANAGER, WHEATBELT

K J Wallace Dip Ed, BSc (Hons)

MANAGER, BIODIVERSITY CONSERVATION GROUP

K D Morris BSc, MSc

MANAGER, BIOLOGICAL INFORMATION GROUP

N G Marchant BSc (Hons), PhD

MANAGER, FINANCIAL SERVICES BRANCH

M J Neilson BA, MAcc, CPA

MANAGER, FIRE MANAGEMENT SERVICES

R Sneeuwjagt BSc, MSc

MANAGER, FORESTS AND TREE CROPS GROUP

J F McGrath BSc (Hons), PhD

MANAGER, FOREST MANAGEMENT BRANCH

M Rayner BSc For (Hons), PhD

MANAGER, INFORMATION MANAGEMENT BRANCH

C J Pearce BSc (Hons), PhD

MANAGER, MANAGEMENT AUDIT BRANCH

P Jones BSc For

MANAGER, MARINE CONSERVATION BRANCH

C J Simpson B App Sci (Biol), G Dip Nat Res, PhD

MANAGER, PARK POLICY AND TOURISM BRANCH

C B Ingram B App Sc

MANAGER, PEOPLE SERVICES BRANCH

C W Gillam BA (Hons), MA, PG Dip Bus, AFAHRI

MANAGER, PROGRAMS & PUBLICATIONS

S McKenna*

MANAGER, WA THREATENED SPECIES & COMMUNITIES UNIT

J Blyth* BSc (Hons)

MANAGER, WILDLIFE BRANCH

K Atkins* BSc (Hons), PhD

PRINCIPAL MEDIA RELATIONS OFFICER

N Higgs

SCIENCE ADVISER

I J Abbott BSc (Hons), PhD, DSc

GOVERNMENT ASTRONOMER

J Biggs BSc (Hons), PhD

* Acting

LANDS AND WATERS

Total Estate

As at 30 June 2002 the total area under the Department's care was 24,185,198 ha representing an increase of 607,665 ha during 2001–2002.

The terrestrial area (not including marine reserves) is approximately 9.11 per cent of the land area of Western Australia.

The table below provides a summary of all tenure classifications.

National Parks

National parks are for wildlife and landscape conservation, scientific study, preservation of features of archeological, historic or scientific interest, and enjoyment by the public. They have national or international significance for scenic, cultural or biological values.

The area of the 69 national parks at 30 June 2002 was 5,095,200 ha, a net increase of 2,990 ha for the year. Notable changes were the increase to Walpole-Nornalup National Park (3,112 ha) and the decrease of Moore River National Park (286 ha) following an area re-calculation.

Conservation Parks

Conservation parks have the same purpose as national parks, but they do not have the same national or international significance. They have significant local or regional value for conservation and recreation.

The area of conservation parks at 30 June 2002 was 704,216 ha, representing an increase for the year of 11 ha. The increase was due to the change in tenure of Penguin Island.

Nature Reserves

Nature reserves are for wildlife and landscape conservation, scientific study, and preservation of features of archeological, historic or scientific interest. Recreation that does not harm natural ecosystems is allowed.

The area of nature reserves at 30 June 2002 was 10,825,039 ha, representing a net increase of 6,840 ha for the year. Notable additions to existing nature reserves included Zuytdorp Nature Reserve (6,291 ha) due to an area re-calculation and Lake Muir Nature Reserve (73 ha) as a result of a purchase. New nature reserves created during the year included one south of Kulin as a result of a purchase (297 ha) and one south west of Kulin (62 ha).

State Forest

State forests are managed for multiple purposes, including water catchment protection, recreation, timber production on a sustained yield basis and conservation. Provision is also made for public utilities and mineral production, where these activities are imposed. Within State forests, designated areas are managed for specific purposes, such as conservation or optimum yield of exotic plantings.

The area of State forest at 30 June 2002 was 1,729,949 ha a net increase for the year of 2,663 ha. Notable changes were the addition of 5,702 ha comprising unallocated Crown Land west of Muchea and the decrease of 3,110 ha east of Walpole.

Timber Reserves

Timber reserves are managed on the same basis as State forests. The category is transitional; as reserves are evaluated they may be changed to a more appropriate tenure eg. State forest or nature reserve.

The area of timber reserves at 30 June 2002 remained unchanged at 141,434 ha.

Department-Managed Lands and Waters (ha) by Region as at 30 June 2002

Tenure Classification	South West	Goldfields	Kimberley	Midwest	Pilbara	South Coast	Warren	Swan	Wheatbelt	Total
National Park	31,836	151,009	829,773	504,845	2,396,627	891,810	243,150	44,858	1,292	5,095,200
Conservation Park	581	33,517	460,232	3,750	149,309	-	-	56,570	257	704,216
Nature Reserve	9,813	6,304,437	809,783	738,589	250,595	1,585,430	32,922	50,590	1,042,880	10,825,039
Marine Park	-	-	23,250	748,735	225,564	-	-	16,391	-	1,013,940
Marine Nature Reserve	-	-	-	132,000	-	-	-	-	-	132,000
Marine Management Area	-	-	-	-	-	-	-	-	-	-
State Forest	656,404	781	-	-	-	4,055	544,119	496,524	28,066	1,729,949
Timber Reserve	33,765	28,576	-	26,338	-	5,231	19,023	28,501	-	141,434
Sections 5(1)(g) & 5(1)(h)										
Reserve	30,282	81,593	79,623	2,318	8,131	<1	634	27,440	588	230,609
Miscellaneous Reserve	358	<1	61	517	1,779	3,814	342	5,946	15	12,832
Freehold(Exec Dir)	21,344	<1	1	<1	<1	63	4,921	274	1	26,604
Leasehold (Exec Dir), Former Leasehold &										
Section 33(2) Managed Land	-	1,216,829	35,625	2,584,832	420,079	-	-	-	-	4,257,365
Sections 16 & 16A Managed Land	121	215	-	7,020	-	-	-	8,654	-	16,010
Totals	784,504	7,816,957	2,238,348	4,748,944	3,452,084	2,490,403	845,111	735,748	1,073,099	24,185,198

Source: Information Management Branch

Marine Reserves

Marine Parks are managed for conservation and recreation, with areas zoned for commercial fishing on a sustained yield basis. Marine nature reserves are managed for the conservation of marine and terrestrial flora and fauna and their habitats. Fishing and collecting are not permitted.

The area of marine parks at 30 June 2002 was approximately 1,013,940 ha. The area of marine nature reserves at 30 June 2002 was approximately 132,000 ha. There were no changes during the year.

Marine Management Areas will provide a formal integrated management framework over areas that have high conservation value and intensive multiple use, selected primarily on the basis of their biological and recreational values and their existing or future commercial activities.

As yet no Marine Management Areas have been proclaimed.

Section 5(1)(g) and 5(1)(h) Reserves

Within the meaning of the *Conservation and Land Management Act 1984*, lands categorised as sections 5(1)(g) and 5(1)(h) reserve are lands reserved under the *Land Act 1933* and the *Land Administration Act 1997* respectively, for which care, control and management is issued to the Conservation Commission. Unlike national parks, conservation parks and nature reserves, they are not automatically vested in the Conservation Commission. Immediately before the commencement of the *Conservation and Land Management Act 1984*, some were vested in, or were under the control of, the National Parks Authority but not as a national park, eg. Matilda Bay Reserve. Predominantly they have conservation/recreation purposes.

The area of sections 5(1)(g) and 5(1)(h) reserves at 30 June 2002 was 230, 609 ha an increase for the year of 204 ha.

Miscellaneous Reserves

There are some remaining reserves managed by the Department, which do not fall within any of the above discrete categories. The purposes of reserves within this category are varied and may include settlements and offices for the Department's operations. The area of miscellaneous reserves at 30 June 2002 was 12,832 ha, representing a decrease of 141 ha for the year.

Other Land

The area of freehold land held by the Executive Director at 30 June 2002 was 26,604 ha, representing a net decrease for the year of 135 ha. Softwood forests occupy the major portion of freehold land held by the Executive Director.

The area of pastoral lease held by the Executive Director at 30 June 2002 was 225,705 ha. In addition, a further 3,913,007 ha of former pastoral lease land is being held under an interim management arrangement prior to formal reservation.

National Parks Vested in the Conservation Commission of Western Australia

NAME	AREA (ha)	NAME	AREA (ha)	NAME	AREA (ha)
Alexander Morrison	8,500	Hassell	1,265	Serpentine	4,357
Avon Valley	4,366	<i>Hidden Valley</i>	2,068	Shannon	52,598
Badgingarra	13,121	John Forrest	2,676	Sir James Mitchell	497
Beedelup	1,786	Kalamunda	375	Stirling Range	115,920
Boorabbin	26,000	Kalbarri	183,004	Stokes	9,726
Brockman	49	Karijini	627,442	Tathra	4,322
Cape Arid	279,382	Kennedy Range	141,660	Torndirrup	3,936
Cape Le Grand	31,801	<i>Lawley River</i>	17,254	Tuart Forest	2,049
Cape Range	50,581	Leeuwin-Naturaliste	18,779	<i>Tunnel Creek</i>	91
Collier Range	235,162	<i>Lesmurdie Falls</i>	56	<i>Un-named</i>	1,571
D'Entrecasteaux	116,686	Lesueur	26,966	<i>Un-named</i>	16,039
Drovers Cave	2,681	Millstream-Chichester	199,736	Walpole-Nornalup	19,072
Drysdale River	448,264	<i>Mitchell River</i>	115,325	<i>Walyunga</i>	1,812
<i>Eucla</i>	3,560	Moore River	17,254	Warren	2,982
Fitzgerald River	329,882	Mount Augustus	9,168	Watheroo	44,474
Francois Peron	52,587	Mount Frankland	30,830	<i>Waychinicup</i>	3,982
Frank Hann	67,550	Nambung	18,362	Wellington	3,045
Geikie Gorge	3,136	Neerabup	1,060	<i>West Cape Howe</i>	3,517
Gloucester	876	Peak Charles	39,959	William Bay	1,734
<i>Goldfields Woodlands</i>	64,612	Porongurup	2,621	Windjana Gorge	2,134
Goongarrie	60,397	Purnululu	239,723	Wolfe Creek Crater	1,460
Gooseberry Hill	33	Rudall River	1,283,706	Yalgorup	13,090
Greenmount	58	Scott	3,273	Yanchep	2,842
				TOTAL	5,095,200

* Names shown in italics are not yet gazetted

Crown land placed under the management of the Department under section 33(2) of the *Conservation and Land Management Act 1984* as at 30 June 2002 totalled 118,653 ha. Of this 406 ha comprises unvested Crown reserve. The remainder is land proposed for addition to the conservation estate, which is managed accordingly under an interim arrangement.

Two areas, parts of Credo and Boolardy Pastoral Leases, totalling 7,235 ha are currently managed under section 16A of the *Conservation and Land Management Act 1984* by agreement between the lessees and the Department.

The area of freehold land managed by the Department under section 16 of the *Conservation and Land Management Act 1984* at 30 June 2002 was 8,775 ha. Most of this land falls within regional parks and is managed by agreement between the Western Australian Planning Commission and the Department.

Conservation Land Acquisitions

The Department acquired over 591,000 ha of land of high conservation value during the year for future addition to the conservation estate. Priorities for purchase are those areas containing ecosystems that are not adequately reserved in the existing conservation reserve system, and additions to existing reserves, which would greatly improve their diversity or facilitate their management.

Funds for conservation land acquisitions were obtained from four sources: the Department's annual capital allocation; an allocation under the Gascoyne-Murchison Strategy; the National Reserve System Program of the Natural Heritage Trust; and some funding from the Crown reserves component of the State Salinity

Strategy. Additionally, a capital appropriation of \$501,000 was provided from State Treasury for the acquisition of 640 ha adjacent to Wellington National Park for addition to the Park. The total expenditure from all funding sources for the financial year was more than \$3.15 million.

With funds allocated under the Gascoyne-Murchison Strategy, the following pastoral leases were purchased during the year: Doolgunna, Narloo, Karara and part of Twin Peaks, Yuin, Boologoroo, Bulga Downs, Cashmere Downs and Wooleen. The leases and part leases cover a combined total area of more than 589,000 ha.

Acquisitions outside the Gascoyne-Murchison Strategy area included the following: 11.5 ha for addition to the Woody Lake Nature Reserve in the Shire of Esperance; 9.5 ha north-west of Bullsbrook supporting an example of the tumulus (organic mound) springs of the Swan Coastal Plain; a 219-ha parcel of remnant vegetation in the Shire of Chapman Valley; 65 ha north-north-east of Eneabba supporting a wetland and highly restricted vegetation type; five parcels of remnant vegetation in the Wheatbelt totalling 1,538 ha; and 1,355 ha in the Ravensthorpe Range supporting a wide range of vegetation communities.

The Department gratefully acknowledges the significant contribution made by the Commonwealth Government through the National Reserve System Program of the Natural Heritage Trust, which supported most of the above purchases. The contribution of the National Reserve System Program this year has totalled more than \$1.48 million. This support will continue to assist in making significant progress towards the establishment of a comprehensive, adequate and representative reserve system in Western Australia.

CORPORATE SERVICES

Financial Services Branch

During the year ended 30 June 2002 the Department's Financial Services Branch provided a range of ongoing administrative support services to the Corporate Executive and operational staff, and completed the following projects:

- Implemented system changes to email remittance advices to suppliers.
- Contributed to planning for the future conversion of the Department's mainframe computers to a new operating system.
- Provided new reports to assist Departmental management processes using the new service provider/purchaser internal framework.
- Implemented a new system to automatically allocate operational on-costs across direct costs.
- Reviewed the Department's heavy fleet requirements and produced new specifications for fire pumping units.
- Assisted in a number of major procurement tenders.
- Sold a number of properties that were no longer required for Department purposes.
- Upgraded office security systems at the Department's Kensington office site.
- Made refinements to purchasing procedures to increase the purchasing level delegated by the State Supply Commission.
- Reviewed the Department's labour on-cost rate.
- Commenced a valuation for the Bibbulmun Track.
- Made a range of other improvements to business processes to improve efficiency and effectiveness.

People Services Branch

WorkForce Services and Planning

Section: The introduction of the new Government Framework General Agreement impacted heavily on the Workforce Services and Planning Section in terms of processing. Enormous efforts by staff resulted in 1034 employee occupancies being individually updated to reflect the new General Agreement salary rates in the Department's Human Resource Information System, CONCEPT. The next stage of updating all employee leave entitlements individually to include leave loading on annual leave, and the addition of short and public service holiday leave is currently progressing.

The Ranger's General Agreement has also now been introduced, and 80 rangers have been updated to the new General Agreement salary rates.

The Web Kiosk facility is now fully implemented and operational throughout the Department. Web Kiosk is a facility that provides access to information within the Concept Human Resource Information Management System through the intra/internet, and enables employees to view and update his or her own personal details and provides the ability to apply/approve leave online. Training in the Web Kiosk facility has commenced within the Department and will continue over the course of the coming year.

With the introduction of the employer direct salary packaging, 42 employees have now taken up the opportunity to salary package their government employee superannuation through People Services Branch.

Testing of the new version 8.06 of the Department's Human Resource Information Management System, CONCEPT, is currently in progress and is expected to be functioning by the end of next financial year. Preparatory work for a move to an Application Service Provider (ASP) model for the

technical support of the CONCEPT system is also well advanced. It is anticipated that the ASP model will deliver greater functionality due to the technical expertise that will be provided, and the increased number of modules that are available for implementation at no additional cost. Considerable work has also been done to enhance the accessibility and accuracy of information from CONCEPT for management reporting purposes. It is expected that a full suite of management reports will be available in the early part of the new financial year to assist managers with decision-making.

A significant restructure in Regional Services Division and the proposed establishment of new parks as a consequence of the Government's *Protecting Our Old-Growth Forests* policy resulted in the establishment and advertising of a number of positions. Throughout the Department last year, 18 salaried staff achieved career advancement through promotion via advertised vacancies. Seventeen salaried staff were reclassified into higher-level positions, and four achieved advancement through criteria progression.

There were no breaches found in relation to any Public Sector Standard or the Department's Code of Conduct.

The Good Working Relations Online Training Package for Grievance Contact Officers has undergone significant redevelopment and redesign and is now an information and education program aimed at employees, managers and Grievance Investigation Officers, as well as Grievance Contact Officers. The expanded program was launched Department-wide on the CALMweb and at the Perth Hills District in Mundaring in March 2002.

Managers and supervisors throughout the Department have continued to complete the online self-paced interactive training course on

Workplace Discrimination and Sexual Harassment – Legal Compliance. New managers and supervisors will be required to complete the course during 2002–2003.

In accordance with the WA Government Equity and Diversity Plan for the Public Sector Workforce 2001–2005, the Department has determined performance objectives for increasing the representation of Indigenous people, women, people from culturally diverse backgrounds, people with disabilities and youth across all levels of the Department. The Department is currently in the process of establishing an Equity and Diversity Taskforce that will be responsible for developing strategies to meet these objectives within specified timeframes.

Risk Management: The Risk Management Section is responsible for developing and implementing risk management policies and procedures in respect to occupational safety and health; corporate health and fitness; workers' compensation; injury management; general liability and the corporate insurance portfolio.

In the area of occupational safety and health, 90 work groups across the Department achieved their safety performance targets during the reporting period. These groups received awards marking their achievements at the annual Industrial Foundation for Accident Prevention Safeway Awards, presented by the Minister for Consumer and Employment Protection, Hon John Kobelke MLA, in October 2001. For the eighth consecutive year, the Department was the most successful participating organisation.

The benefit of a safe working environment is well recognised within the Department, as is the interface between safety, health and fitness in minimising injury to workers and reducing costs. The continuing positive effectiveness of the safety and health program is reflected in the performance indicators shown opposite.

Occupational Safety & Health Performance Indicators		
	2001-02	2000-01
Lost Time Injury Frequency Rate	10	8
All Injury Frequency Rate	37	46
Number of Lost Time Incidents	24	20
Average Days Lost per (LTI)	5	13
Workers' Compensation Premium	\$600,408	\$648,259

Employee Relations: Under the Government's new Wage and Parity Policy, new General Agreements were introduced for public servants and rangers, with negotiations for similar conditions well advanced for construction and maintenance workers covered by the Australian Workers Union (AWU). Next priorities include finalisation of new agreements for the remaining groups of visitor centre employees and pilots.

Final drafts for a new simplified AWU (WA Public Sector) Award have been provided to the Australian Industrial Relations Commission for ratification.

A review of the AWU career structure elements of competence, initially introduced in the early 1990s, was undertaken. Existing competencies have been updated and the opportunity to revisit the implementation manual was undertaken. Work is due to commence on further development of competencies for the "above tradesperson equivalent" classifications and further tripartite discussions will continue into the next year.

Discussions on a review of the ranger classification structure continued, and following the resolution of possible demarcation issues between the Civil Service Association and the Australian Liquor, Hospitality and Miscellaneous Workers Union, proposals for a new classification structure were well advanced but had not concluded by 30 June.

There were no disputes referred to either the Australian or the Western Australian Industrial Relations Commissions.

Organisational Learning and Development: Twelve recruits graduated in May 2002 after completion of 12 weeks of competency-based training delivered over a two-year period. Training programmes included four wheel drive operators, field surveying, recreation planning and management, disease management, fire management, public participation, law enforcement, conversing with the community, supervisory skills and senior first aid. Each of the programs has national recognition from the Training Accreditation Council. All of the graduating officers have since achieved permanent appointment with the Department.

Eighteen Departmental people were successful for six internal scholarship programmes, which promote continuous learning in the following areas:

- **Executive Director's Scholarship** – made available to all wages employees to assist them financially in post secondary education studies, required for entry to field officer positions. The 2002 recipient is Ken Howes from Margaret River;
- **Dr George Malajczuk Sciences Scholarship** – designed to provide continuous learning opportunities in a science disciplines. The 2002 recipient is Stephen White from Environmental Protection Branch;
- **Seamus Mulholland Leadership Scholarship** – designed to provide continuous learning opportunities in a range of management and leadership disciplines. The 2002 recipient is Andrew Hill from Fremantle;
- **Executive Director's Undergraduate Scholarship** – made available to all permanent Departmental people to assist them financially in relevant undergraduate study programs. There are nine recipients of this scholarship and they are located throughout the state.

- **June Craig Scholarship for Departmental Women** – designed to encourage, support and facilitate all women in the Department, to enhance and develop their careers and increase their contribution to the Department's mission. The 2002 recipients are Tammie Reid, Ingrid Hunt, Cheryl Cowell, Laura Beck and Dr Margaret Byrne.
- **C. E. Lane Poole Memorial Trust Award** – this study tour award provides an opportunity for a Departmental or Conservation Commission officer to undertake a study tour in the eastern states or New Zealand. The recipient of the award for 2002 is Ian Dumbrell.

Thirty-eight people have successfully completed the Leadership and Organisational Development program over the past financial year. The programme has been designed to provide the learner with the necessary tools to address the areas of Leadership, Change Management and Project Management. The programme features a multi-faceted approach incorporating theory, experiential learning and above all collegial learning. Murdoch University has delivered the two programs.

Sixteen people have successfully completed the internationally recognised Certificate IV Effective Manager course. This course offers formal qualifications in management. Six of these graduates have articulated their studies into the Diploma of Management course. A further 10 Departmental people have now enrolled in the Certificate IV Effective Manager course and 10 Departmental people have articulated into the Diploma of Management course for 2002.

Currently there are 41 wages employees enrolled in the Certificate IV in Conservation and Land Management Course.

The Department has also embarked on an employment strategy for Indigenous people. A partnership with the

Federal Department of Employment and Workplace Relations has been announced. This will see 18 Indigenous trainees graduate from the Conservation and Land Management Training Package over a six-year period. These graduates will be employed in field officer positions throughout the State. A further four cadets have been sponsored by the Department while undertaking tertiary studies. This programme is part of the National Indigenous Cadetship Programme that provides funds for the student during the 40 weeks of academic study and placement with the Department for the remaining 12 weeks whilst on semester breaks and between academic years. These cadets will be offered full-time work with the Department on completion of their studies and satisfactory performance whilst employed by the Department during the 12 weeks per year.

The Department has also undertaken a strategy to develop learning programmes on-line to provide equity access to learning and development programmes for all our people regardless of location. The initiative will add a further four on-line learning programmes by the end of next financial year.

Information Management Branch

Information Services Section completed the extension of the Department's communication network and new email system. This has improved access by remote offices and work centres for information exchange and knowledge sharing. A new strategic plan outlining the strategy and future direction of information technology and telecommunication was finalised for approval by Corporate Executive.

Corporate Information Section has undertaken project work to ensure the Department's compliance with the new State Records legislation, including the

development of a training package. Implementation of a corporate Keyword Classification Thesaurus continued with the commencement of conversion for the South West Region. A project commenced to replace the Department's existing records management system with an Electronic Document and Records Management System.

The Geographic Information Services Section provided spatial data and mapping support for regional operations throughout the Department, including training in global positioning systems, desktop geographic information systems (GIS) and data capture and plotting tools. In addition, digital spatial data was distributed on compact disk, including the cadastre and new versions of the Department's Land Management Maps.

The section provided GIS support for the processes involved in the establishment of new national parks in the southwest of the State. Assistance was also provided for the identification of areas of high conservation value for the preparation of the Forest Management Plan, and for the National Land and Water Resources Audit Biodiversity Project.

Three new Land Management Series sheets were published, and a new Atlas was prepared for the Swan Region. Maps were also produced for the Forest Management Plan Discussion Paper and for a variety of other map publications.

Remote sensing technology was employed in a major project to map forest cover over the Goldfields-Murchison area, and for other projects including the monitoring of vegetation over Peron Peninsula and Millstream National Park. The Department is also participating in a continuation of the Landsat-based Land Monitor project.

Waste Paper Recycling: The Department follows the State Government's policy to recycle all waste paper generated by government metropolitan agencies and utilises the 'Whole of State Government Contract' administered by the Department of Industry and Technology for Waste Paper Recycling.

The primary objectives of the contract are to:

- improve waste management and recycling practices within the public sector;
- maximise the volume of waste paper collected from all metropolitan agencies for recycling;
- reduce the volume of waste paper going to landfill; and
- help foster recycling within the community.

During the 2001–2002 financial year, the Department provided 6,610 tonnes of paper for recycling under the contract.

ELECTORAL ACT 1907

In accordance with the requirements of Section 175ZE of the Western Australian Electoral Act 1907, the Department of Conservation and Land Management incurred the following expenditures in the financial year ended 30 June 2002.

Media advertising organisations:
\$179,478.27 (Marketforce Productions)
and \$25,647.60 (Media Decisions WA).

There was no expenditure for advertising agencies or in the market research, direct mail and polling areas by the Department.

Total expenditure was \$205,125.87.

FIRE MANAGEMENT SERVICES

The 2001–2002 fire season in the southern half of Western Australia was extremely dry and continued the run of drought years that has prevailed since 1998. No significant rainfall occurred in the period from early October 2001 to late April 2002. This was reflected in the Soil Dryness Index, which is an indicator of the seasonal dryness of soil and large branch ground debris. The Soil Dryness Index for most locations in the southwest reached its peak value of 2000 in March and April 2002.

The dryness of the ground litter and vegetation fuels meant that approximately 60 per cent of the prescribed burning programs in southwest Western Australia that were planned for the Spring/early Summer and Autumn months were cancelled or postponed because of the risk of severe fire behaviour and possible burn escapes. As a result, the prescribed burning program achieved within the southwest forest ecosystems was only 74,739 ha, which is the lowest in 41 years. This was the third year since 1998–1999 that the annual burning program has fallen below 100,000 ha primarily because of extended drought conditions.

Smoke management constraints that aim to avoid smoke accumulations in Perth, and minimise smoke affecting major regional centres, have severely restricted the number of days that are suitable for undertaking safe and effective planned burns in 2001–2002 fire season.

The impact of the drought conditions and other burning constraints has been such that the Department has been unable to achieve more than 50 per cent of its annual burn programs since 1998–99. This decline in the burn program in the southwest has resulted in a situation where about 70 per cent of the southwest forest regions are carrying natural fuel accumulations that will sustain intense wildfires under summer conditions.

Throughout the State the Department attended 604 wildfires that affected lands managed by the Department. The vast majority of these (533) occurred in the southwest region, which exceeds the 10-year rolling average for this area by 20 per cent. The majority of wildfires were deliberately lit (46 per cent) and lightning strikes (17 per cent). During the period 16 to 18 January 2002, a total of 55 lightning caused wildfires were suppressed. All these fires, with the exception of one on the southwest coast near Lake Jasper, were contained to small sizes.

Escapes from Departmental burns represented one per cent of all wildfires, while four per cent of wildfires were from escapes from private property burns.

The long dry fire season and the record number of wildfires attended by Departmental staff throughout the State resulted in large expenditures on fire suppression operations including wages, overtime, heavy machinery hire and costs associated with the operation of aerial water bombers.

Aerial Water Bombing Operations

The aerial suppression programs managed jointly by the Department and Fire and Emergency Services Authority (FESA) during the summer months of 2001–2002 fire season again provided an effective and rapid suppression capability for the Perth outer metropolitan area and the southwest region stretching from Jurien Bay to Albany. Five Dromader aircraft were contracted to provide an aerial rapid-attack capability to assist ground-based fire crews from the Department, FESA or Bushfire Brigades. The water bombers attended a total of 131 wildfires during the period 3 December 2001 and 18 April 2002. It was estimated that the Perth and Bunbury based aircraft were responsible for saving public and private assets, and natural values worth in excess of \$33 million.

Planned Burns

Throughout the State, the Department completed 96,878 ha of planned burning on Department-managed lands. The burns were prescribed to meet a variety of purposes including the conservation and protection of biodiversity, protection of park visitors and natural assets, community protection, forest regeneration and plantation management.

Throughout the southwest regions, the planned burn program in the native ecosystems totalled 74,739 hectares. Approximately 59 per cent of burns were completed in the September to November period, six percent in January to March, 20 per cent in April to June 2002, and 15 per cent in July and August.

A total of 7,094 ha of pine (*Pinus pinaster*) plantations near Wanneroo and Yanchep were prescribed burnt in winter and early spring. A total of 13,251 ha of planned burn was undertaken in the Midwest, South Coast, Pilbara and Wheatbelt regions. Many of these burns were wind-driven or open-edged burns that provide strategic protection to conservation reserves and nearby community assets. Approximately 623 km of open-edge burns were ignited within Departmental reserves in the Kimberley Region.

Fire Management for Biodiversity Conservation

During 2001–2002, the Department initiated the Fire and Biodiversity Conservation Project, which will result in the development of comprehensive planning guidelines for the provision of ecologically based fire regimes that are aimed at optimising the maintenance of ecological processes and biodiversity values, whilst ensuring the protection of conservation and societal values. Information on evolutionary adaptations to fire by plants and animals will be utilised to determine the most appropriate fire regimes for

the conservation of biodiversity in the various ecosystems across the State commencing in the southwest. This ecological basis for fire management will be the foundation on which the Department will meet its responsibility to protect community values and to achieve other land management objectives. The fundamental principle associated with this approach is that fire diversity in terms of frequency, intensity, season, spatial pattern and scale promotes biodiversity.

Smoke Management

The Department's fire managers applied smoke management systems for all planned burns in the southwest regions. This required careful analysis of forecast weather and atmospheric conditions, fuel conditions, ignition patterns and timing, and size and locations of burns relative to population centres. Weather forecasters from the Bureau of Meteorology regularly provided the Department with detailed information on weather and atmospheric conditions. As a result of this close collaboration there was only one instance out of the total of 208 burning days when smoke from a Departmental planned burn caused haze particulate levels to exceed the State's air quality standards set by the State's Department of Environmental Protection and the National Environment Protection Council.

Fire Training

Fire Management Services Branch staff conducted 18 fire training courses covering the following topics: Incident Control System; Fire Management in the Department; Logistics Management; Incident Planning; Fire Operations Officer; Sector/Divisional Commander; Advance Fire Fighter and Basic Fire Fighter. Fire courses were also conducted for new Departmental field staff recruits, and the Department's Bush Rangers. District staff conducted numerous training sessions for fire crews, contractors and volunteer bushfire members.

The following table shows the high-level fire management and fire fighting courses that were conducted

in the year 2001–2002, including number of people trained.

The 275 trainees were predominantly Department employees, but also included personnel from the Forest Products Commission, FESA (both employees and volunteers), interstate government agencies, local government and private contractors.

Liaison on training development at the State and national level was maintained, and the Department continued to provide high-level input into the development of the Australian National Public Safety Competencies and Fire Curriculum. The development and promotion of common training systems and course materials was actively pursued between the fire agencies within Western Australia.

Course Title	No. Courses	Total Trainees
Basic Fire Awareness	3	48
Basic Fire Fighter	1	8
Level 1 Fire Fighter	1	18
Fire Operations 1	1	13
Wildfire Suppression 3	1	16
Introduction to Incident Control System	3	31
Operational Management	2	32
Logistics Management	1	20
Incident Planning	2	32
Resources Unit Management	1	16
Situation Unit Management	1	16
Fire Management within the Department	1	25
Totals	18	275

FIRE MANAGEMENT SERVICES PERFORMANCE INDICATORS SOUTHWEST REGIONS 2001–2002

Key Effectiveness Indicators (1 and 2)

1. Prescribed Burning

Region	5-year rolling average (ha)	Actual 2001–2002 (ha)	Difference	
			(ha)	%
Swan	39,608	29,809	-9,799	-25
South West	32,028	25,157	-6,871	-21
Warren	64,582	19,773	-44,809	-69
Total	136,218	74,739	-61,479	-45

Note: Five-year rolling average does not reflect the scheduled prescribed burn area.

These statistics compare the 2001–2002 planned burning program with the five-year rolling average for conservation and protection burning. Burning achievements are dependent upon the availability of suitable weather conditions and resources, and the need to maintain burn security and air quality standards in high population centres.

The Warren, South West and Swan Regions' burning achievements were below the five-year rolling average.

The lower total burn area achieved in 2001–2002 was primarily due to the very dry weather and fuel conditions throughout the burning season. Other contributing factors to the lower areas include the continuing reductions in burn size; the increasing complexity of multiple ignition burns; the need to protect increasing areas of fire sensitive forest regeneration; and the limited number of suitable burning days when the risk of smoke accumulation in Perth and regional centres are acceptably low.

2. Fire Suppression

Region	Priority 1 & 2 (%)	
	Standard	2001–2002
Swan	95	95
South West	95	96
Warren	95	95
Department Average		97

The percentage of all forest wildfires that are attacked with effective suppression forces before these fires exceed five hectares in Priority 1 and Priority 2 areas, under 95 percentile weather conditions. The percentage standard to be exceeded is 95 per cent of all forest fires requiring suppression by direct attack.

Definition:

The 95 percentile weather conditions are days when forest fire danger is below 'very high' and 'extreme' as calculated in the Department's Forest Fire Behaviour Tables (1998). Firefighters work safely and effectively under these conditions in standard forest fuels.

LEGISLATION AND COMPLIANCE

Statement of Compliance with written law 2001–2002

We have attempted to comply with the requirements of relevant written law, as originally enacted and as variously amended. Steps have been taken to rectify minor errors and omissions detected during 2001–2002. The relevant Acts and amendments to legislation are noted in this section of the annual report.



Keiran McNamara
ACTING EXECUTIVE DIRECTOR
30 August 2002

ACTS ADMINISTERED

- *Conservation and Land Management Act 1984.*
- *Sandalwood Act 1929.*
- *Wildlife Conservation Act 1950.*

On behalf of the people of Western Australia, the Department manages national parks, conservation parks, marine parks, State forests, timber reserves, nature reserves, marine nature reserves, other reserves, lease areas and any associated fauna, flora and forest produce under the legislation that it administers. It is also responsible for conserving flora and fauna throughout the State.

The *Conservation and Land Management Act 1984* established the Department. There are also three statutory bodies established under the Act, namely the Conservation Commission of Western Australia, the Marine Parks and Reserves Authority and the Marine Parks and Reserves Scientific Advisory Committee. All are responsible to the Minister for the Environment and Heritage. Their functions and proceedings are described in separate annual reports to the Minister.

MINING AND GOVERNMENT AGREEMENTS ACTS

The CALM Act does not generally protect land managed by the Department from mining or development projects. Section 4 of the CALM Act provides that nothing in the Act shall take away from the operation of any Act relating to minerals or petroleum or any Agreement Act for a development project (except in marine nature reserves and certain zones in marine parks which are protected from petroleum drilling and production).

The CALM Act cannot impose restrictions on mining or development projects subject to an Agreement Act. The requirements for mining and development projects with respect to land and waters managed by the Department are stated in the *Mining Act 1978* and the individual Agreement Acts. The requirements of the *Environmental Protection Act 1986* also need to be satisfied with such projects on land managed by the Department.

The following mining and petroleum Acts generally prevail over the CALM Act – *Mining Act 1978; Petroleum Act 1967; Petroleum Pipelines Act 1969; Petroleum (Submerged Lands) Act 1982.*

Agreement Acts which involve clearing land managed by the Department, or which require access to forest resources, also include specific responsibilities for the Department. The bauxite and coal operations predominantly require permission to be given by the Department for the companies to harvest the timber before mining.

The Agreement Acts that affect departmental responsibilities include: *Alumina Refinery Agreement Act 1961; Alumina Refinery (Worsley)*

Agreement Act 1973; Collie Coal (Griffin) Agreement Act 1979; Collie Coal (Western Collieries) Agreement Act 1979; Dardanup Pine Log Sawmill Agreement Act 1992; Silicon (Kemerton) Agreement Act 1987; Wesply (Dardanup) Agreement Authorisation Act 1975; Wood Chipping Industry Agreement Act 1969.

Where an Agreement Act involves contracting in relation to forest products this is undertaken by the Forest Products Commission.

The *Mineral Sands (Eneabba) Agreement Act 1975* affects the Department's management of the land involved in that project.

OTHER RELEVANT ACTS

The *Bush Fires Act 1954* has important requirements for the Department with respect to fires on land managed by the Department.

Other State Acts which have relevance to the Department's operations and role as an employer include: *Aboriginal Heritage Act 1972; Aerial Spraying Control Act 1966; Agriculture and Related Resources Protection Act 1976; Agriculture Protection Board Act 1950; Beekeepers Act 1963; Control of Vehicles (Off-road Areas) Act 1978; Country Areas Water Supply Act 1947; Dividing Fences Act 1961; Energy Operators (Powers) Act 1979; Electricity Corporation Act 1994; Environmental Protection Act 1986; Equal Opportunity Act 1984; Explosives and Dangerous Goods Act 1961; Financial Administration and Audit Act 1985; Fish Resources Management Act 1994; Forest Products Act 2000; Freedom of Information Act 1992; Government Employees Housing Authority Act 1964; Health Act 1911; Heritage of Western Australia Act 1990; Industrial*

Relations Act 1979; Land Administration Act 1997; Local Government Act 1995; Long Service Leave Act 1958; Metropolitan Water Supply, Sewerage and Drainage Act 1909; Minimum Conditions of Employment Act 1993; Misuse of Drugs Act 1981; Occupational Safety and Health Act 1984; Occupiers Liability Act 1985; Pearling Act 1990; Public Sector Management Act 1994; Public Works Act 1902; Soil and Land Conservation Act 1945; State Superannuation Act 2000; State Supply Commission Act 1991; Swan River Trust Act 1988; Titles (Validation) and Native Title (Effect of Past Acts) Act 1995; Town Planning and Development Act 1928; Transfer of Land Act 1893; Water and Rivers Commission Act 1995; Water Corporation Act 1995; Water Services Coordination Act 1995; Waterways Conservation Act 1976; Workers' Compensation and Rehabilitation Act 1981; Workplace Agreements Act 1993.

Commonwealth Acts relevant to the Department's activities include: *Australian Heritage Commission Act 1975; Environment Protection and Biodiversity Conservation Act 1999; Native Title Act 1993; Regional Forest Agreements Act 2002; Trade Practices Act 1974; Workplace Relations Act 1996.*

International agreements relevant to the Department's activities: *Agreement between the Government of the People's Republic of China and the Government of Australia for the Protection of Migratory Birds and their Environment; Agreement between the Government of Japan and*

the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment; Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention); Convention on International Trade in Endangered Species of Wild Fauna and Flora; Convention for the Protection of the World Cultural and Natural Heritage; Convention on the Conservation of Migrating Species of Wild Animals; Convention on Biological Diversity.

REGULATIONS ADMINISTERED

- Conservation and Land Management Regulations 2002.
- Forest Management Regulations 1993.
- Sandalwood Regulations 1993.
- Wildlife Conservation Regulations 1970.

CHANGES IN LEGISLATION

Changes to regulations

Regulation 63 in Part 11 of the *Wildlife Conservation Regulations 1970*, suspends the operation of section 23(1) of the *Wildlife Conservation Act 1950* with regard to the taking by Aboriginal people of declared specially protected fauna and rare flora for food. The suspension does not apply to the taking of dugong. This regulation was amended on 14 August 2001 to extend that exception to a further eight specially protected fauna species that are not threatened by taking by Aboriginal people.

The *Conservation and Land Management Regulations 2002* were published in the *Gazette* on 3 May 2002 and provide a consolidated set of regulations applicable to management of the visitors and other users of the land and waters that the Department manages. These regulations repealed and replaced Part 6 of the *Wildlife Conservation Regulations 1970* (which applied to nature reserves), all of the *National Parks Authority Regulations 1977*, all of the *Conservation and Land Management Regulations 1992* and those regulations in the *Forest Management Regulations 1993* that addressed the activities of visitors to forests. The new regulations address visitor and certain other activities in marine conservation reserves for the first time.

Changes to Conservation and Land Management Act and Wildlife Conservation Act

Consequential amendments to both the *Conservation and Land Management Act 1984* and the *Wildlife Conservation Act 1950* came into effect on 29 June 2002 under the *Criminal Investigation (Identifying People) Act 2002*. These amendments were made because each of the Acts administered by the Department relied on section 50 of the *Police Act 1892* to deal with suspected offenders who refused to give their name and address to an investigating officer. Section 50 of the *Police Act* was repealed under the *Criminal Investigation (Identifying People) Act 2002* and the consequential amendments enable the powers of Part 3 of the 2002 Act to be applied by prescribed public officers.

PERFORMANCE INFORMATION

I certify that the performance indicators are based on proper records, are relevant and appropriate for assisting users to assess the performance of the Department of Conservation and Land Management and fairly represent the performance of the Department of Conservation and Land Management for the financial year ended 30 June 2002.



Keiran McNamara
ACTING EXECUTIVE DIRECTOR
15 August 2002

OUTCOME

***Conservation of biodiversity
(Biodiversity: the variety of life forms:
the different plants, animals and
microorganisms, the genes they
contain, and the ecosystems they
form).***

- Output 1: Nature Conservation;
- Output 2: Sustainable Forest Management and;
- Output 3: Resources and Services Provided to the Conservation Commission of Western Australia.

OUTCOME

***Community understanding
enjoyment and appreciation of parks,
wildlife and the natural environment
and involvement in their management.***

- Output 4: Parks and Visitor Services; and
- Output 5: Astronomical Services

OUTPUT 1 NATURE CONSERVATION

Outcome achieved by:

The conservation of indigenous plants, animals and ecological processes in natural habitats.

Output description

The development and implementation of programs for flora and fauna conservation, for threatened species and ecological communities and for commercially exploited species according to the principles of ecological sustainability; the acquisition, conservation and protection of representative ecosystems; and encouraging public awareness, understanding and support for nature conservation services and policies.

Note: The Department uses the National Strategy for the Conservation of Australia's Biological Diversity definition of 'conservation', ie. 'the protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment'.

The Output performance can be best measured by effectiveness and efficiency indicators in three key areas:

- 1. Wildlife and habitat management;**
- 2. Wildlife utilisation; and**
- 3. Threatened species management.**

Key Effectiveness Indicators

1. Wildlife and habitat management

Land is set aside for the management of wildlife and habitat. Management strategies are developed to ameliorate threatening agents, such as fire, pests, weeds and diseases, which can impact on the functioning of native ecosystems, and threaten the survival of species.

Performance Indicator

Example population estimates of native fauna following control of a threatening process.

Notes

Research by Department scientists demonstrated in 1988 that fox predation was a major cause of small fauna decline in the southwest of Western Australia. This led to the baiting for foxes in selected areas of land managed by the Department, which resulted in the recovery of several species of threatened fauna at those sites. In 1994 the baiting program was extended as Operation Foxglove, where 500,000 ha of the northern jarrah forest was baited on a regular basis. In 1996, this program was further expanded as *Western Shield* with fox baiting now occurring over 3.5 million hectares of the State.

If baiting for foxes is successful in reducing fox predation as a threatening process, then it would be expected that fauna in the size range susceptible to fox predation would, in the absence of other factors, firstly stabilise, and then recover to an equilibrium level for the area of suitable habitat in a bushland locality.

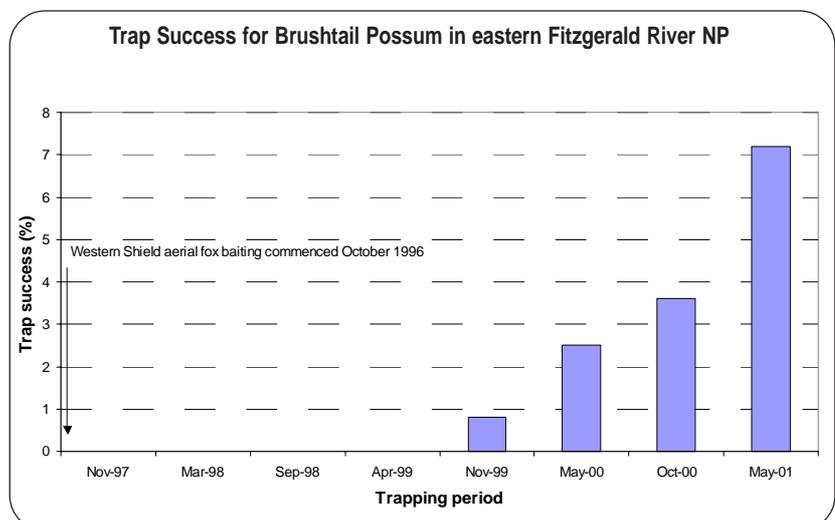
To monitor the implementation of *Western Shield*, monitoring sites are being established across the range of the baiting program.

Measure

Population estimates for native fauna susceptible to fox predation in areas where fox baiting is occurring, as shown by monitoring sites where *Western Shield* is operating.

Note: The full Western Shield program commenced in 1996, and hence only six years of monitoring data are available for areas where baiting was not previously undertaken. An example set of data from an area baited under Western Shield is presented below.

The graph below shows the recovery following fox baiting, of the medium-sized mammal, the Brushtail Possum, in the 329,038 ha Fitzgerald River National Park in the Department's Albany District. Prior to fox baiting, low levels of medium-sized mammals were known from the park. Following fox baiting the known diversity of medium-sized fauna in the area has increased, with populations of Brush-tailed Possums increasing significantly. This response to fox baiting is typical of the response over the range of fox



baiting activity, although the drought over the past two years has caused some variation in the maintenance of fauna levels with continued fox baiting. Further examples of monitoring from other regions have been presented in previous annual reports.

2. Wildlife utilisation

Species such as kangaroos, crocodiles and a number of flora species (excluding timber) are commercially utilised and must be managed to ensure the use is sustainable.

Performance Indicator

Example population levels of harvested wildlife.

Notes

The management of flora is based on the non-destruction of the harvested plants and is therefore sustainable. Limited harvesting of breeding crocodiles, eggs and hatchlings occurs from the wild. Kangaroo harvesting, however, involves the taking of larger numbers of animals from the wild, and must, therefore, be managed in a manner that does not threaten the wild populations.

The management programs for red and western grey kangaroo harvesting were first published in 1973. These programs outline the basis of sustainable harvesting using population estimates and harvest quotas.

From 1981 to 1993, triennial aerial surveys were undertaken for red and western grey kangaroos over the pastoral region of Western Australia. Since 1995 the surveys have been done annually, each covering one third (one million km²) of the pastoral region. These data are used to estimate the populations of these species which are subject to commercial harvest. Annual population estimates of red kangaroos are calculated from the survey data, with the estimates for the between-survey areas being extrapolated using population trend

information, while western grey kangaroo populations are only recalculated when the southern pastoral region, where this species mainly occurs, is surveyed.

Sustainable harvest quotas have been determined from historical monitoring, and are set at a maximum of around 25 per cent of the population estimate, with the actual quota based on:

- current population trends;
- seasonal conditions;
- review of previous harvests;
- the proportion of the habitat and population not subject to harvesting;
- current land use practice and trends in land use; and
- significance of the take outside the commercial quota.

Measure

The graph below illustrates the management of harvest levels that allow for the maintenance of kangaroo populations in areas where commercial harvesting occurs.

Notes: Harvest levels are recorded for the previous calendar year as delays occur in receiving harvest reports. Minor corrections may also occur to previous years' data as late harvest returns are incorporated. As from 1998, population estimates for kangaroos have been corrected for temperature. This gives a more

realistic estimate of kangaroo numbers. Previous years' population data has also been recalculated using the temperature correction.

The variations observable in the populations of the kangaroo species mainly reflect rangeland condition, primarily as determined by rainfall, rather than the level of harvest permitted. As a natural feature of kangaroo population data, these fluctuations are taken into account over the longer term in setting sustainable harvest levels.

3. Threatened species management

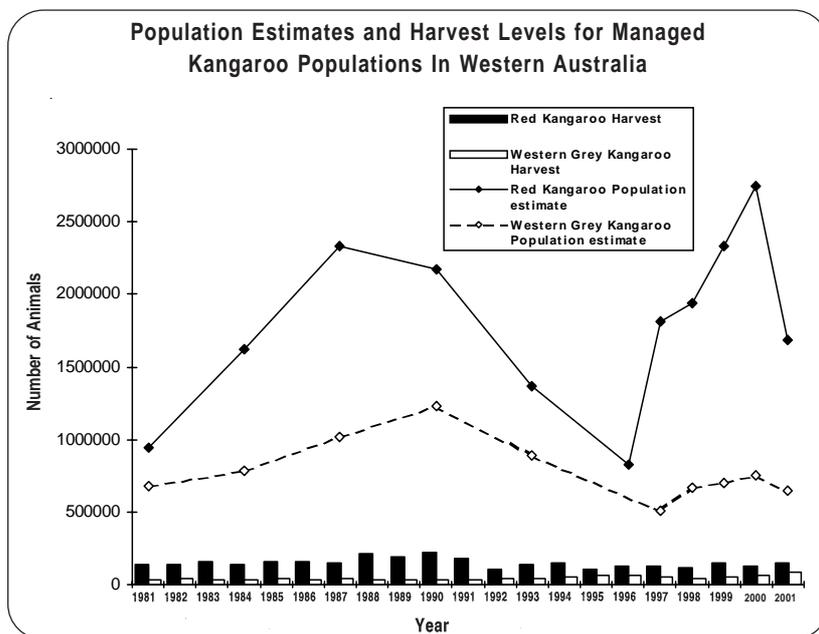
A management system is in place to identify, protect and recover flora and fauna that is threatened with extinction or otherwise in need of special protection.

Performance Indicator

The identification and management of wildlife taxa that are threatened or requiring special conservation attention.

Note: Threatened taxa conservation in Western Australia involves two phases;

- (i) *the identification and listing of taxa in appropriate categories as determined by the level of threat and the level of available knowledge; and*



(ii) management to enable threatened taxa to be de-listed, or re-listed in less threatened categories, and to obtain the necessary information for poorly known taxa to categorise them properly.

Indicators (a) and (b) below address these two phases.

a) **The number of the State's wildlife taxa identified and listed as either threatened or requiring special conservation attention, compared to previous years.**

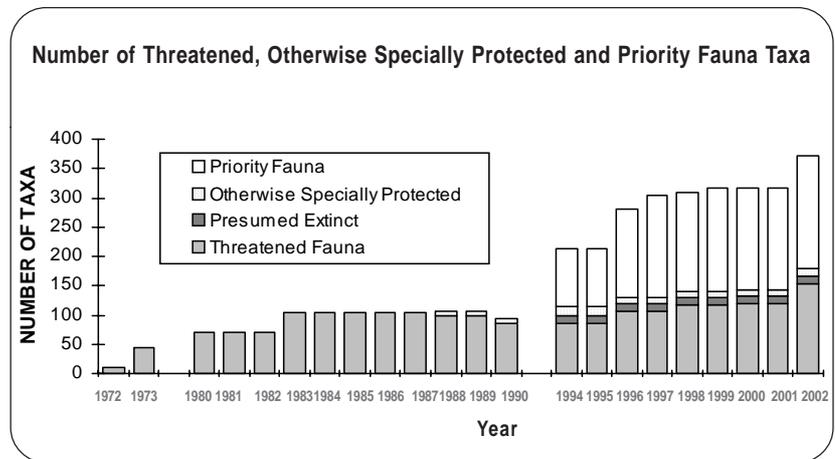
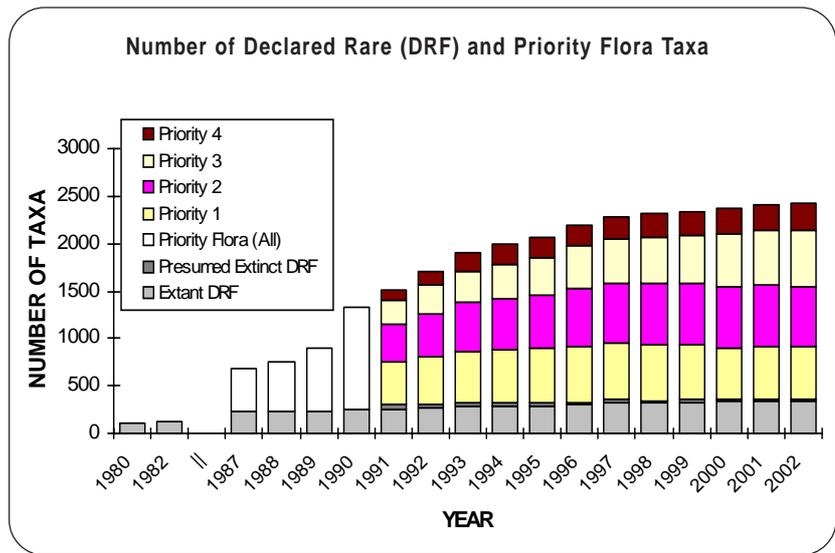
Note

As from 1998–99 the measure relates to actual listing changes to the declared lists of specially protected fauna and flora made by the Minister for the Environment and the lists of priority fauna and flora prepared by the Department. Recommendations made by the Threatened Species Scientific Committee, but not yet declared by the Minister are not included.

Measure

As shown in the graph above, at 30 June 2002 a total of 2,801 taxa (2,430 flora and 371 fauna) were declared to be specially protected, or included on the Department's priority flora and fauna lists. This represents an increase of 2.6 per cent in the number of taxa listed as requiring special conservation status compared to 2000–2001.

Forty-five flora and 67 fauna taxa were added, and 26 flora and 12 fauna taxa were deleted from the lists during the year. Additions were due to further scientific study revealing additional taxa that appear to warrant special conservation attention, the listing at subspecific level of certain taxa, or the inclusion of nationally-listed species of avifauna. Deletions were due either to taxonomic studies revealing that taxa were inappropriately listed, or surveys revealing that taxa were more common than previously thought, and hence no longer warranting special conservation attention.



Notes: Migratory bird species listed under Schedule 3 of the fauna notice are not included in the numbers of taxa requiring special protection as most are not Western Australian species.

A taxon (plural taxa) is a term for any classificatory group of organisms, including species, subspecies and varieties. The indicator refers to the number of the State's wildlife taxa that are either:

- declared to be specially protected by the Minister for the Environment and Heritage under the Wildlife Conservation Act 1950; that is, taxa that are considered to be either rare, likely to become extinct, or otherwise in need of special protection; or
- listed by the Department as priority flora or fauna; that is, taxa that are either poorly known

but potentially in need of special protection based on the information available, or rare but not currently threatened and in need of monitoring. Full definitions were presented in the Department's 1997–98 Annual Report.

The increase in the number of taxa listed mainly reflects the Department's maintenance of an enhanced knowledge base of the State's wildlife through taxonomic revision, curation of collections, databasing of information, and field investigations, and does not in itself represent a change in the conservation status of the State's wildlife.

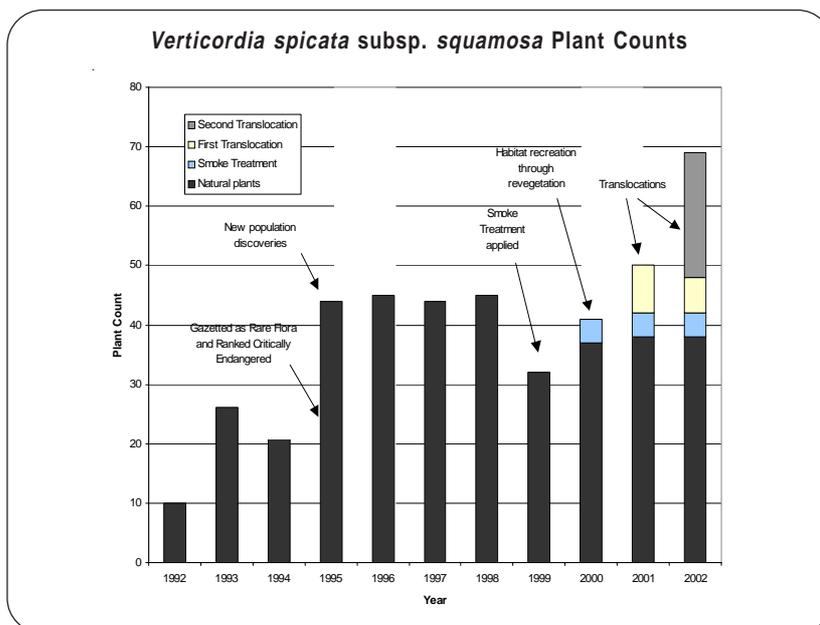
b) **The recovery of threatened taxa as a consequence of specific management actions as demonstrated through case examples.**

Note

Given the probabilistic nature of the categories of threat, and the long-term nature of threatened taxa recovery, significant management actions may occur before a taxon moves from one category to a lower risk category. The measure of such movements thus will occur over long time periods.

Measure

- i) *Verticordia spicata* subsp. *squamosa* was first collected east of Three Springs in 1974. It was listed as Declared Rare flora in June 1995 and ranked in September 1995 as Critically Endangered due to the low number of known individuals and the continuing decline in the quality of the plant's habitat. At the time it was known from only four small populations, mainly on narrow road verges and totalling 21 plants. A larger population of 15 plants on private property had been partially cleared. Following the listing, Departmental staff and members of the local community became familiar with the subspecies, resulting in the discovery of several new larger populations. Unfortunately most were in decline and by 1999, there was still only a total of 32 plants known in seven populations. No recruitment of new seedlings had been observed at any of the populations. An honours student had conducted smoke treatment trials at one site to stimulate germination.
- In November 1999 an Interim Recovery Plan for this subspecies was approved and local staff began implementing recovery actions with assistance from the local community. Following summer rain in early 2000, several new seedlings appeared in the smoke treated area. These were enclosed in rabbit netting for protection, and surrounding property owners baited for rabbits.
- In Autumn 2000, smoke treatment and weed control trials were



carried out at three populations in an attempt to produce more seedlings. Two very dry winters followed and no new seedlings have been recorded to date.

It was evident that very little appropriate habitat for this taxon remained and the likelihood of locating further new populations was very low. A Translocation Proposal was approved and attempts to raise seedlings by the Botanic Gardens and Parks Authority began. The subspecies proved very difficult to propagate both from seed and cuttings. More seed and cuttings were collected in the summer of 2000 to use in direct seeding and the translocation site. Also at this time a property owner reported that a new population of one plant occurred in a Shire road reserve. A fence was erected some distance outside the road reserve and the area revegetated, effectively doubling the width of the road reserve and providing a more secure habitat for this plant.

Eight plants were available for an initial translocation, and with the assistance of the Mingenew Herbarium group, were planted (with additional direct seeding) into remnant vegetation on private property. The community group monitored and watered the plants

throughout the dry winter and early summer. Six of the 8 plants are healthy and one flowered during its first summer.

The Botanic Gardens and Parks Authority propagated 21 new plants, and these were planted near the previous eight, and a watering system installed. The herbarium group will continue to monitor the translocated population and manage the remnant for its conservation values.

All populations are monitored regularly. The private property population where recruitment was recorded following smoke treatment has four very vigorous seedlings which are now approximately 30cm tall. In total there are now 9 populations with a total of 69 plants. Although still critically endangered, its future is now more secure.

- ii) Medium-sized mammals in the southwest of the State have generally declined in their population size and range due to loss of habitat and predation by foxes. While fox control under the *Western Shield* program has assisted the recovery of these species in many areas, in other areas some species have become locally extinct. In such situations, translocation programs may be implemented to re-establish the

species in secure conservation reserves, in conjunction with fox control to remove this threatening process.

The chuditch is a listed threatened species. Fox control, habitat management, captive breeding and the establishment of new populations in protected areas are strategies included in the published Recovery Plan for this species.

The graph below shows the results of a translocation program of the chuditch, *Dasyurus geoffroii* into the 107,812 ha Lake Magenta Nature Reserve, in the south eastern Wheatbelt, with supporting fox control. While the translocation was done as a reintroduction, subsequent data showed that chuditch were already present but in extremely low density, hence it is technically a restocking. The translocation has been successful in establishing a replicating, viable population of this species in the reserve, as shown by the increase in the numbers of animals originating from the original translocated stock.

While the population has fluctuated, and declined in recent years, it has generally been trapped above the criterion for successful establishment (1 per cent trap success), as set out in the Recovery Plan, and was trapped at this rate at the last survey time. The fluctuation and reduction cycles represents the normal trend expected when a population increases rapidly and beyond the carrying capacity of the available habitat, combined with the impact of drought during 2000 and 2001. It would be expected that further fluctuation will occur as the population stabilises with habitat capacity, and seasonal variations. This example is typical of the type of response achievable with properly planned habitat management and fauna translocations. Further examples have been presented in previous annual reports.

Key Efficiency Indicators

Note

This is the first year of cost allocation under the new service provider agreements and a new chart of accounts within the Department. Consequently there has been a reallocation of some of the Department's resources, plus a more accurate accounting of expenditure, resulting in a higher budget expenditure against nature conservation actions. This has caused a rise in the per unit costs for the nature conservation efficiency indicators.

1. Wildlife and habitat management

The cost per hectare managed.

Note

This measure provides an indicative comparison of the accrual basis gross total cost (excluding revenues) per hectare of managing nature conservation on Departmental-managed lands and waters.

Measure

1997-1998:	\$2.12 per hectare
1998-1999:	\$1.85 per hectare
1999-2000:	\$2.05 per hectare
2000-2001:	\$2.03 per hectare
2001-2002:	\$2.28 per hectare

2. Wildlife utilisation

The accrual basis net cost after revenue of managing the harvesting and utilisation of wildlife per licence issued.

Note

This measure provides an indicative comparison of the accrual basis net cost after revenue of managing the harvesting and utilisation of wildlife per licence issued.

1997-1998:	\$2.671 per taxon
1998-1999:	\$2,606 per taxon
1999-2000:	\$2,650 per taxon
2000-2001:	\$2,303 per taxon
2001-2002:	\$6,341 per taxon

Note

This measure mainly comprises the direct and overhead costs associated with the conservation management of the kangaroo, emu, crocodile, aviculture, and flora industries, and marine fauna interactions; expressed on a per licence issued basis (2,728 licences in 1997-98; 2,666 in 1998-99; 2,599 in 1999-2000; 2,274 in 2000-2001; and 2,363 in 2001-2002).

Measure

1997-1998:	\$410 per licence
1998-1999:	\$425 per licence
1999-2000:	\$362 per licence
2000-2001:	\$512 per licence
2001-2002:	\$1291 per licence

3. Threatened species management

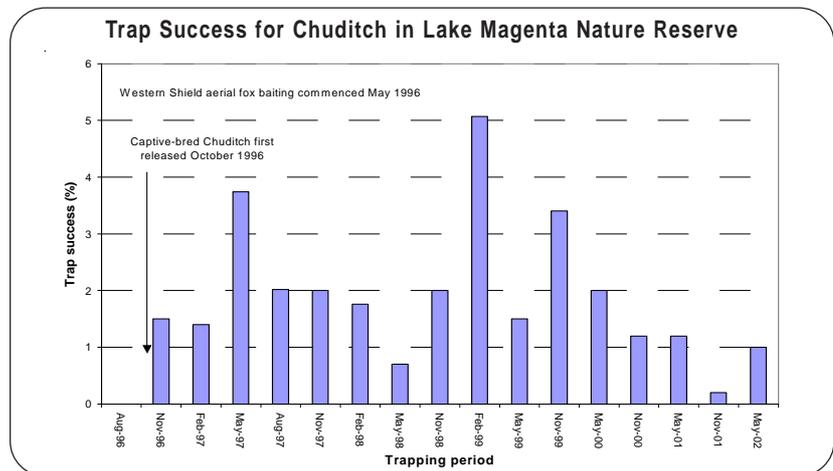
The accrual basis net cost after revenue of management per taxon that is threatened or otherwise requires special conservation attention.

Note

This measure mainly comprises the direct and overhead costs associated with species conservation, science services, fox control and the management of threatened flora and fauna; expressed on a per taxon basis (2,619 taxa at 30 June 1998; 2,657 at 30 June 1999; 2,687 at 30 June 2000; 2,729 at 30 June 2001; and 2,801 at June 2002).

Measure

1997-1998:	\$2,671 per taxon
1998-1999:	\$2,606 per taxon
1999-2000:	\$2,650 per taxon
2000-2001:	\$2,303 per taxon
2001-2002:	\$6,341 per taxon



OUTPUT 2 SUSTAINABLE FOREST MANAGEMENT

Outcome achieved by:

The development and implementation of management plans and systems for sustainable management of State forest and timber reserves.

Output description

The sustainable management of State forest and timber reserves while maintaining or enhancing nature conservation, water, recreation, landscape and other values in the long term, and encouraging public awareness, understanding and support for sustainable forest management, services and policies.

Key Effectiveness Indicator

Satisfaction of the sustainable forest management standards of the Conservation Commission of Western Australia.

Note

The Conservation Commission of Western Australia has adopted compliance with the Ministerial Conditions, Commitments and operational guidelines for the Forest Management Plan 1994-2003 as its standards for sustainable forest management pending finalisation of a new forest management plan. The Department has a statutory requirement to manage State forest and timber reserves and regulate access to State forest and timber reserves by the Forest Products Commission and its contractors, and to ensure that operational guidelines and standards are met. Compliance is measured through a field audit process that samples active and completed forest coupes in both jarrah and karri, in a range of rainfall zones, that have or are being harvested by a range of contractors. The audits are conducted at least annually.

The results of a field audit were presented to the Conservation Commission in November 2001. The audit forms the basis for the measures of the Key Effectiveness Indicator. The Conservation Commission resolved to note the audit findings and responses, and endorse follow-up audit in 2002 as part of the Conservation Commission's audit program. The follow-up audit will be reported on in the 2002-2003 annual report.

Measures

Output performance can best be measured in two key areas of compliance with the Forest Management Plan 1994-2003. These are:

- (i) Ministerial Conditions and Commitments; and
- (ii) major aspects of the *Manual of Management Guidelines for Timber Harvesting*.

(i) Ministerial Conditions and Commitments

Compliance with the Ministerial Condition to keep river and stream reserves and diverse ecotype conservation areas unharvested in perpetuity, and the zone boundaries protected during harvesting.

The breach of a boundary is considered an incident. Incidents are categorised as minor if a machine has crossed the boundary with minimal soil disturbance or major if the crossing involves soil and vegetation disturbance or tree removal. Removing trees from within zones for reasons of safety are not considered as incidents. Compliance is presented in the table below.

Compliance with requirements for the Ministerial Condition for phased logging.

In all second order catchments in the intermediate and low rainfall zones of the multiple use jarrah forest subject to logging, at least 30 per cent of each second order catchment has a retained basal area of greater than 15 square metres per hectare for a period of at least 15 years after harvesting of the remainder of the catchment. The requirements of this Ministerial Condition were being complied with for all areas sampled.

Compliance with requirements for the Ministerial Condition for high salt risk catchments.

Within each catchment identified as a high salt risk additional river and stream buffers are to be retained. No harvesting was found to have occurred in these areas in the past year.

	Stream Zone	Diverse Ecotype Zone	Other (Reserves, Coupe Boundaries, etc)
Length Assessed(metres)	10,156	2,666	2,215
No. of Minor Incidents	28	6	1
Length of Minor Incidents (metres)	239	24	6
No. of Major Incidents	7	Nil	Nil
Length of Major Incidents (metres)	223	Nil	Nil
% of Edge Protected Intact	95.5%	99%	99.7%

Compliance with Commitments for the retention of habitat elements.

Requirements are the identification and marking of four primary habitat trees per hectare or 20 per five hectares in all areas cut over. The specification also requires the identification and marking of at least one example of ground habitat per hectare. The average number of habitat trees per hectare for areas sampled was found to be 5.8 and the average number of ground habitats per hectare was 0.2.

Compliance with the Commitment to limit karri gap size.

The requirement is that karri gap size be no larger than 80 hectares. All areas sampled complied. The maximum gap size recorded was 39.3 ha. The average gap size was 11.2 ha.

Compliance with the Commitment to limit the distance between retained mature karri forest.

The requirement is to, where possible, ensure the distance between areas of retained mature forest is a maximum of 400 metres. The areas sampled complied.

(ii) Major aspects of the *Manual of Management Guidelines for Timber Harvesting*.*Compliance with planning and pre-harvest checklists.*

Standard documentation must be completed prior to any harvesting operation on State forest commencing. Approval of the documentation signifies formal approval for an area to be harvested. The requirements of this specification were complied with for each coupe sampled during the audit.

Compliance with specifications for coupe demarcation.

Management boundaries, including coupe, river, stream, travel route and diverse ecotype zones, must be identified and demarcated prior to the commencement of cutting. Ninety- six per cent of boundaries assessed were found to be marked correctly.

Compliance with requirements for the protection of soil.

When extraction is completed in any feller's block, and prior to machinery leaving, interceptor banks and drains must be constructed across all extraction tracks and disturbed firebreaks with exposed soil to minimise the risk of erosion. Ninety- three per cent of assessed track complied with the requirement.

Compliance with requirements for the protection of water.

Effective water protection measures should be undertaken during all phases of harvesting. The level of compliance is incorporated in the table showing compliance with the Ministerial Conditions and the Commitment for river and stream reserves. Compliance is also monitored through measures in place such as phased logging in the intermediate/low rainfall zone in the jarrah forest and also the identification of high salt risk catchments where additional stream buffers are retained. Additional measures to protect water quality are in place, such as the requirement to construct erosion barriers in harvested areas to protect streams from turbidity.

Compliance with requirements for the protection of threatened flora.

Field searches are conducted along proposed road alignments, landing and gravel pit sites before harvesting operations commence. Located populations are demarcated and protected from disturbing activity. Field searches for the presence of threatened flora populations had been conducted in all coupes sampled.

Compliance with requirements for the protection of threatened fauna.

Areas planned for harvesting are assessed in a desktop procedure against a matrix that determines the probability of habitats of threatened fauna occurring. Databases containing records of known habitats, populations and sightings are also consulted. The desktop procedure is yet to be formally approved. The audit found limited evidence of the procedure being followed due to a lack of records of use and results for the procedure.

Key Efficiency Indicator

The average cost per hectare of managing State forest and timber reserves

Note

The accrual basis average gross cost per hectare of managing gazetted State forest and timber reserves in accordance with current forest management plans. The area managed totalled 1,871,000 hectares.

Measure

The cost per hectare managed was \$17.82, a decrease on the 'Target' cost of \$20.94 in the 2001–2002 Budget Statements.

OUTPUT 3 RESOURCES AND SERVICES

PROVIDED TO THE CONSERVATION COMMISSION OF WESTERN AUSTRALIA

Outcome achieved by:

The provision of resources and services to the Conservation Commission of Western Australia

Output description

The provision of resources and services to the Conservation Commission of Western Australia for the satisfaction of its functions which include; having vested in it the State's national parks, conservation parks, nature reserves, State forest and timber reserves; policy development for the preservation and community

enjoyment of the State's natural environment, and promoting the appreciation of flora, fauna and the natural environment; advice to the Minister for the Environment and Heritage on the development of policies for the conservation and management of biodiversity throughout the State and on the ecologically sustainable management of State forest, timber reserves and forest produce; and audit of the Department of Conservation and Land Management's and the Forest Products Commission's performance against management plans.

Key Efficiency Indicator

The average cost per management plan/significant policy developed.

Note

The accrual basis average cost of developing management plans and/or significant policies for the Conservation Commission's consideration.

Measure

The average cost per management plan/significant policy developed for the Commission's consideration was \$27,360. This represents an increase of \$16,260 on the 'Target' cost of \$11,100 in the 2001-2002 Budget Statements. This is due to the development of the new forest management plan.

OUTPUT 4 PARKS AND VISITOR SERVICES

Outcome achieved by:

Community enjoyment and appreciation of parks, wildlife and the natural environment without compromising conservation and management objectives.

Output description

Dealing with public involvement, visitation and appreciation of the natural environment on lands and waters managed by the Department, including preparing and implementing management and recreation site development plans; providing, managing and maintaining appropriate access, recreation opportunities and visitor facilities; protecting natural areas, visitors and facilities from wildfire; training Departmental staff and volunteers, working with local tourist bureaux and commercial tour operators; involving Aboriginal people in park management and the provision of visitor facilities and services; providing visitor information and designing and initiating educational and interpretive activity programs which enrich visitor experience and help develop greater community awareness and support for parks, natural areas, nature-based tourism and recreation services and policies.

Key Effectiveness Indicators

1. The extent to which visitors are satisfied with their visit overall to recreation areas managed by the Department.

Notes

The Department's revised survey program first conducted in January 2000, was undertaken for its second full year during 2001–2002. This new survey program enhances the rigour of measuring the overall level of visitor satisfaction to recreation areas managed by the Department as well as providing for a benchmark Visitor Satisfaction Index (VSI) and the

collection of other information useful for planning and management purposes. The survey is being conducted across a broad range of parks, reserves and forest areas at different times of the year to account for the geographic spread of these areas and associated seasonal variation in visitor patterns across the State.

Respondents to the 2001–2002 survey program show the following characteristics:

- fifty-three per cent of respondents were from Western Australia, 30 per cent from interstate and the remaining 17 per cent from overseas.
- the majority of respondents surveyed were visiting with friends and/or family as opposed to travelling on a tour, with an organised group or on their own.
- the largest proportion of respondents were in the 40–59 year age bracket, being 32% of visitors, and the 25–39 year age bracket, which comprised 31 per cent of respondents.
- sixty-six per cent of respondents overall were first time visitors to the recreation areas surveyed.

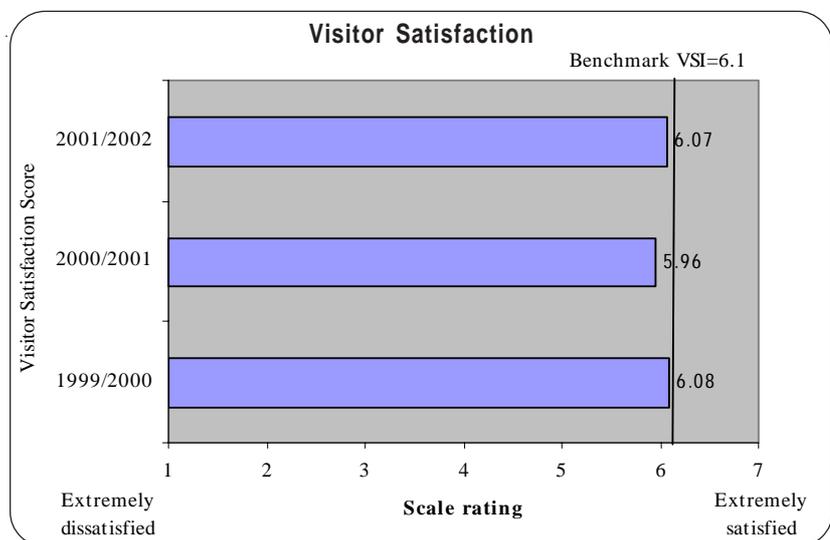
Note: A total of 2720 surveys were distributed during specific survey

periods throughout the year to visitors to 18 parks/recreation sites across the State with 1266 completed surveys returned. At a 95 per cent confidence level, the survey responses reported below have a standard error within the range of ±0.02.

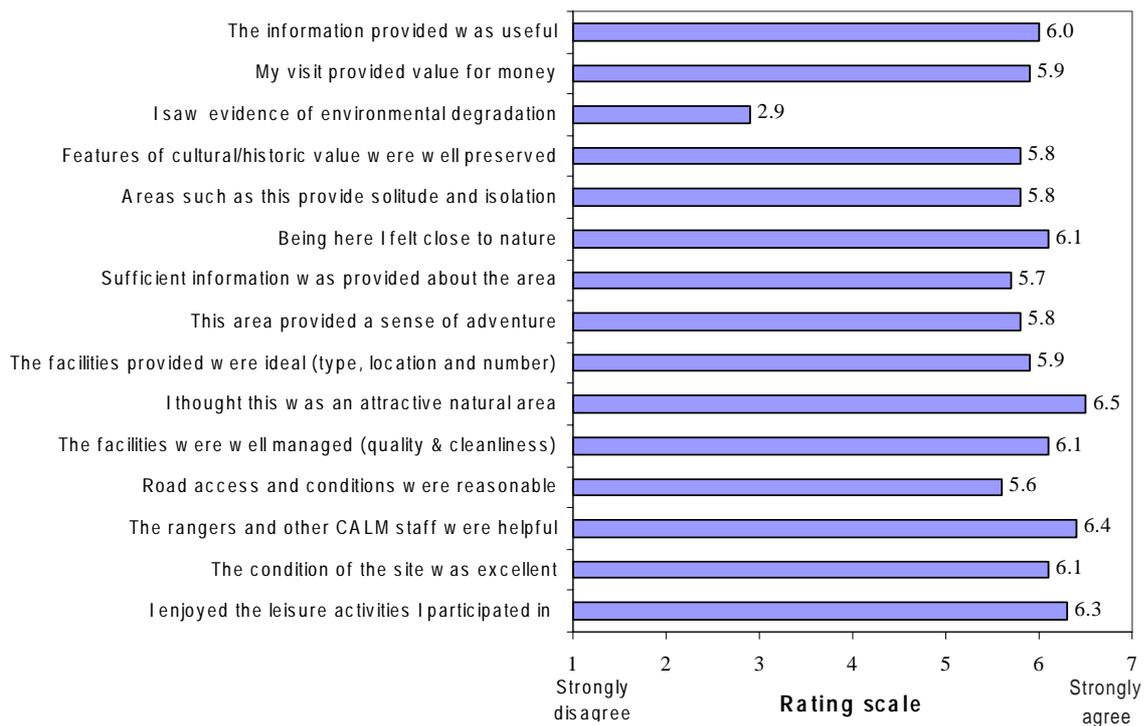
Measures

As part of the new survey program, a benchmark Visitor Satisfaction Index (VSI) from which to compare visitor satisfaction levels each year has been adopted. This benchmark has been set at 6.1 on a rating scale from 1 (extremely dissatisfied) to 7 (extremely satisfied). The 2001–2002 VSI averaged from visitor responses to the survey at the selected parks, reserves and forest areas around the State was 6.07, which is just slightly below the benchmark VSI of 6.1. This is illustrated in the **Visitor Satisfaction Scores** graph below, along with the results from the previous two years during which time the new survey program has been implemented.

The survey also asked visitors to rate the condition and management of the site they visited, the activities in which they participated and their overall experience at the site. All these factors contribute to the visitors' overall experience during their visit. The **Visitor Experience Ratings** graph over indicates that the naturalness of the area, helpfulness of Departmental staff



Visitor Experience Ratings



and rangers, the enjoyment derived from leisure activities and the condition and management of facilities received the highest ratings from visitors' responses to this part of the survey. These were also the highest ratings given from responses to the surveys conducted last year.

2. The extent to which the public has shown interest/support for Departmental-managed recreation areas, facilities and services.

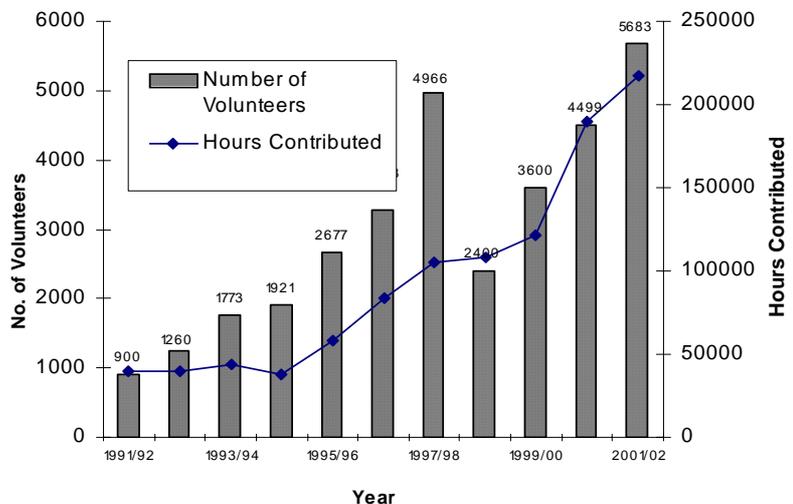
Note

The level of volunteer involvement indicates continued public support for the Department's management programs and the Department's ability to balance competing land uses to aid public enjoyment and protect conservation values.

Measures

As illustrated in the diagram **Volunteer Involvement**, the number of volunteer hours spent on various nature conservation and parks and visitor services projects this year totalled 217,000 hours, an increase of 14 per cent on last year's figure of 190,000

Volunteer Involvement



hours. In addition, a further 180,000 hours were contributed to various projects by the 1100 Bush Ranger cadets who participated in the CALM Bush Ranger cadet program.

The number of registered volunteers currently stands at 5,683, an increase of 26 per cent on last year's figure of 4,499. This reflects the community's strong interest in and willingness to actively support environmental management and protection projects.

3. The number of visits to recreation areas managed by the Department.

Note

The number of visits to recreation areas is based on data from the Department's Visitor Information and Statistics (VISTAT) Program.

Measures

Data from VISTAT indicates that the number of visits to lands and waters

managed by the Department for 2001–2002 totalled 9,821,000. As illustrated in the diagram opposite on **Visitor Use Levels**, this figure comprises both recorded numbers of visits from traffic counter devices, surveys and other data sources as well as estimated numbers of visits based on field observation. This figure represents a conservative increase of just over 1 per cent on the 9,718,000 visits in 2000–2001. This increase in visits reflects a continuing interest by the public in visiting natural areas managed by the Department, despite increased fuel costs, dry weather conditions experienced in some recreation areas and the effects of September 11 on world travel.

To compare long term trends in visitor use levels and patterns, Cape Le Grand, Nambung and Purnululu national parks have been selected because they represent low, medium and high levels of annual visitation.

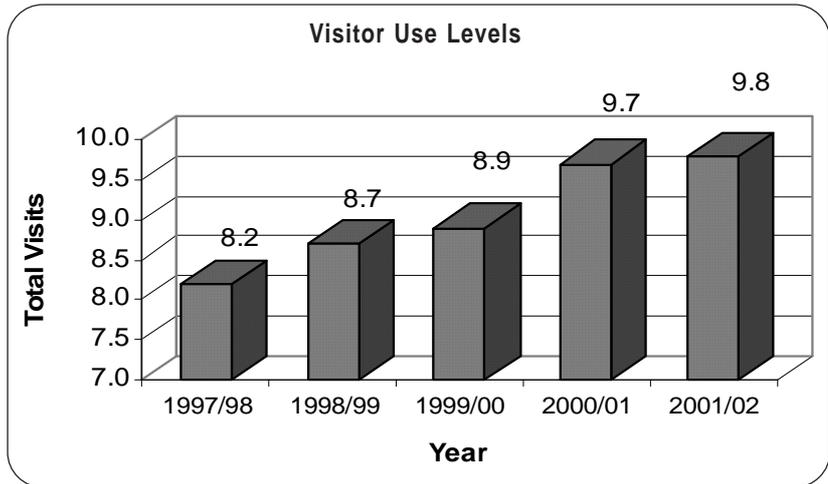
As indicated in the table over **Trends in Visitor Numbers to Three National Parks**, two of the three parks have experienced an increase in visitor numbers over the previous 12 months. Over the past four years, the general trend has been one of continuous growth in visitation to Department managed parks, reserves and forest areas throughout the State.

Key Efficiency Indicators

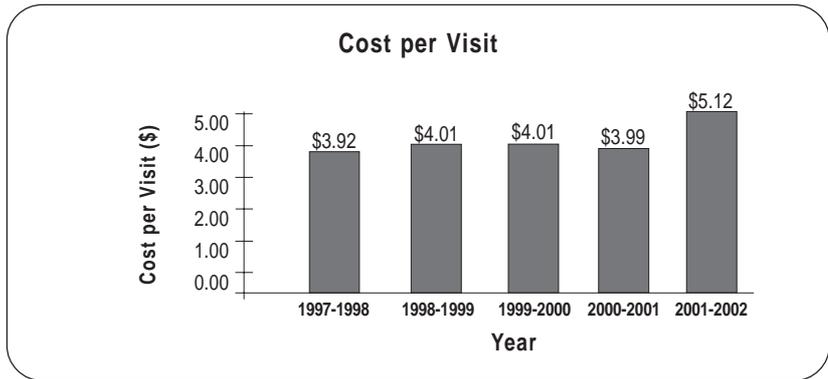
1. *Cost per visit.*

Note

The accrual basis gross total cost (excluding revenues) of Parks and Visitor Services, expressed as a cost per recorded visit to Department-managed lands and waters.



National Parks	1998–1999	1999–2000	2000–2001	2001–2002
Cape Le Grand	72,000	74,000	65,000	65,000
Nambung	191,000	194,000	169,000	173,000
Purnululu	17,000	17,000	18,000	21,000



Measure

The 2001–2002 gross cost per visit was \$5.12. As shown in the **Cost per Visit** graph, this represents an increase of \$1.13 over the figure reported for 2000–2001. The primary reasons for this increase were the allocation of an additional \$6.55 million dollars to the provision of parks and visitor facilities and services under the State Government’s *Protecting Our Old-Growth Forests* policy and the settlement of a previous liability claim.

2. *Ratio of total cost of services to operating revenues.*

Note

The accrual basis total cost of providing Parks and Visitor Services expressed as a ratio of operating revenue from those services.

Measure

With total expenditure of \$50,297,000 and operating revenue of \$17,847,000, the 2001–2002 ratio was 2.82:1, an increase of 0.64 on the ratio of 2.18:1 in 2000–2001.

OUTPUT 5 ASTRONOMICAL SERVICES

Outcome achieved by:

Astronomical information and services for the benefit of the community.

Output description

Providing public information and awareness directly beneficial to the Western Australian community, and contributing to scientific research in astronomy by co-operating with national and international institutions in the acquisition, analysis, interpretation and dissemination of information.

Key Effectiveness Indicators

1. The level of customer satisfaction with the services provided by the Observatory.

Note

During 2001–2002, 9,714 people visited the Observatory, 1,001 people used the recorded information line, and 11,080 people telephoned seeking information.

A total of 535 customer survey questionnaires were distributed; 495 to Observatory star viewing night, day and Sunday visitors between July 2001 and May 2002, and 40 to customers of Observatory services such as lectures and natural lighting consultancies.

Note: At a 95 per cent confidence level the survey responses reported below have a standard error within the range ±4%.

Measure

The table **Overall Satisfaction with Perth Observatory** shows the combined analysis of 233 (47 per cent) responses to the visitors' survey question 'How satisfied were you with the services provided by Perth Observatory?' and the 32 (80 per cent) responses to the services customers' survey question 'Did the service

Response	1996–97 %	1997–98 %	1998–99 %	1999–2000 %	2000–2001 %	2001–2002 %
Very satisfied	69.6	68.7	71.3	75.1	72.8	64.6
Satisfied	26.8	29.9	26.4	23.9	25.3	31.3
Neither satisfied or dissatisfied	3.0	1.2	2.3	0.8	1.9	3.4
Dissatisfied	0.4	0.2	0.0	0.0	0.0	0.7
Very dissatisfied	0.2	0.0	0.0	0.2	0.0	0.0

Note: Prior to 1999–2000 the table reports responses from surveys of star viewing night customers only.

Response	1996–97 %	1997–98 %	1998–99 %	1999–2000 %	2000–2001 %	2001–2002 %
Strongly agree	48.7	45.4	52.6	54.9	57.6	42.0
Agree	46.1	50.9	45.5	43.9	38.9	53.4
Neither agree or disagree	4.2	3.5	1.9	1.2	3.5	4.6
Disagree	1.0	0.2	0.0	0.0	0.0	0.0
Strongly disagree	0.0	0.0	0.0	0.0	0.0	0.0

provided by the Perth Observatory meet your needs?' The responses to both survey questions indicate levels of satisfaction consistent across all types of visits and services.

2. The extent to which visitors perceive the information presented during their tour of the Observatory increased their knowledge and awareness of astronomy.

Note

This indicator relates to the educational role of the Observatory in meeting the demand by the community for information on astronomy and measures the extent to which that demand is met.

Measure

The **Increased Knowledge and Awareness of Astronomy** table illustrates visitors' perception as measured by the visitors' survey

described above. The analysis of the 238 (48 per cent) responses to the question 'To what extent do you agree that the information presented on the tour increased your knowledge of and awareness of astronomy?' indicates levels of satisfaction consistent across all types of visits.

3. Research findings published in internationally recognised journals.

Note

One of the aims of Perth Observatory is to further scientific research in astronomy. One method of measuring the contribution to scientific research is to determine the number of articles published in internationally recognised scientific journals. The publishers of these journals independently evaluate articles submitted to ensure they meet appropriate standards and criteria. Publication in these journals evidences that the Observatory is adding to scientific knowledge and therefore furthering scientific research.

Measure

During 2001–2002, the Observatory had five (five in 2000–2001) articles published in internationally recognised journals. *Note: 18 (22 in 2000–2001) other scientific papers related to scientific data on astronomical objects were also published as articles in educational journals, popular magazines, newsletters or internal reports.*

Key Efficiency Indicators

1. Cost per tour visitor.

Note

The Perth Observatory conducts an on-site educational program through guided tours for school and community groups, tourists and the general public. This indicator shows the average accrual gross cost per tour visitor based on 2001–2002 tour participation totalling 9,714 (2000–2001 8,424), ie. night visitors – 6,107, day visitors – 3,213 and Sunday afternoon visitors – 394.

Measure

The cost per visitor in 2001–2002 was \$20.42 (2000–2001 \$15.66) an increase of \$1.92 on the ‘Target’ cost of \$18.50 in the 2001–2002 Budget Statements. This increase is mainly due to an increase in the number of night sessions conducted.

2. Cost per enquiry.

Note

This indicator shows the average accrual gross cost relating to the Observatory receiving and responding to enquiries about astronomical information by way of the information line, telephone calls and attendance at astronomy talks and field nights.

Measure

Based on a total of 18,405 enquiries in 2001–2002, the cost per enquiry was \$31.54 (22,720 enquiries at \$28.30 in 2000–2001). This is a decrease of \$1.36 on the ‘Target’ cost of \$32.90 in the 2001–2002 Budget Statements.

3. Cost of research activities per refereed research paper.

Note

This indicator shows the average accrual gross cost of the Observatory’s research activities expressed as an average per refereed scientific research paper.

Measure

In 2001–2002 the average cost per paper of the research activities supporting the five refereed research papers was \$81,836 (five papers at \$86,000 in 2000–2001), a decrease of \$3,164 on the ‘Target’ cost of \$85,000 in the 2001–2002 Budget Statements.

4. Cost of research activities per 1,000 head of WA population.

Note

This indicator shows the accrual gross cost of the Observatory’s research activities expressed as an average cost per 1,000 head of WA population.

Measure

The cost of research activities per 1,000 head of WA population was \$213 in 2001–2002, (\$191 in 2000–2001) an increase of \$23 on the ‘Target’ cost of \$190 in the 2001–2002 Budget Statements.



AUDITOR GENERAL

To the Parliament of Western Australia

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
PERFORMANCE INDICATORS FOR THE YEAR ENDED JUNE 30, 2002**Matters Relating to the Electronic Presentation of the Audited Performance Indicators**

This audit opinion relates to the performance indicators of the Department of Conservation and Land Management for the year ended June 30, 2002 included on the Department's web site. The Executive Director is responsible for the integrity of the Department's web site. I have not been engaged to report on the integrity of the Department's web site. The audit opinion refers only to the performance indicators named below. It does not provide an opinion on any other information which may have been hyperlinked to or from these performance indicators. If users of this opinion are concerned with the inherent risks arising from electronic data communications, they are advised to refer to the hard copy of the audited performance indicators to confirm the information included in the audited performance indicators presented on this web site.

Scope

I have audited the key effectiveness and efficiency performance indicators of the Department of Conservation and Land Management for the year ended June 30, 2002 under the provisions of the Financial Administration and Audit Act 1985.

The Executive Director is responsible for developing and maintaining proper records and systems for preparing and presenting performance indicators. I have conducted an audit of the key performance indicators in order to express an opinion on them to the Parliament as required by the Act. No opinion is expressed on the output measures of quantity, quality, timeliness and cost.

My audit was performed in accordance with section 79 of the Act to form an opinion based on a reasonable level of assurance. The audit procedures included examining, on a test basis, evidence supporting the amounts and other disclosures in the performance indicators, and assessing the relevance and appropriateness of the performance indicators in assisting users to assess the Department's performance. These procedures have been undertaken to form an opinion as to whether, in all material respects, the performance indicators are relevant and appropriate having regard to their purpose and fairly represent the indicated performance.

The audit opinion expressed below has been formed on the above basis.

Audit Opinion

In my opinion, the key effectiveness and efficiency performance indicators of the Department of Conservation and Land Management are relevant and appropriate for assisting users to assess the Department's performance and fairly represent the indicated performance for the year ended June 30, 2002.

D D R PEARSON
AUDITOR GENERAL
September 25, 2002

FINANCIAL STATEMENTS

The accompanying financial statements of the Department of Conservation and Land Management have been prepared in compliance with the provisions of the Financial Administration and Audit Act 1985 from proper accounts and records to present fairly the financial transactions for the period ending 30 June 2002 and the financial position as at 30 June 2002.

At the date of signing we are not aware of any circumstances which would render the particulars included in the financial statements misleading or inaccurate.



Keiran McNamara
ACCOUNTABLE OFFICER
15 August 2002

John Byrne
PRINCIPAL ACCOUNTING OFFICER
15 August 2002

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 30 JUNE 2002**

	Note	2001–2002 (\$'000)	2000–2001 (\$'000)
COST OF SERVICES			
Expenses from Ordinary Activities	4		
Employee expenses	5	64,039	70,042
Supplies and services	6	43,302	53,479
Harvesting		0	25,401
Capital user charge	7	11,237	0
Depreciation expense	8	10,585	10,658
Borrowing costs expense		492	6,855
Bad and doubtful debt expenses		343	373
Administration expenses	9	6,481	6,235
Accommodation expenses		3,329	3,402
Grants & subsidies	10	754	691
Total cost of services		<u>140,562</u>	<u>177,136</u>
Revenue from Ordinary Activities			
User charges and fees	11	7,509	49,775
Commonwealth grants and contributions		9,607	13,172
Net profit on disposal of non-current assets	12	12	289
Other revenues from ordinary activities	13	42,688	51,776
Total revenues from ordinary activities		<u>59,816</u>	<u>115,012</u>
NET COST OF SERVICES		<u>(80,746)</u>	<u>(62,124)</u>
REVENUES FROM GOVERNMENT			
Output Appropriations	14	96,812	74,291
Liabilities assumed by the Treasurer		(1,059)	(2,556)
Resources received free of charge		833	555
Net assets assumed (Transferred)	15	(2,717)	(644)
Total revenues from Government		<u>93,869</u>	<u>71,646</u>
Change in net assets before extraordinary item		13,123	9,522
Net increase/(decrease) in asset revaluation reserve		124,942	8,727
Total changes in equity other than those resulting from transactions with WA State Government as owners.		<u>138,065</u>	<u>18,249</u>

The Statement of Financial Performance should be read in conjunction with the accompanying notes.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2002

	Note	2001–2002 (\$'000)	2000–2001 (\$'000)
CURRENT ASSETS			
Cash assets	28(a)	30,393	22,441
Restricted cash assets	16	69	195
Inventories	17	2,681	2,371
Receivables	18	7,038	8,705
Amounts receivable for outputs	19	314	0
Prepayments	20	732	1,102
Total Current Assets		41,227	34,814
NON-CURRENT ASSETS			
Restricted cash assets	16	2,000	1,529
Amounts receivable for outputs	19	10,500	0
Property, plant, equipment and vehicles	21	2,055,429	1,939,537
Other assets	22	58,238	48,011
Total Non-Current Assets		2,126,167	1,989,077
TOTAL ASSETS		2,167,394	2,023,891
CURRENT LIABILITIES			
Payables	23	6,257	6,271
Interest-bearing liabilities	24	0	123
Provisions	25	9,210	8,443
Other liabilities	26	3,959	3,283
Total Current Liabilities		19,426	18,120
NON-CURRENT LIABILITIES			
Interest-bearing liabilities	24	0	3,687
Provisions	25	5,342	4,846
Total Non-Current Liabilities		5,342	8,533
TOTAL LIABILITIES		24,768	26,653
EQUITY			
	27		
Equity Contribution to Government		(235,052)	(234,998)
Equity Contribution from Government		7,377	0
Reserves		1,979,326	1,854,384
Accumulated surplus/(deficit)		390,975	377,852
Total Equity		2,142,626	1,997,238
TOTAL LIABILITIES AND EQUITY		2,167,394	2,023,891

The Statement of Financial Position should be read in conjunction with the accompanying notes.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED 30 JUNE 2002

	Note	2001–2002 (\$'000)	2000–2001 (\$'000)
CASH FLOWS FROM GOVERNMENT			
Output appropriations		85,998	67,367
Capital appropriations		7,365	6,924
Holding account drawdowns		0	0
Net cash provided by Government		<u>93,363</u>	<u>74,291</u>
UTILISED AS FOLLOWS:			
CASH FLOWS FROM OPERATING ACTIVITIES			
Payments			
Employee costs		(58,670)	(66,100)
Superannuation		(5,103)	(6,964)
Supplies and services		(42,364)	(52,674)
Harvesting costs		0	(25,003)
Borrowing costs		(581)	(8,503)
GST payments on purchases		(6,059)	(6,687)
GST payments to taxation authority		(208)	(951)
Capital user charge		(10,525)	0
Other payments		(11,308)	(9,676)
Receipts			
Sale of goods and services		32,320	91,757
User charges and fees		13,163	15,949
Commonwealth grants and contributions		9,357	12,721
Interest received		1,343	841
GST receipts on sales		4,001	6,084
GST receipts from taxation authority		1,683	1,103
Other receipts		6,125	3,847
Net cash provided by/(used in) operating activities	28	<u>(66,826)</u>	<u>(44,256)</u>
CASH FLOWS FROM INVESTING ACTIVITIES			
Proceeds from sale of non-current physical assets		1,394	2,045
Purchase of non-current physical assets		(15,824)	(19,242)
Net cash provided by/(used in) investing activities		<u>(14,430)</u>	<u>(17,197)</u>
CASH FLOWS FROM FINANCING ACTIVITIES			
Repayment of borrowings		(3,810)	(8,200)
Net cash provided by/(used in) financing activities		<u>(3,810)</u>	<u>(8,200)</u>
Net increase/(decrease) in cash held		8,297	4,638
Cash at the beginning of the financial year		24,165	19,527
CASH AT THE END OF THE FINANCIAL YEAR	28(a)	<u>32,462</u>	<u>24,165</u>

The Statement of Cash Flows should be read in conjunction with the accompanying notes.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
OUTPUT SCHEDULE OF EXPENSES AND REVENUES
FOR THE YEAR ENDED 30 JUNE 2002**

	OUTPUT 1 NATURE CONSERVATION (\$'000)		OUTPUT 2 SUSTAINABLE FOREST MANAGEMENT (\$'000)		OUTPUT 3 RESOURCES SUPPLIED TO THE CONSERVATION COMMISSION (\$'000)		OUTPUT 4 PARKS AND VISITOR SERVICES (\$'000)		OUTPUT 5 ASTRONOMICAL SERVICES (\$'000)		TOTAL (\$'000)	
	2001-2002	2000-2001	2001-2002	2000-2001	2001-2002	2000-2001	2001-2002	2000-2001	2001-2002	2000-2001	2001-2002	2000-2001
Note												
COST OF SERVICES												
Expenses from Ordinary Activities												
4 Employee expenses	28,128	27,074	16,207	24,701	350	200	18,773	17,455	581	612	64,039	70,042
5 Supplies and services	17,347	14,165	9,360	26,719	194	41	16,229	12,391	172	163	43,302	53,479
6 Harvesting	0	0	0	25,401	0	0	0	0	0	0	0	25,401
7 Capital user charge	2,310	0	2,627	0	2	0	6,107	0	191	0	11,237	0
8 Depreciation expense	2,174	1,966	2,473	3,554	9	2	5,749	4,955	180	181	10,585	10,658
Borrowing costs expense	128	329	0	5,613	0	0	364	913	0	0	492	6,855
Bad and doubtful debt expenses	13	0	312	354	0	0	18	19	0	0	343	373
9 Administration expenses	2,954	2,613	1,629	1,775	102	28	1,752	1,783	44	36	6,481	6,235
Accommodation expenses	1,253	1,153	725	986	27	16	1,305	1,229	19	18	3,329	3,402
10 Grants & subsidies	754	691	0	0	0	0	0	0	0	0	754	691
Total cost of services	55,061	47,991	33,333	89,103	684	287	50,297	38,745	1,187	1,010	140,562	177,136
Revenue from Ordinary Activities												
11 User charges and fees	0	0	0	42,997	0	0	7,509	6,778	0	0	7,509	49,775
Commonwealth grants and contributions	9,150	8,600	302	528	0	0	155	4,044	0	0	9,607	13,172
12 Net profit on disposal of non-current assets	26	53	32	155	0	0	(46)	81	0	0	12	289
13 Other revenues from ordinary activities	6,497	3,831	25,809	40,970	5	5	10,229	6,851	148	119	42,688	51,776
Total revenues from ordinary activities	15,673	12,484	26,143	84,650	5	5	17,847	17,754	148	119	59,816	115,012
NET COST OF SERVICES	(39,388)	(35,507)	(7,190)	(4,453)	(679)	(282)	(32,450)	(20,991)	(1,039)	(891)	(80,746)	(62,124)
REVENUES FROM GOVERNMENT												
14 Output appropriations	44,199	40,711	14,657	7,374	555	288	36,283	25,212	1,118	706	96,812	74,291
Liabilities assumed by the Treasurer	(458)	(1,107)	(271)	(804)	(5)	(7)	(316)	(610)	(9)	(28)	(1,059)	(2,556)
Resources received free-of-charge	360	182	214	187	5	1	247	181	7	4	833	555
15 Net assets assumed (transferred)	0	7	(2,717)	(4,700)	0	0	0	4,049	0	0	(2,717)	(644)
Total revenues from Government	44,101	39,793	11,883	2,057	555	282	36,214	28,832	1,116	682	93,869	71,646
Change in net assets	4,713	4,286	4,693	(2,396)	(124)	0	3,764	7,841	77	(209)	13,123	9,522

The Output Schedule of Expenses and Revenue should be read in conjunction with the accompanying notes.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
SUMMARY OF CONSOLIDATED FUND APPROPRIATIONS AND REVENUE ESTIMATES (NOTE 37)
FOR THE YEAR ENDED 30 JUNE 2002

	2001–2002			2000–2001		
	Estimate \$'000	Actual \$'000	Variance \$'000	Estimate \$'000	Actual \$'000	Variance \$'000
PURCHASE OF OUTPUTS						
Item 66 Net amount appropriated to purchase outputs	102,255	96,664	(5,591)	96,664	67,174	29,490
Amount Authorised by Other Statutes						
- Salaries and Allowances Act 1975	173	148	(25)	148	193	(45)
Total appropriations provided to purchase outputs	102,428	96,812	(5,616)	96,812	67,367	29,445
DETAILS OF EXPENDITURE BY OUTPUTS						
Nature Conservation	64,419	55,061	(9,358)	55,061	47,991	7,070
Sustainable Forest Management	39,158	33,333	(5,825)	33,333	89,103	(55,770)
Resources and services provided to the Conservation Commission of Western Australia	555	684	129	684	287	397
Parks and Visitor Services	48,155	50,297	2,142	50,297	38,745	11,552
Astronomical Services	1,211	1,187	(24)	1,187	1,010	177
Total Cost of Outputs	153,498	140,562	(12,936)	140,562	177,136	(36,574)
Less retained revenue	(52,061)	(60,649)	(8,588)	(60,649)	(115,567)	54,918
Net Cost of Outputs	101,437	79,913	(21,524)	79,913	61,569	18,344
Adjustment for movement in cash balances and other accrual items	991	16,899	15,908	16,899	5,798	11,101
Total appropriations provided to purchase outputs	102,428	96,812	(5,616)	96,812	67,367	29,445
CAPITAL						
Item 155 Capital Contribution (2000–01 Amount provided for capital services)	7,365	7,365	0	7,365	6,924	441
Capital Expenditure						
Capital appropriations	7,365	7,365	0	7,365	6,924	441
Adjustment for movement in cash balances and other funding sources	8,700	8,459	(241)	8,459	12,318	(3,859)
Total capital expenditure	16,065	15,824	(241)	15,824	19,242	(3,418)
GRAND TOTAL OF APPROPRIATIONS	109,793	104,177	(5,616)	104,177	74,291	29,886
DETAIL OF REVENUE ESTIMATES						
Revenues disclosed as Administered Revenues	103	110	7	110	85	25

The Summary of Consolidated Fund Appropriations, Variance to Actual and Budget should be read in conjunction with the accompanying notes. This Summary provides the basis for the Explanatory Statement information requirements of TI 945.

Footnote: The comparative figures for 2000–01 have been revised to report accrual information rather than the cash information reported in this summary for 2000–01, to provide more meaningful comparative information with the figures presented for the current financial year for the purposes of the Explanatory Statement required by Treasurer's Instruction 945. The financial effect in the current year of this change in reporting is that the total cost of outputs for 2000–01 reported in this summary is \$M140.6 where as in the summary for 2000–01 the total cost of outputs was \$M168.9 .

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

1. DEPARTMENTAL MISSION AND FUNDING

In partnership with the community, to conserve Western Australia's natural diversity of native plants, animals, and other organisms, and the lands and waters entrusted to the Department for the benefit and appreciation of present and future generations.

In 2001–2002 the Department was predominantly funded by Parliamentary appropriations. The Department provided the outputs as disclosed at Note 3. Government policy determines the fees charged.

In the process of reporting on the Department as a single entity, all intra-entity transactions and balances have been eliminated.

As part of the State Government's Machinery of Government framework announced on 21 June 2001, the Department will be renamed the Department of Conservation when legislation is amended.

2. SIGNIFICANT ACCOUNTING POLICIES

The following accounting policies have been adopted in the preparation of the financial statements. Unless otherwise stated these policies are consistent with those adopted in the previous year.

General Statement

The financial statements constitute a general purpose financial report which has been prepared in accordance with Australian Accounting Standards, Statements of Accounting Concepts and other authoritative pronouncements of the Australian Accounting Standards Board, and Urgent Issues Group (UIG) Consensus Views as applied by the Treasurer's Instructions. Several of these are modified by the Treasurer's Instructions to vary application, disclosure, format and wording. The Financial Administration and Audit Act and the Treasurer's Instructions are legislative provisions governing the preparation of financial statements and take precedence over Australian Accounting Standards, Statements of Accounting Concepts and other authoritative pronouncements of the Australian Accounting Standards Board, and UIG Consensus Views. The modifications are intended to fulfil the requirements of general application to the public sector, together with the need for greater disclosure and also to satisfy accountability requirements.

If any such modification has a material or significant financial effect upon the reported results, details of that modification and where practicable, the resulting financial effect, are disclosed in individual notes to these financial statements.

Basis of accounting

The financial statements have been prepared in accordance with Australian Accounting Standard AAS29.

The statements have been prepared on an accrual basis using historic cost accounting, with the exception of certain non-current assets and liabilities, which, as noted, are measured at fair value.

Administered assets, liabilities, expenses and revenues are not integral to the Department in carrying out its functions and are disclosed in the notes to the financial statements, forming part of the general purpose financial report of the Department. The administered items are disclosed on the same basis as is described above for the financial statements of the Department. The administered assets, liabilities, expenses and revenues are those which the Government requires the Department to administer on its behalf. The assets do not render any service potential or future economic benefits to the Department, the liabilities do not require the future sacrifice of service potential or future economic benefits of the Department, and the expenses and revenues are not attributable to the Department.

As the administered assets, liabilities, expenses and revenues are not recognised in the principal financial statements of the Department, the disclosure requirements of Australian Accounting Standard AAS 33, Presentation and Disclosure of Financial Instruments, are not applied to administered transactions.

a) Output Appropriations

Output Appropriations are recognised as revenues in the period in which the Department gains control of the appropriated funds. The Department gains control of appropriated funds at the time those funds are deposited into the Department's bank account or credited to the holding account held at the Department of Treasury and Finance. Refer to Note 14 for further commentary on output appropriations.

b) Contributed Equity

Under UIG 38 "Contributions by Owners Made to Wholly-Owned Public Sector Entities" transfers in the nature of equity contributions must be designated by the Government (owners) as contributions by owners (at the time of, or prior to transfer) before such transfers can be recognised as equity contributions in the financial statements. Capital contributions (appropriations) have been designated as contributions by owners and have been credited directly to Contributed Equity in the Statement of Financial Position. All other transfers have been recognised in the Statement of Financial Performance. Prior to the current reporting period, capital appropriations were recognised as revenue in the

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 30 JUNE 2002

Statement of Financial Performance. Capital appropriations which are repayable to the Treasurer are recognised as liabilities. Refer to Note 14 for further commentary on the application of UIG 38.

Aircraft	5 – 6 years
Boats	5 years
Plant and Machinery	4 – 10 years
Heavy Fleet Vehicles	5 years
Recreation / Tourism Assets	10 – 20 years

c) Net Appropriation Determination

Pursuant to section 23A of the Financial Administration and Audit Act, the Treasurer may make a determination providing for prescribed revenue to be retained by a department. Receipts in respect of all revenues recognised in the Statement of Financial Performance are the subject of a net appropriation determination by the Treasurer.

The net appropriation determination allows all prescribed revenues to be retained.

Prescribed revenues include moneys received other than from taxes, royalties and Commonwealth general purpose grants.

Retained revenues may only be applied to the outputs specified in the 2001–2002 Budget Statements.

d) Grants and Other Contributions Revenue

Grants, donations, gifts and other non-reciprocal contributions are recognised as revenue when the Department obtains control over the assets comprising the contributions. Control is normally obtained upon their receipt. Contributions are recognised at their fair value. Contributions of services are only recognised when a fair value can be reliably determined and the services would be purchased if not donated.

e) Operating Accounts

Amounts appropriated are deposited into the Department's bank account and any revenues that are the subject of net appropriation determinations are deposited into the account. Revenues not subject to net appropriation determinations are credited to the Consolidated Fund. All payments of the Department are made from the operating account.

f) Depreciation of non-current assets

All non-current assets having a limited useful life are systematically depreciated over their useful lives in a manner that reflects the consumption of their future economic benefits.

Depreciation is calculated on the straight-line basis, using rates which are reviewed annually. Useful lives for each class of depreciable asset are:

Buildings	20 – 40 years
Furniture	10 years
Office Equipment	6 – 7 years
Computer Equipment	4 years

g) Revaluation of Land, Buildings and Infrastructure

The Department has a policy of valuing land, buildings and infrastructure at fair value.

Freehold land held in the name of the Executive Director, Crown land in the conservation estate and vested State Forest are valued by the Valuer General on either a market value or current use basis. The Valuer General provided a revaluation for 2001–2002 that has been recognised in the financial statements.

Crown land is reserved for or held by the Conservation Commission of Western Australia for the conservation and land management purposes prescribed by the Conservation and Land Management Act 1984. Should the land no longer be reserved or held for these purposes the land becomes Crown land within the meaning of the Land Administration Act 1997 and thus would no longer be vested in the Conservation Commission. Therefore land of this nature cannot be sold by the Department to meet liabilities or fund activities.

The value of tourism facilities standing on the land is reported separately from the Valuer General's land valuation.

h) Recognition of Revenue

Revenue from the sale of goods and disposal of other assets and the rendering of services, is recognised when the Department has passed control of the goods or other assets or delivery of the service to the customer.

i) Employee entitlements

Annual leave

This entitlement is recognised at current remuneration rates and is measured at the amount unpaid at the reporting date in respect to employees' service up to that date.

Long Service Leave

Leave entitlements are calculated at current remuneration rates. A liability for long service leave is recognised after an employee has completed four years of service. An actuarial assessment of long service leave undertaken by PricewaterhouseCoopers in 2000 determined that the liability measured using the short hand method was not materially different from the liability measured using the present value of expected future payments.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

This method of measurement of the liability is consistent with the requirements of Australian Accounting Standard AAS 30 "Accounting for Employee Entitlements".

Superannuation

Staff may contribute to the Pension Scheme, a defined benefits pension scheme now closed to new members, or to the Gold State Superannuation Scheme, a defined benefit lump sum scheme now also closed to new members. All staff who do not contribute to either of these schemes become non-contributory members of the West State Superannuation Scheme, an accumulation fund complying with the Commonwealth Government's Superannuation Guarantee (Administration) Act 1992. All of these schemes are administered by the Government Employees Superannuation Board (GESB)

The superannuation expense comprises the following elements:

- i) change in the unfunded employer's liability in respect of current employees who are members of the Gold State Superannuation Scheme. Employer contributions have been paid to the Gold State Superannuation scheme since the inception of the scheme in 1987; and
- ii) employer contributions paid to the Gold State Superannuation Scheme and the West State Superannuation Scheme.

The superannuation expense does not include payment of pensions to retirees, as this does not constitute part of the cost of services provided by the Department in the current year.

A revenue "Liabilities assumed by the Treasurer" equivalent to (i) is recognised under Revenues from Government in the Statement of Financial Performance as the unfunded liability is assumed by the Treasurer. The GESB makes the benefit payments and is recouped by the Treasurer.

The total unfunded liability assumed by the Treasurer for current employees in the Gold State Superannuation Scheme for pre 1987 service is \$12.39M. (2000-2001 \$13.44M)

The total unfunded liability assumed by the Treasurer in respect of the Pension Scheme pensions that will be payable to current employees when they retire is \$2.49M. (2000-2001 \$2.86M).

j) Leases

The Department has entered into a number of operating lease arrangements for the rent of buildings, office equipment and motor vehicles where the lessor

effectively retains all of the risks and benefits incidental to ownership of the items held under the operating leases. Equal instalments of the lease payments are charged to the operating statement over the lease term as this is representative of the pattern of benefits to be derived from the leased property.

The Department had no finance lease commitments during 2001-2002.

k) Receivables

Receivables are recognised at the amounts receivable as they are due for settlement no more than 30 days from the date of recognition.

Collectability of accounts receivable is reviewed on an ongoing basis. Debts that are known to be uncollectable are written off. A provision for doubtful debts is raised where reasonable doubts as to collection exist.

l) Accrued Salaries

The Treasury accrued salaries suspense account (refer note 16) consists of amounts paid annually into a suspense account maintained at Treasury over a period of 10 financial years to meet the additional cash outflow in each eleventh year when 27 pay days occur in that year instead of the normal 26. No interest is received on this account.

Accrued salaries (refer note 26) represent the amount due to staff but unpaid at the end of the financial year, as the end of the last pay period for that financial year does not coincide with the end of the financial year. Accrued salaries are settled within a few days of the financial year end. The Department considers the carrying amount of accrued salaries to be equivalent to the net fair value.

m) Payables

Payables, including accruals not yet billed, are recognised when the Department becomes obliged to make future payments as a result of a purchase of assets or services. Payables are generally settled within 30 days.

n) Inventories

Inventories have been valued at the lower of cost and net realisable value, apart from publications that are valued at the wholesale price. Nursery stock at the Narrogin Nursery is valued at cost including overheads.

o) Accrued Superannuation

Accrued superannuation represents the Department's estimated liability at the end of year for employer superannuation contributions to the Government Employees Superannuation Board. The Department receives fortnightly invoices in arrears.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002 (\$'000)	2000–2001 (\$'000)		2001–2002 (\$'000)	2000–2001 (\$'000)
10. GRANTS & SUBSIDIES			13. OTHER OPERATING REVENUES		
Recurrent			Interest received	1,343	841
Oil Mallee Association of WA	319	50	State Grants	6,179	3,771
Green Skills Inc	129	153	Other Revenue		
Oil Mallee Company	50	35	- Mining Compensation	3,534	3,520
World Wide Fund for Nature	46	50	- Sale of Publications	462	477
Kalgoorlie Boulder Urban Landcare Group	30	0	- Nursery Sales	72	4,571
Urban Bushland Council	17	18	- Other Revenues	1,059	1,757
Central Oil Mallee Region Inc	14	0	- Agency Sharefarming revenue	0	7,090
Eastern Wheatbelt Oil Mallee	14	0	- Recoups and Private Grants	30,039	29,749
Midwest Oil Mallee Association	14	0		<u>42,688</u>	<u>51,776</u>
Upper Great Southern Oil Mallee Growers	14	0	14. REVENUES (TO)/FROM GOVERNMENT		
Conservation Council of WA	13	32	Appropriation revenue received during the year:		
Cockburn Wetlands Education Centre	10	10	- Output Appropriation (i)	96,812	67,367
Beverley Natural History Society	0	5	- Capital Appropriation (ii)	0	6,924
Birds Australia Group	0	12		<u>96,812</u>	<u>74,291</u>
Malleefowl Preservation Group	0	16	The following liabilities have been assumed by the Treasurer during the financial year: (iii)		
Moore River Catchment Group Inc	0	15	- Superannuation	(1,059)	(2,556)
National Trust of Australia	0	10	Total liabilities assumed by the Treasurer	<u>(1,059)</u>	<u>(2,556)</u>
Vasse Wonnerup Land Conservation District Committee	0	5	Resources received free-of-charge (iv)		
WA National Parks & Reserves	0	6	Determined on the basis of the following estimates provided by agencies:		
Wildflower Society of WA	0	7	Department of Land Administration	631	287
WA State Coastal Conference	0	5	Crown Solicitor's Office	117	178
Greening Western Australia	0	20	Office of the Auditor General	77	90
Yenyenning Lakes Management Group	0	11	Agriculture Western Australia	8	0
Trees Southwest	0	36		<u>833</u>	<u>555</u>
Shire of Ravensthorpe	0	60	(i) Output appropriations are accrual amounts as from 1 July 2001, reflecting the full price paid for outputs purchased by the Government. The appropriation revenue comprises a cash component and a receivable (asset). The receivable (holding account) comprises the depreciation expense for the year and any agreed increase in leave liability during the year.		
Various Grants under \$5,000	84	135	(ii) Capital appropriations were revenue in 2001 (year ended 30 June 2001). From 1 July 2001, capital appropriations, termed Capital Contributions, have been designated as contributions by owners and are credited straight to equity in the Statement of Financial Position.		
	<u>754</u>	<u>691</u>	(iii) Where a liability has been assumed by the Treasurer or other entity, the department recognises revenues equivalent to the amount of the liability assumed and an expense relating to the nature of the event or events that initially gave rise to the liability.		
11. USER CHARGES AND FEES					
Royalties and Timber Sales					
- Hardwood Royalties	0	9,313			
- Softwood stumpages	0	5,482			
- Sandalwood sales	0	5,560			
- Recovery of Hardwood Harvesting Costs	0	12,856			
- Recovery of Softwood Harvesting Costs	0	9,786			
Parks and Visitor Services revenue	7,509	6,778			
	<u>7,509</u>	<u>49,775</u>			
12. NET PROFIT/(LOSSES) ON DISPOSAL OF NON-CURRENT ASSETS					
Profit on Sale of Non-Current Assets	12	289			
Gross Proceeds on disposal of Assets	1,347	888			

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002 (\$'000)	2000–2001 (\$'000)		2001–2002 (\$'000)	2000–2001 (\$'000)
(iv) Where assets or services have been received free of charge or for nominal consideration, the department recognises revenues equivalent to the fair value of the assets and/or the fair value of those services that can be reliably determined and which would have been purchased if not donated, and those fair values shall be recognised as assets or expenses, as applicable.			21. PROPERTY, PLANT, EQUIPMENT AND VEHICLES		
15. NET ASSETS ASSUMED (TRANSFERRED)			Land at valuation 01/07/01 (i)	2,001,387	
During 2001–2002 State forest valued at \$2.7M was transferred to the Edith Cowan University.	(2,717)	(644)	Land at valuation 01/07/00		1,879,546
			Land at cost	3,230	8,875
16. RESTRICTED CASH ASSETS			Sub Total	<u>2,004,617</u>	<u>1,888,421</u>
Current			Buildings at valuation 1996–97, 1997–98, 1998–99	32,647	33,094
Cash amounts in suspense account (i)	69	195	Accumulated Depreciation	(7,919)	(6,391)
	<u>69</u>	<u>195</u>	Sub Total	<u>24,728</u>	<u>26,703</u>
Non-current			Buildings at cost	11,513	10,471
Accrued salaries suspense account (ii)	2,000	1,529	Accumulated Depreciation	(1,371)	(948)
	<u>2,000</u>	<u>1,529</u>	Sub Total	<u>10,142</u>	<u>9,523</u>
(i) Cash in this account relates to unidentified amounts received.			Plant and Equipment at valuation, 1995–96	3,894	4,207
(ii) Amount held in the suspense account is only to be used for the purpose of meeting the 27th pay in a financial year that occurs every 11 years.			Accumulated Depreciation	(3,384)	(3,434)
17. INVENTORIES			Sub Total	<u>510</u>	<u>773</u>
Publications	2,504	2,264	Plant and Equipment at cost	21,322	18,334
Souvenirs	171	100	Accumulated Depreciation	(11,179)	(9,279)
Nursery Stock	6	7	Sub Total	<u>10,143</u>	<u>9,055</u>
	<u>2,681</u>	<u>2,371</u>	Vehicles at cost	15,302	13,907
18. RECEIVABLES			Accumulated Depreciation	(10,013)	(8,845)
Receivables	7,207	9,172	Sub Total	<u>5,289</u>	<u>5,062</u>
Provision for doubtful debts	(1,292)	(965)	Total Property, Plant, Equipment and Vehicles	<u>2,055,429</u>	<u>1,939,537</u>
GST Receivable from ATO	1,123	498	(i) The revaluation of land was performed in July 2001 in accordance with an independent valuation by the Valuer General's Office. Fair value of land has been determined on the basis of a combination of current market buying values where the land could be sold readily in the real estate market and non market values for land not normally sold in the real estate market. The valuations were made in accordance with a regular policy of annual revaluation.		
	<u>7,038</u>	<u>8,705</u>	22. OTHER NON-CURRENT ASSETS		
19. AMOUNTS RECEIVABLE FOR OUTPUTS			Parks and Visitors Facilities at valuation, 1997–98, 2001–02	63,519	55,307
Current	314	0	Accumulated Depreciation	(15,941)	(12,714)
Non Current	10,500	0	Sub Total	<u>47,578</u>	<u>42,593</u>
	<u>10,814</u>	<u>0</u>	Parks and Visitors Facilities at cost	7,709	5,404
This asset represents the non-cash component of output appropriations. It is restricted in that it can only be used for asset replacement or payment of leave liability.			Accumulated Depreciation	(812)	(364)
20. OTHER ASSETS			Sub Total	<u>6,897</u>	<u>5,040</u>
Current			Work in Progress	3,763	378
Prepayments	609	557	Total Other Non-Current Assets	<u>58,238</u>	<u>48,011</u>
Earned Revenue	123	545			
	<u>732</u>	<u>1,102</u>			

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002	2000–2001		2001–2002	2000–2001
	(\$'000)	(\$'000)		(\$'000)	(\$'000)

Reconciliations

Reconciliations of the carrying amounts of asset categories at the beginning and end of the current financial year are set out below:

	2001–2002					
	Plant, Equipment & Vehicles	Parks & Visitor Facilities	Land	Buildings	Assets under construction	Total
Carrying amount at start of year	14,890	47,633	1,888,420	36,227	378	1,987,548
Additions	7,515	2,249	3,230	1,784	3,385	18,163
Disposals	1,749	45	946	890	0	3,630
Revaluation increments	0	8,312	116,630	0	0	124,942
Depreciation	4,712	3,674	0	2,199	0	10,585
Write off assets	0	0	0	0	0	0
Assets transferred to other Government departments	2	0	2,717	52	0	2,771
Carrying amount at end of year	15,942	54,475	2,004,617	34,870	3,763	2,113,667

23. PAYABLES

Trade payables	6,257	6,271
	<u>6,257</u>	<u>6,271</u>

24. INTEREST BEARING LIABILITIES

Current borrowings	0	123
Non-current borrowings	0	3,687
Total Borrowings	<u>0</u>	<u>3,810</u>

25. PROVISIONS

Employee Entitlements

The aggregate employee entitlement liability recognised and included in the financial statements is as follows:

Provision for employee entitlements:

Current

Current annual leave	4,827	4,300
Current long service leave	4,383	4,143
	<u>9,210</u>	<u>8,443</u>

Non-current

Long service leave	5,342	4,846
	<u>5,342</u>	<u>4,846</u>

Total Provisions

	<u>14,552</u>	<u>13,289</u>
--	---------------	---------------

26. OTHER LIABILITIES

Current		
Accrued expenditure	1,730	1,628
Accrued Wages & Salaries	1,208	1,503
Accrued Superannuation	97	63
Accrued Capital User charge	712	0
Accrued Loan Interest	0	89
Unearned Revenue	212	0
	<u>3,959</u>	<u>3,283</u>

27. EQUITY

Equity represents the residual interest in the net assets of the Department. The Government holds the equity interest in the Department on behalf of the community.

Distribution of equity to Government

Opening balance	(234,998)	0
-----------------	-----------	---

The following forestry assets and liabilities were distributed to Government for transfer to the Forest Products Commission for the year.

Forest Infrastructure	0	(31,660)
Standing Timber	0	(261,859)
Plant & Equipment	(2)	(12,237)
Buildings	(52)	(2,083)
Land	0	(710)
Inventories	0	(3,006)
Petty Cash	0	(4)
Total Assets	<u>(54)</u>	<u>(311,559)</u>

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002	2000–2001
	(\$'000)	(\$'000)
27. EQUITY (continued)		
Non-Current leave	0	813
WA Treasury Corporation Debt	0	75,748
Total liabilities	0	76,561
Closing balance	(235,052)	(234,998)
Contributed equity		
Opening balance	0	0
Capital contributions (i)	7,365	0
Assets transferred from the Forest Products Commission	12	0
Closing balance	7,377	0

(i) From 1 July 2001, capital appropriations, termed Capital Contributions, have been designated as contributions by owners and are credited straight to equity in the Statement of Financial Position.

Asset Revaluation Reserve

Balance at beginning of year	1,854,384	1,845,657
Revaluation during the year:		
- Land	116,630	7,445
- Buildings	0	1,282
- Parks & Visitors assets	8,312	0
Balance at end of year	1,979,326	1,854,384

The Asset Revaluation Reserve represents that portion of equity resulting from the revaluation of non-current assets. The balance at the end of the year of \$M1,979 is comprised of Land (\$M1,969.8), Parks & Visitors Assets (\$M8.3) and Buildings (\$M1.2).

Accumulated Surplus / (Deficit)

Balance at beginning of year	377,852	368,330
Change in net assets resulting from operations and restructuring	13,123	9,522
Balance at the end of the year	390,975	377,852

28. NOTES TO THE STATEMENT OF CASH FLOWS
(a) Reconciliation of cash

Cash assets	30,393	22,441
Restricted cash assets (refer to note 16)	2,069	1,724
	32,462	24,165

	2001–2002	2000–2001
	(\$'000)	(\$'000)
(b) Reconciliation of net cost of services to net cash flows provided by / (used in) operating activities		
Net cost of services	(80,746)	(62,124)
Non-cash items:		
Depreciation expense	10,585	10,658
Superannuation liability assumed by the Treasurer	(1,059)	(2,556)
Resources received free-of-charge (Profit) / loss on sale of assets	833	555
	(12)	(289)
(Increase) / decrease in current assets:		
Accounts receivables	1,980	11,496
Inventories	(310)	9,811
Prepayments	(52)	452
Other Current Assets	748	53
Net GST Receipts (Payment)	(583)	(451)
Increase / (decrease) in employee provisions	1,003	(2,022)
Increase / (decrease) in other current liabilities	112	(2,475)
Transfer of Assets and Liabilities	0	(2,197)
Accounts Payable	(37)	(2,870)
Accrued Capital User charge	712	0
Accrued Logging Costs	0	(2,298)
Net Cash Used in Operating Activities	(66,826)	(44,256)

29. RESOURCES PROVIDED FREE-OF-CHARGE

During the year the following resources were provided to other agencies free of charge for functions outside the normal operations of the Department:

Conservation Commission of Western Australia (expenses)	58	302
	58	302

30. COMMITMENTS FOR EXPENDITURE

Non-cancellable operating lease commitments

Not later than 1 year	4,114	3,739
Later than 1 year and not later than 5 years	15,441	14,112
Later than 5 years	4,193	3,573
	23,748	21,424

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002 (\$'000)	2000–2001 (\$'000)	2001–2002 2000–2001 (\$'000) (\$'000)				
31. FINANCIAL INSTRUMENTS							
			Fixed Interest Rate Maturity				
	Weighted Average Effective Interest Rate %	Variable Interest Rate \$000	Less than 1 Year \$000	1 to 5 Years \$000	More than 5 Years \$000	Non- Interest Bearing \$000	Total \$000
2002							
Financial Assets							
Cash assets	4.48	30,393	-	-	-	-	30,393
Restricted cash assets	4.48	69	-	-	-	2,000	2,069
Receivables		-	-	-	-	7,206	7,206
		30,462	-	-	-	9,206	39,668
Financial Liabilities							
Payables		-	-	-	-	6,257	6,257
		-	-	-	-	6,257	6,257
2001							
Financial assets	5.66	22,636	-	-	-	9,250	31,886
Financial liabilities	8.95	-	1,515	1,441	854	6,271	10,081

32. REMUNERATION AND RETIREMENT BENEFITS OF SENIOR OFFICERS

Remuneration

The number of senior officers, whose total of fees, salaries and other benefits received, or due and receivable, for the financial year, fall within the following bands are:

\$	2001–2002	2000–2001
80,000 – 90,000	0	1
90,000 – 100,000	1	0
100,000 – 110,000	1	1
110,000 – 120,000	6	4
120,000 – 130,000	0	1
160,000 – 170,000	1	1
170,000 – 180,000	0	0
200,000 – 210,000	0	1
280,000 – 290,000	1	0

The total remuneration of senior officers is:

1,327	1,134
-------	-------

Retirement Benefits

In respect of Senior Officers the following amounts were paid for in the financial year:

Contributions to Gold State and West State Superannuation Schemes	99	74
---	----	----

33. SUPPLEMENTARY INFORMATION

Write-Offs

Losses of Public Money and Public or other Property

Irrecoverable amounts	19	26
Other	16	25
General (includes thefts reported to Police, lost property and stock taking deficiencies)	1	1
	36	52

Public and other property, revenue and other debts due to the state written off in accordance with Section 45 of the Financial Administration and Audit Act.

Approved by the Executive Director	21	52
Approved by the Minister / Governor.	15	0
	36	52

34. ADMINISTERED EXPENSES AND REVENUES

Expenses

Transfer payments (i)	1,286	631
Receipts paid into Consolidated fund	107	85
Total administered expenses	1,393	716

Revenues

Fauna Licences	110	85
Contractors Deposits	41	169
Total administered revenues	151	254

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002	2000–2001
	(\$'000)	(\$'000)
35. ADMINISTERED ASSETS AND LIABILITIES		
Current Assets		
Cash assets	2	1,245
Total Administered Current Assets	<u>2</u>	<u>1,245</u>
Total Administered Assets	<u>2</u>	<u>1,245</u>
Current Liabilities		
Payables	2	0
Contractors Deposits	-	1,245
Total Administered Current Liabilities	<u>2</u>	<u>1,245</u>
Total Administered Liabilities	<u>2</u>	<u>1,245</u>

- (i) Deposits held for the satisfactory completion of contracts related to Forest Products Commission operations was transferred to the Forest Products Commission.

36. CONTINGENT LIABILITIES

In addition to the liabilities incorporated in the financial statements, the Department has the following contingent liabilities:

(a) Litigation in progress

Various claims for damages have been lodged against the Department. The Department has denied liability and the Accountable Officer is of the opinion that no material loss will be incurred.

(b) Native title claims

Native title claims have been made on departmental land of which some have yet to be determined.

37. EXPLANATORY STATEMENT

The Summary of Consolidated Fund Appropriations and Revenue Estimates discloses appropriations and other statutes expenditure estimates, the actual expenditures made and revenue estimates and payments into the Consolidated Fund, all on an accrual basis.

The following explanations are provided in accordance with Treasurer's Instruction 945.

	2001–2002	2001–2002	
	Estimate	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

SIGNIFICANT VARIATIONS TO ANNUAL ESTIMATES

Significant variations are considered to be those greater than 10% or above \$2.5M.

Item 66 Net amount appropriated to purchase outputs

102,255	96,664	(5,591)
----------------	---------------	----------------

The reduction in this item relates principally to the deferment of \$8.058 million that was provided for the Salinity Strategy. These funds have been reallocated to 2002/03 and the out-years.

Other adjustments concern unbudgeted amounts for a public liability claim payment, \$1.75 million and a recalculation of the Capital User Charge payable to Treasury, \$1.067 million.

Amount Authorised by Other Statutes

- Salaries and Allowances Act 1975

173	148	(25)
------------	------------	-------------

The reduction in payments under the Salaries and Allowances Act relate to the former Executive Director leaving the Department in July 2001 and the appointment of an acting Executive Director on a different remuneration package.

Details of Expenditure by Outputs

- Nature Conservation	64,419	55,061	(9,358)
------------------------------	---------------	---------------	----------------

The reduction in estimated expenditure is principally attributable to the deferment of Salinity Strategy funds of \$8.058 million which have been reallocated to 2002/03 and the out-years.

- Sustainable Forest Management

39,158	33,333	(5,825)
---------------	---------------	----------------

Expenditure on this Output has undergone change since the 2001/02 estimate was presented.

The Government's *Protecting of Our Old Growth-Forests* policy has seen an increase in the area of proposed national and conservation parks emanating from areas previously designated as State Forest and Timber Reserves. The consequence of this change has been for generally lower expenditure on the Sustainable Forest Management Output and increased expenditure on the other Outputs of Nature Conservation and Parks and Visitor Services. In the Regional Services Directorate lower expenditures were recorded against budget for; Jarrah Forest Enhancement Program \$1.0 million, Warren Region \$0.7 million, Fire Management Services \$0.5 million and South West Region \$0.4 million.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001–2002	2001–2002	
	Estimate	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

Other areas where actual expenditures were lower than budget occurred in recoupable projects \$1.1 million, and depreciation charges \$0.4 million.

- Resources and services provided to the Conservation

Commission of WA **555** **684** **129**

The increased expenditure undertaken by the Commission relates to work for the new Forest Management Plan.

Less retained revenue **(52,061)** **(60,649)** **(8,588)**

Actual revenues achieved for 2001/02 exceeded budget in several areas of which the major items were; recoup to the Department from the FPC \$1.9 million, general recoupable projects \$1.9 million, grants for Regional Parks capital development from the Department for Planning and Infrastructure \$1.3 million, mining compensation from bauxite mining operations \$1.0 million, income from recreation areas \$0.8 million and interest on bank account balance \$0.5 million.

	2001–2002	2000–2001	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

SIGNIFICANT VARIATIONS TO 2000-01 OUT-TURNS

Significant variations are considered to be those greater than 10% or above \$2.5M.

Item 66 Net amount **96,664** **67,174** **29,490**
appropriated to purchase outputs

The large increase in the appropriation to the Department in 2001/02 is mainly attributable to the introduction of accrual appropriations for depreciation and leave liability \$10.8 million and implementation of a capital user charge \$10.5 million.

Other major increases include: changed financial arrangements resulting from CALM / FPC restructure \$2.9 million, "Protecting Our Old-Growth Forest policy allocation for national parks and Project Director \$2.8 million, compensation for royalty reductions resulting from the Regional Forest Agreement \$2.3 million, funding for the payment of a one-off public liability claim \$1.7 million and an amount for payroll increases \$1.5 million.

Offsetting the increased appropriation amounts was a budget reduction of \$4.5 million required to meet the Government's Priority and Assurance Dividend targets as well as savings required in travel, consultancies and advertising expenditures.

	2001–2002	2000–2001	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

Amount Authorised by Other Statutes

- Salaries and Allowances Act 1975

148 **193** **(45)**

The reduction in payments during 2001/02 under the Salaries and Allowances Act relate to the former Executive Director leaving the Department in July 2001 and the appointment of an acting Executive Director on a different remuneration package.

Details of Expenditure by Outputs

-Nature Conservation **55,061** **47,991** **7,070**

Increased expenditure in this Output was due to: application of a capital user charge for the first time \$2.3 million, increased specific purpose grants expenditure funded from the Natural Heritage Trust \$1.2 million and other grants \$0.5 million, reduction in the credit applicable to reduced superannuation liability assumed by the Treasurer \$0.6 million, increased leave liability expense \$0.5 million, increased depreciation charges \$0.2 million and resources received free of charge \$0.2 million.

-Sustainable Forest Management

33,333 **89,103** **(55,770)**

Significant increased expenditures were experienced for 2000-01 due to the retention of the Forest Products Division (FPD) operations up to 16th November 2000 within the Department. From this date onwards the FPD became the Forest Products Commission (FPC) and operated as a separate entity.

-Resources and services provided to the Conservation

Commission of WA **684** **287** **397**

The Commission commenced operations part way through 2000/01 and the higher expenditure in 2001/02 reflects a full year operations.

-Parks and Visitor Services **50,297** **38,745** **11,552**

Increased expenditure in this Output was due to: application of a capital user charge for the first time \$6.1 million, new funding for national parks from the Government's *Protecting Our Old-Growth Forests* policy \$2.1 million, public liability claim against the Department \$1.8 million, increased depreciation charges \$0.8 million and wildfire suppression expenditure in national parks \$0.5 million.

-Astronomical Services **1,187** **1,010** **177**

Increased expenditure in this Output was due to the application of a capital user charge for the first time, \$0.191 million.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT – NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2002**

	2001-2002	2000-2001	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

Less retained revenue (60,649)(115,567) 54,918

Significant increased revenues were experienced for 2000-01 due to the retention of the Forest Products Division (FPD) operations up to 16th November 2000 within the Department. From this date onwards the FPD became the Forest Products Commission (FPC) and operated as a separate entity.

	2001-2002	2000-2001	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

DETAIL OF REVENUE ESTIMATES

Revenues disclosed as 110 85 25

Administered Revenues

The increased revenue collections in 2001/02 were from the issuing of kangaroo tags.



AUDITOR GENERAL

To the Parliament of Western Australia

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
FINANCIAL STATEMENTS FOR THE YEAR ENDED JUNE 30, 2002**

Matters Relating to the Electronic Presentation of the Audited Financial Statements

This audit opinion relates to the financial statements of the Department of Conservation and Land Management for the year ended June 30, 2002 included on the Department of Conservation and Land Management's web site. The Executive Director is responsible for the integrity of the Department's web site. I have not been engaged to report on the integrity of the Department's web site. The audit opinion refers only to the statements named below. It does not provide an opinion on any other information which may have been hyperlinked to or from these statements. If users of this opinion are concerned with the inherent risks arising from electronic data communications, they are advised to refer to the hard copy of the audited financial statements to confirm the information included in the audited financial statements presented on this web site.

Scope

I have audited the accounts and financial statements of the Department of Conservation and Land Management for the year ended June 30, 2002 under the provisions of the Financial Administration and Audit Act 1985.

The Executive Director is responsible for keeping proper accounts and maintaining adequate systems of internal control, preparing and presenting the financial statements, and complying with the Act and other relevant written law. The primary responsibility for the detection, investigation and prevention of irregularities rests with the Executive Director.

My audit was performed in accordance with section 79 of the Act to form an opinion based on a reasonable level of assurance. The audit procedures included examining, on a test basis, the controls exercised by the Department to ensure financial regularity in accordance with legislative provisions, evidence to provide reasonable assurance that the amounts and other disclosures in the financial statements are free of material misstatement and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Accounting Standards and other mandatory professional reporting requirements in Australia and the Treasurer's Instructions so as to present a view which is consistent with my understanding of the Department's financial position, its financial performance and its cash flows.

The audit opinion expressed below has been formed on the above basis.

Audit Opinion

In my opinion,

- (i) the controls exercised by the Department of Conservation and Land Management provide reasonable assurance that the receipt, expenditure and investment of moneys and the acquisition and disposal of property and the incurring of liabilities have been in accordance with legislative provisions; and
- (ii) the Statement of Financial Performance, Statement of Financial Position, Statement of Cash Flows, Output Schedule of Expenses and Revenues and Summary of Consolidated Fund Appropriations and Revenue Estimates and the Notes to and forming part of the financial statements are based on proper accounts and present fairly in accordance with applicable Accounting Standards and other mandatory professional reporting requirements in Australia and the Treasurer's Instructions, the financial position of the Department at June 30, 2002 and its financial performance and its cash flows for the year then ended.

D D R PEARSON
AUDITOR GENERAL
September 25, 2002

APPENDICES

1. Area of Prescribed Burns 1999–2000 to 2001–2002	97
2. Number of Wildfires and Areas by Land Categories	98
3. Area and Number of Wildfires	98
4. Areas Prescribed Burnt within Southwest Forest Regions	99
5. Number of Prescribed Burns Conducted within Southwest Forest Regions	99
6. Trends in the Area of Native Forest Harvested	100
7. Wildlife Licences Issued in 2001–2002	101
8. Summary of Damage Licences Issued in 2001–2002	101
9. Offences Under the Conservation and Land Management Act and Regulations and Wildlife Conservation Act and Regulations, 2001–2002	102
10. Publications Produced in 2001–2002	103

APPENDIX 1 AREA OF PRESCRIBED BURNS FOR ALL DEPARTMENT REGIONS 1999–2000 TO 2001–2002

	1999–2000	2000–2001	2001–2002
Indigenous Vegetation - Hand Burning (ha)			
State forest	8,722	4,266	7,027
National parks	8,039	4,528	5,754
Nature reserves	6,205	2,178	3,024
Other Crown land and private property	4,158	676	470
Total	27,124	11,648	16,275
Indigenous Vegetation - Aerial Burning (ha)			
State forest	73,889	34,769	24,958
National parks	22,712	63,123	13,747
Nature reserves	24,083	3,220	13,256
Other Crown land and private property	970	243	839
Total	121,654	101,355	52,801
Indigenous Vegetation - Silviculture Burning (ha)			
• Jarrah	38,485	14,276	17,042
• Karri	1,662	3,345	1,873
• Wandoo	-	-	-
Total	40,147	17,621	18,915
Softwood Plantation - Burning (ha)			
State forest			
• fuel reduction	5,488	7,656	8,306
• second rotation clearing burns	556	75	582
Total	6,044	7,731	8,888
Grand Total	194,968	138,355	96,878

For data specific to Southwest Forest regions see Appendices 4 and 5.

APPENDIX 2
WILDFIRES IN ALL DEPARTMENT REGIONS 1999–2000 TO 2001–2002
NUMBER AND AREA BY LAND CATEGORY AND NUMBER AND PER CENT BY CAUSE

All Department Regions	Number			Area Burnt (ha)		
	1999–2000	2000–2001	2001–2002	1999–2000	2000–2001	2001–2002
State forest						
• native hardwood	141	160	192	6,770	3,073	2,330
• softwood plantation	129	153	63	68	187	122
National parks	70	71	63	112,131	442,382	*360,469
Nature reserves	55	56	36	214,463	295,201	27,820
Other Department reserves	29	51	57	339,856	31,668	83,951
Other Crown lands	84	91	82	167,607	1,053,545	88,483
Private property	81	129	111	25,989	14,590	14,735
Total	589	711	604	866,885	1,840,647	577,910

CAUSES

	Number			Per cent		
	1999–2000	2000–2001	2001–2002	1999–2000	2000–2001	2001–2002
Deliberately/illegally lit	274	327	280	47	46	46
Escapes—Department burns	11	5	5	2	1	1
Escapes—other burning	49	47	25	8	7	4
Accidental—timber industry	2	4	3	0	1	0
Accidental—other industries	28	29	16	5	4	3
Accidental—recreationists	14	35	32	2	5	5
Lightning	101	83	101	17	12	17
Unknown	88	151	113	15	21	19
Other causes	22	30	29	4	4	5
Total	589	711	604	100	100	100

* The majority of area burnt by wildfires during 2001–2002 fire season occurred within National Parks within the Kimberley and Pilbara regions.

APPENDIX 3
AREA AND NUMBER OF WILDFIRES FOR ALL DEPARTMENT REGIONS 2001–2002

Region		State forest native hardwood	State forest softwood plantation	National parks	Nature reserves	Crown lands and private property	Total
Southwest Forest Regions							
Swan	Area (ha)	1,795	34	330	1,987	5,119	9,265
	Number	124	52	22	11	150	359
South West	Area (ha)	436	87	131	46	624	1,324
	Number	57	11	15	3	49	135
Warren	Area (ha)	93	-	4,682	3,310	315	8,400
	Number	11	-	14	3	11	39
Sub Total	Area (ha)	2,324	121	5,143	5,343	6,058	18,989
	Number	192	63	51	17	210	533
Other Regions outside of Southwest Forests							
Kimberley	Area (ha)	-	-	300,900	-	15	300,915
	Number	-	-	3	-	2	5
Pilbara	Area (ha)	-	-	52,000	3,500	2,400	57,900
	Number	-	-	3	1	1	5
Midwest	Area (ha)	-	-	9	370	15,773	16,152
	Number	-	-	1	3	12	16
Goldfields	Area (ha)	-	-	450	-	153	603
	Number	-	-	1	-	2	3
Wheatbelt	Area (ha)	-	-	-	12,550	7,765	20,315
	Number	-	-	-	8	4	12
South Coast	Area (ha)	-	-	1,982	9,556	151,498	163,036
	Number	-	-	4	7	19	30
Sub Total	Area (ha)	-	-	355,341	25,976	177,604	558,921
	Number	-	-	12	19	40	71
Grand Total	Area (ha)	2,324	121	360,484	31,319	183,662	577,910
	Number	192	63	63	36	250	604

¹ Kimberley Region data derived from DOLA fire scar mapping for the principal wildfire period July to December 2001.

APPENDIX 4
AREAS PRESCRIBED BURNT WITHIN SOUTHWEST FOREST REGIONS FOR 2001–2002

Dominant purpose	Forest Region	Area (hectares)				Years since last burnt
		Winter	Spring	Summer	Autumn	
Strategic fire protection	Swan	2,033	7,184	-	1,502	8 - 30
	South West	-	6,483	-	352	4 - 16
	Warren	-	1,723	1,937	-	7 - 17
Silviculture	Swan	4,210	-	-	4,141	10 - 21
	South West	-	11,232	-	131	6 - 22
	Warren	62	1,484	2,293	958	2 - 26
Nature Conservation	Swan	3,761	2,176	-	1,861	8 - 31
	South West	-	4,966	-	208	5 - 9
	Warren	303	5,471	-	5,426	8 - 15
Tourism and Recreation	Swan	637	1,737	-	566	8 - 31
	South West	-	1,785	-	-	8 - 21
	Warren	-	1	115	-	7 - 15
Grand Total by season (ha)		11,006	44,243	4,345	15,145	
Grand Total (ha)		74,739				

Does not include softwood plantation burns.

APPENDIX 5
NUMBER OF PRESCRIBED BURNS CONDUCTED WITHIN SOUTHWEST FOREST REGIONS IN EACH SEASON FOR VARIOUS PURPOSES IN 2001–2002

Dominant purpose	Forest Regions	Winter		Spring		Summer		Autumn		Total No. of burns	No. of escapes
		Aero	Hand	Aero	Hand	Aero	Hand	Aero	Hand		
Fuel reduction	Swan	1	6	4	7	-	-	3	-	21	-
	South West	-	-	2	1	-	-	-	2	5	-
	Warren	-	-	2	3	2	1	-	-	8	2
Silviculture	Swan	1	-	-	-	-	-	1	-	2	-
	South West	-	-	6	1	-	-	-	2	9	-
	Warren	-	1	-	11	-	12	-	21	45	-
Nature Conservation	Swan	1	-	1	1	-	-	1	3	7	-
	South West	-	-	2	1	-	-	-	3	6	-
	Warren	-	1	2	6	-	-	3	7	19	-
Tourism and Recreation	Swan	-	2	1	6	-	-	-	3	12	1
	South West	-	-	2	2	-	-	-	-	4	-
	Warren	-	-	-	1	-	3	-	-	4	-
Total		3	10	22	40	2	16	8	41	142	3

**APPENDIX 6
TRENDS IN THE AREA OF NATIVE FOREST HARVESTED**

	<u>Jarrah Forest</u>	<u>Jarrah/Wandoo Forest</u>	<u>Karri Forest</u>	
	ha	ha	Clearfelled or cut to seed trees ha	Thinned ha
1976-77	32,320	1 170	2,610	-
1977-78	26,020	740	4,450	-
1978-79	25,540	530	2,710	-
1979-80	25,150	860	2,110	60
1980-81	22,930	1,440	2,080	180
1981-82	24,680	610	2,180	320
1982-83	23,740	330	990	190
1983-84	21,540	580	1,490	260
1984-85	20,010	1,440	2,360	500
1985-86	22,640	650	1,590	340
1986	19,340	1,150	1,090	490
1987	17,180	1,380	1,310	700
1988	23,400	490	1,180	840
1989	15,130	200	1,510	910
1990	12,960	100	1,560	340
1991	10,910	-	1,920	230
1992	13,990	30	1,540	310
1993	14,250	40	1,630	80
1994	14,050	50	1,440	-
1995	17,830	30	2,410	-
1996	22,320	50	1,300	60
1997	18,240	60	1,870	60
1998	19,250	60	1,970	320
1999	14,200	50	1,890	360
2000	20,570	10	1,310	70
2001	15,760	*	1,380	120

* Jarrah/wandoo harvested included in jarrah total.

**APPENDIX 7
WILDLIFE LICENCES ISSUED IN 2001-2002**

Fauna Licences	Licences Issued	Fauna Licences (Cont.)	Licences Issued
SCIENTIFIC		KANGAROO	
Scientific Collection (Reg 17)	351	Take Kangaroos for sale (Reg 6)	269
Bird/Bat Banding (Reg 23)	120	Deal in carcasses (Reg 8)	26
EDUCATION & PUBLIC		Skin Dealing (Reg 10)	15
(to take) (Reg 15)		Processing (Reg 7)	22
Marine interaction	251	EXPORTS INTERSTATE	
Other	148	Skins of fauna (or other dead fauna)	40
EDUCATION & PUBLIC		Fauna (live)	213
(to hold) (Reg 16)	107		253
AVIAN FAUNA		EXPORT OVERSEAS	
Keep & breed in captivity (Reg 12)	3,687	Skins of fauna (or other dead fauna) from WA	65
Deal (Reg 13)	53	Emu eggs or products (personal items) from WA	10
Breed for Commercial Purposes (Reg 14)	1	Fauna (avian) from WA (live)	1
Trap (Reg 11)	3		76
SPECIES TRAPPED COMMERCIALY	Number	IMPORTS INTERSTATE	
Twenty-eight Parrot	572	Skins of fauna (or other dead fauna) into WA	2
Red-capped Parrot	109	Australian fauna (live)	252
Western Rosella	153	Live exotic birds and other animals	140
Galah	12		394
FAUNA		Total Fauna Licences	5,930
Keep in Captivity (Reg 12A)	122		
EMUS		Flora Licences	
Emu Farming (Reg 14)	22	Commercial Purposes	480
Dealing (Reg 8)	3	Commercial Producers	417
Dealing (Emu eggshells Reg 13)	1	Scientific/Prescribed Purposes	923
Processing (Reg 7)	2	Sandalwood (from Crown Land)	43
CROCODILES		Sandalwood (from Private Land)	28
Crocodile Farming (Reg 14)	2	Permits To Take Declared Rare Flora	71
Skin Dealing (Reg 10)	0		1,962
Processing (Reg 7)	2		

**APPENDIX 8
SUMMARY OF DAMAGE LICENCES AND DANGEROUS FAUNA LICENCES ISSUED IN 2001-2002**

	No. of Licences Issued	Total No. of Each Species Authorised to be Taken		No. of Licences Issued	Total No. of Each Species Authorised to be Taken
OTHER AVIAN FAUNA			WATERFOWL		
Australian Bustard	1	4	Eurasian Coot	2	trap and relocate
Australian Raven	24	240	Little Pied Cormorant	1	2
Barn Owl	1	trap and relocate	Maned Geese	18	150 + scare/trap and relocate
Black Kite	3	scare only	Mountain Duck	2	200 + scare only
Brolga	3	scare only	Pacific Black Duck	8	60 + scare/trap and relocate
Brown Goshawk	4	trap and relocate	Pelican	2	scare only
Collard Sparrowhawk	2	trap and relocate	Pied Cormorant	5	58
Eastern Long-billed Corella	1	scare only	EMU	62	6880
Galah	20	2230 + scare only	MAMMALS		
Little Corella	18	2378 + scare only	Agile Wallaby	1	scare only
Little Crow	1	5	Euro	13	1700
Magpie Lark	1	2	Grey Kangaroo	927	741,138
Osprey	2	Disturb/scare only	Red Kangaroo	20	3880
Red-tailed Black Cockatoo	4	scare only	DANGEROUS FAUNA		
Red-capped Parrot	5	125	Butcherbirds	2	3
Sacred Ibis	2	scare only	Galah	1	50
Silver Gull	8	1470 + scare only	Magpie	74	89
Southern Boobook Owl	1	trap and relocate	Magpie Lark	1	1
Twenty Eight Parrots	45	9035 + scare/trap and relocate	S/W Crocodile	6	6
Wedge Tailed Eagles	2	1 + scare only	Western Grey Kangaroo	2	11
Welcome Swallow	1	trap and relocate			
Western Long-billed Corella	34	5030 + scare/trap and relocate			
White-tailed Black Cockatoo (Long billed)	7	scare only			

APPENDIX 9
OFFENCES UNDER THE CONSERVATION AND LAND MANAGEMENT ACT AND
REGULATIONS AND WILDLIFE CONSERVATION ACT AND REGULATIONS, 2001–2002

Charges	Recomm'd Charges	Convic- tions	Fines \$	Costs \$	Dismissed	Letter of Warning	No. Further Action	Pending
CONSERVATION and LAND MANAGEMENT ACT								
Illegal taking or possession of forest produce.	100	28	\$2900.00	\$1621.60	0	3	68	1
Offences relating to the occupation of Department land	5	0	0	0	0	0	0	5
Offences relating to Marine Parks and Reserves.	8	0	0	0	0	1	0	7
CONSERVATION and LAND MANAGEMENT REGULATIONS								
Offences relating to disease risk areas	7	2	\$550.00	\$115.40	0	2	3	0
Offences relating to activities on State Forests, Nature Reserves and National Parks	32	1	\$300.00	\$57.70	0	13	3	15
Totals	152	31	\$3750.00	\$1794.70	0	19	74	28
WILDLIFE CONSERVATION ACT								
Use of illegal devices in taking fauna	1	0	0	0	0	0	1	0
Illegal taking or possession of protected fauna	55	6	\$2050.00	\$317.85	0	20	0	29
Illegal importation, selling or taking for sale of fauna	23	0	0	0	0	10	7	6
Offences relating to the taking or possession of rare or threatened fauna	10	0	0	0	0	3	0	7
Illegal taking of protected flora	143	0	0	0	0	46	0	97
Offences relating to the sale of protected flora	29	0	0	0	0	6	0	23
Taking declared rare flora without the Minister's consent	8	0	0	0	0	4	1	3
Offences against wildlife officers	9	0	0	0	0	6	0	3
Failing to comply with licence conditions	21	0	0	0	0	8	0	13
WILDLIFE CONSERVATION REGULATIONS								
Offences relating to the acquisition, possession, control and disposal of fauna	27	2	\$250.00	\$29.35	0	7	4	14
Totals	326	8	\$2300.00	\$347.20	0	110	13	195

APPENDIX 10
PUBLICATIONS PRODUCED IN 2001–2002

GENERAL

Annual Report of the Department of Conservation and Land Management 2000– 2001
CALM Book News (leaflet, 5 issues)
 CALM Bush Rangers Annual Report 2000
CALM News (newspaper, 6 issues)
 2001 Organisational Learning and Development Manual
 CALMfire Safety Bulletin
 Carbon Rights in WA (leaflet)
 Corporate Plan 2000 – 2005
 Corporate Plan 2000 – 2005 (pocket size)
 Herdsman Lake Regional Park Draft Management Plan
 Jurien Bay Marine Park Management Plan
LANDSCOPE Calendar 2002
LANDSCOPE Expeditions Manual
LANDSCOPE Expeditions Program 2001 (catalogue)
LANDSCOPE Magazine (4 issues)
LANDSCOPE – We Miss You (leaflet)
 Managing Fire (leaflet)
 Marine Parks and Reserves Scientific Advisory Committee Annual Report 1999 – 2000
 National Parks and Nature Conservation Authority Annual Report 1999 – 2000
 Our Observatory (leaflet)
 Professional Development (flyer)
 Rowles Lagoon Nature Reserve Management Plan
 Safety in Bush Fire Control (booklet)
 Sensationally Summer Nights (leaflet)
 Stars and Telescopes (leaflet)
 Turquoise Coast Island Nature Reserves Draft Management Plan
 Wedge and Grey Master Plan
 We'd like you to be our next Partners (folder and Leaflet)

NATURE CONSERVATION

Bundera - Threatened Flora (poster)
 CALMScience Vol 3 No 3 (journal)
 CALMScience Vol 3 No 4 (journal)
 Catchment Carers Trail 2001 (leaflet)
 Celebrate World Environment Day (flyer)
 Common Birds of the Kimberley – Bush Book
 Discovering Leeuwin – Naturaliste National Park – Discovery Book
 Encouraging Quendas Wildlife Notes No 5 (leaflet)
 Fighting Fire with Fire - *LANDSCOPE* extract (leaflet)
 Geology and Land Forms of the Kimberley – Bush Book
 Geology and Land Forms of the South - West – Bush Book
 Hazardous Animals of North - West Australia – Bush Book
 How to Create a Local Herbarium (book)
 How to Manage your Granite Outcrops (booklet)
 Lake Joondalup Midge Strategy Problem (leaflet)
 Living with Quendas (leaflet)
 Managing a Fiery Change – *LANDSCOPE* extract (leaflet)
 Marine Community Monitoring Manual
 Marine Conservation Matters (newsletter, 2 issues)
 Marine Conservation Reserves in WA (leaflet)
 Marine Conservation Reserves Management Concepts in WA (flyer)
 Marine Mammal Interaction Logbook
 Marmion Marine Park (4 posters)
 Natural Resource Management WA – Salinity Report
 No Take Areas in Marine Management (leaflet)
 Nuytsia Vol 13 no 3 (journal)

Oceans of Wealth - *LANDSCOPE* extract (leaflet)
 Partnerships in Conservation (book)
 Partnerships in Nature Conservation (booklet)
 Phytophthora Cinnamomi Disease Vol 2
 Plants of the Bibbulmun Track (leaflet)
 Proposed Jurien Bay Marine Park – Have Your Say (leaflet)
 Proposed Marine Conservation Reserves in the South West Capes Region
 Regional Perspective : Dampier Archipelago/Cape Preston
 Regional Perspective : Montebello/Barrow Island
 RAMSAR Wetlands (report)
 Safety in Bushfire Control (leaflet)
 State Salinity Review Report
 Threatened Flora Seed Centre (poster)
 Western Shield Action Pack
 Western Shield Newsletter April 2001
 Western Wildlife Newsletter (4 issues)
 Whale Watching (leaflet)
 Wheatbelt Wonders Under Threat – *LANDSCOPE* extract (leaflet)
 Wildflowers of the South - West – Bush Book
 Your Land Its Future (leaflet)

PARKS AND VISITORS

A Guide to Lane Poole Reserve (magpaper)
 A Guide to Shark Bay World Heritage Property (magpaper)
 A Guide to the Coral Coast Parks (magpaper)
 Aboriginal Culture Excursions (leaflet)
 Albany to Denmark National Parks (leaflet)
 An Invitation to Join Us – New Opportunities in 2001 at the Hills Forest (flyer)
 Avon Descent : Public Information (flyer)
 Avon Valley National Park – Avon Descent (leaflet)
 Best Recipes for Interpreting our Heritage (manual)
 Cape to Cape Walk Track (leaflet)
 Caring for Gngangara Park (leaflet)
 Coastal Parks to Albany's East (leaflet)
 Dryandra Woodland Ecology Course (leaflet)
 Experiencing Whale Sharks in Ningaloo Marine Park (leaflet)
 Exploring the Hills Forest (leaflet)
 Exploring the Hills Forest Parents Booklet
 Fees and Charges – A Visitors Guide (leaflet)
 Forest Walk 2000 (leaflet)
 Francois Peron National Park (leaflet)
 Go Bush Autumn 2001 (leaflet)
 Go Bush Spring 2000 (leaflet)
 How to see the Avon Descent (flyer)
 John Forrest National Park (leaflet)
 Julimar Conservation Park (leaflet)
 Kalbarri National Park (leaflet)
 Karijini National Park Visitor Guide (leaflet)
 Karri Forest Explorer (poster)
 Leeuwin Caves Postcards
 Monkey Mia Magic (leaflet)
 Monkey Mia Newsletter (3 issues)
 Mt Augustus National Park (leaflet)
 Nambung National Park (leaflet)
 National Parks Alive! Perth Hills (folder)
 Need Information on National Park Passes (flyer)
 Ngauwudu – Mitchell Plateau (flyer)
 Parks for People – *LANDSCOPE* extract (leaflet)
 Parks of the Coral Coast (leaflet)

Parks of the Plateau – *LANDSCOPE* extract (leaflet)
 Penguin Island and Shoalwater Islands Marine Park (flyer)
 Perth Outdoors (magpaper)
 Purnululu National Park (leaflet)
 Stirling Range and Porongurup National Parks (leaflet)
 The Hills Forest, Nature's Base (leaflet)
 Tour Operator's Handbook (booklet)
 Touring WA Newsletter (2 issues)
 Tourism Manual
 Walk the Bibbulmun Track (poster)
 Walking Tour (leaflet)
 Welcome to Shoalwater Islands Marine Park and Penguin Island (leaflet)
 Yanchep National Park Visitor Guide (leaflet)
 Yanchep, Perth's Natural, Cultural meeting Place (leaflet)
 Your Guide to WA National Parks and Forests (leaflet)
 You're invited to the 2001 CALM Tourism Industry Exchange (flyer)

SUSTAINABLE FOREST MANAGEMENT

A New Forest Management Plan for the South West (leaflet)
 Adding Value to Forest Products (leaflet)
 Arbor Day Poster 2001
 Calculating Sustained Yield for the Forest Management Plan (2004 – 2013)
 Conserving forests, building communities : An Information Kit
 Firewood collecting in the Collie and Harvey area (leaflet)
 Growing WA Sandalwood from Seed
 Indicative Logging Plans 2000 – 2001 Consultation Report
 Investing in Maritime Pine (leaflet)
 Sandalwood – Fragrant Harvest – *LANDSCOPE* extract (leaflet)
 Sandalwood (leaflet)
 Sandalwood Information Sheets No, No2 and No3
 Saving the Giants – *LANDSCOPE* extract (leaflet)
 School of Wood Catalogue
 Seed Notes No1 - Information Newsletter
 Seed Notes No2 – Seed Collection Newsletter
 Seed Notes No3 – Eremophila Newsletter
 Seed Notes No4 – Adenanthos Newsletter
 Seed Price List (booklet)
 Timber Harvesting in Water Catchment (flyer)
 Timber Technology Newsletter August 2001
 WA Forest Products (magpaper)
 Wellington Discovery Forest – Educational Opportunities (leaflet)

SCIENTIFIC PUBLICATIONS

Abbott, I. (2000). Impact of agricultural development and changed fire regimes on species composition of the avifauna in the Denmark region of south-west Western Australia, 1889-1999. *CALMScience* **3**, pp. 279-308.
 Abbott, I. (2001). Aboriginal names of mammal species in south-west Western Australia. *CALMScience* **3**, pp. 433-486.
 Abbott, I. (2001). Historic record of Australian pelican, *Pelecanus conspicillatus*, breeding in southwest Western Australia. *Western Australian Naturalist* **23**, pp. 1-7.
 Abbott, I. (2001). Productivity of biologists in CALMScience Division: a preliminary benchmarking study. - Draft. Department of Conservation and Land Management, Western Australia, pp. 1-9.
 Abbott, I., Burbidge, T. and Wills, A. (2000). 1999 jarrah leafminer survey [MAP]. Department of Conservation and Land Management, Western Australia, pp. 1.
 Abbott, I., Burbidge, T. and Wills, A. (2000). Jarrah leafminer cutout boundaries, 1985-92, 1996 & 1999 [MAP]. Department of Conservation and Land Management, Western Australia, pp. 1.

Abbott, I., Marchant, N. and Cranfield, R. (2000). Long-term change in the floristic composition and vegetation structure of Carnac Island, Western Australia. *Journal of Biogeography* **27**, pp. 333-346.
 Abbott, I., McGrath, J., Hearn, R., Liddel, G. and Pearce, C. (2000). FORESTCHECK: an integrated system for monitoring the forests of south-west Western Australia: concept plan. Department of Conservation and Land Management, Western Australia, pp. 1-30.
 Abbott, I., Wills, A., Burbidge, T. and van Heurck, P. (2000). Arthropod faunas of crowns of jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) in Mediterranean-climate forest: a preliminary regional-scale comparison. *Australian Forestry* **63**, pp. 21-26.
 Afonso, C. ... Martin, R. ... and Williams, A. [94 authors] (2000). Combined analysis of the binary lens caustic-crossing event MACHO 98-SMC-1. *Astrophysical Journal* **532**, pp. 340-352.
 Albrow, M.D., Beaulieu, J.-P., Caldwell, J.A.R., Depoy, D.L., Dominik, M., Gaudi, B.S., Gould, A., Greenhill, J., Hill, K., Kane, S., Martin, R., Menzies, J., Naber, R.M., Pogge, R.W., Pollard, K.R., Sackett, P.D., Sahu, K.C., Vermaak, P., Watson, R. and Williams, A. (2000). Limits on stellar and planetary companions in microlensing event OGLE-1998-BUL-14. *Astrophysical Journal* **535**, pp. 176-189.
 Albrow, M.D., Beaulieu, J.-P., Caldwell, J.A.R., Dominik, M., Gaudi, B.S., Gould, A., Greenhill, J., Hill, K., Kane, S., Martin, R., Menzies, J., Naber, R.M., Pollard, K., Sackett, P.D., Sahu, K.C., Vermaak, P., Watson, R. and Williams, A. (2000). Detection of rotation in a binary microlens : planet photometry of MACHO 97-BLG-41. *Astrophysical Journal* **534**, pp. 894-906.
 Algar, D. (2000). Introduced predators in the arid zone: the W.A. experience: considering the impact on reintroductions and the need for control. In: *Biodiversity and the Re-Introduction of Native Fauna at Uluru-Kata Tjuta National Park: Proceedings of the Uluru-Kata Tjuta National Park Cross-Cultural Workshop on Fauna Re-Introduction, September 1999*. Bureau of Rural Sciences, Canberra. pp. 50-52.
 Algar, D. and Angus, G.J. (2000). Recommendations on a control strategy for feral cats at Peron Peninsula, Western Australia: a report to the Project Eden Management Committee. Department of Conservation and Land Management, Western Australia, pp. 1-60.
 Algar, D., Burbidge, A.A. and Angus, G.J. (2001). Cat eradication on the Montebello Islands (ABSTRACT). In: *Eradication of Island Invasives: Practical Actions and Results Achieved at the University of Auckland, 19-23 February 2001*. IUCN Species Survival Commission, Invasive Species Specialist Group, Auckland. pp. 11.
 Angus, G.J. and Thomas, N.D. (2000). An assessment of feral cat (*Felis catus*) abundance at Dragon Rocks Nature Reserve and some implications for fauna conservation. Department of Conservation and Land Management, Western Australia, pp. 1-11.
 Bartle, J., Olsen, G., Carslake, J. and Cooper, D. (2001). *Acacia* species as large scale crop plants in the Australian wheatbelt (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
 Behn, G., McKinnell, F.H., Caccetta, P. and Vernes, T. (2001). Mapping forest cover, Kimberley region of Western Australia. *Australian Forestry* **64**, pp. 80-87.
 Biggs, J. (2000). Notes from the institutions: Perth Observatory report. *Newsletter (Astronomical Society of Australia)* **24**, pp. 9-10.
 Biggs, J. (2000). Star viewing night manual. - Version 4.0. Perth Observatory, pp. 1-9.
 Birch, P. (2000). Analysis of visitor survey forms used for Perth Observatory night tours, October 1999-May 2000. Perth Observatory, pp. 1-10.

- Bradshaw, S.D., Morris, K.D. and Bradshaw, F.J. (2001). Water and electrolyte homeostasis and kidney function of desert-dwelling marsupial wallabies in Western Australia. *Journal of Comparative Physiology. B* **171**. pp. 23-32.
- Brand, J.E. (2000). The effects of management regime and host species on sandalwood (*Santalum spicatum*) recruitment near Paynes Find, Western Australia. *Rangeland Journal* **22**. pp. 243-255.
- Brand, J.E. (2001). Review of the influence of Acacia species on sandalwood (*Santalum spicatum*) establishment in Western Australia (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Brand, J.E., Crombie, D.S. and Mitchell, M.D. (2000). Establishment and growth of sandalwood (*Santalum spicatum*) in south-western Australia: the influence of host species. *Australian Forestry* **63**. pp. 60-65.
- Brand, J.E., Fox, J.E.D. and Moretta, P. (2001). Review of research into sandalwood (*Santalum spicatum*) tree farm systems in south-western Australia. In: *Conference Proceedings: Forests in a Changing Landscape: 16th Commonwealth Forestry Conference jointly with the 19th Biennial Conference of the Institute of Foresters of Australia, Fremantle, Western Australia, 18-25 April, 2001*. Promaco Conventions, Perth. pp. 527-535.
- Broadhurst, L. (2000). Morphometric analysis of variation in *Geleznowia verrucosa* Turcz. (Rutaceae). *Australian Systematic Botany* **13**. pp. 479-490.
- Buist, M., Byrne, M. and Yates, C. (2000). Understanding rarity in a unique wattle (*Acacia lobulata*) in south-western Australia. *Danthonia* **9(2)**. pp. 8-9.
- Buist, M., Coates, D. and Yates, C. (2001). Rarity and threat in relation to the conservation of *Acacia* in Western Australia (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Buist, M., Yates, C.J. and Ladd, P.G. (2000). Ecological characteristics of *Brachychiton populneus* (Sterculiaceae) (kurrajong) in relation to the invasion of urban bushland in south-western Australia. *Austral Ecology* **25**. pp. 487-496.
- Burbidge, A. (2000). Brimming with birds: Cape Arid National Park. *Landscape* **16(2)**. pp. 10-15.
- Burbidge, A. (2000). Bristlebirds: they're back!. *Watsnu: the Newsletter of the Western Australian Threatened Species and Communities Unit* **7(2)**. pp. 1-2.
- Burbidge, A.A. (2000). Conservation of the biota of the megadiverse South-West Botanical Province, Australia. *Australian Systematic Botany Society Newsletter* **102**. pp. 25-33.
- Burbidge, A.A. (2000). Mammal translocations to Uluru-Kata Tjuta National Park: some introductory comments. In: *Biodiversity and the Re-Introduction of Native Fauna at Uluru-Kata Tjuta National Park: Proceedings of the Uluru-Kata Tjuta National Park Cross-Cultural Workshop on Fauna Re-Introduction, September 1999*. Bureau of Rural Sciences, Canberra. pp. 57-63.
- Burbidge, A. (2000). Montebello renewal update. *Watsnu: the Newsletter of the Western Australian Threatened Species and Communities Unit* **7(2)**. pp. 5.
- Burbidge, A.H. (2000). Western bristlebird annual report, 1999. Department of Conservation and Land Management, Western Australia, pp. 1-4.
- Burbidge, A.H. (2000). Western whipbird research plan: annual report 1999. Department of Conservation and Land Management, Western Australia, pp. 1-15.
- Burbidge, A. (2001). Bristlebird translocation update. *South Coast Threatened Birds Newsletter* **5**. pp. 1-2.
- Burbidge, A.A., Blyth, J.D., Fuller, P.J., Kendrick, P.G., Stanley, F.J. and Smith, L.A. (2000). The terrestrial vertebrate fauna of the Montebello Islands, Western Australia. *CALMScience* **3**. pp. 95-107.
- Burbidge, A.A. and Fuller, P.J. (2000). The breeding seabirds of Shark Bay, Western Australia. *CALMScience* **3**. pp. 190-124.
- Burbidge, A.H., Harvey, M.S. and McKenzie, N.L. (2000). Biodiversity of the southern Carnarvon Basin. *Records of the Western Australian Museum Supplement* **61**. pp. 1-595.
- Burbidge, A.H., Johnstone, J.E., Fuller, P.J. and Stone, P. (2000). Terrestrial birds of the southern Carnarvon Basin, Western Australia: contemporary patterns of occurrence. *Records of the Western Australian Museum Supplement* **61**. pp. 449-464.
- Burbidge, A.H., McKenzie, N.L. and Harvey, M.S. (2000). A biogeographic survey of the southern Carnarvon Basin, Western Australia: background and methods. *Records of the Western Australian Museum Supplement* **61**. pp. 1-11.
- Burbidge, A.A. and Morris, K.D. (2001). Introduced animal eradications for nature conservation on W.A. islands: a review (POSTER ABSTRACT). In: *Eradication of Island Invasives: Practical Actions and Results Achieved at the University of Auckland, 19-23 February 2001*. IUCN Species Survival Commission, Invasive Species Specialist Group, Auckland. pp. 10.
- Burbidge, A.A., Morris, K. and Drew, M. (2000). Mammal monitoring, Barrow Island Nature Reserve, October 2000. Department of Conservation and Land Management, Western Australia. pp. 1-27.
- Burrows, N.D., Burbidge, A.A. and Fuller, P.J. (2000). Nyaruninpa: Pintupi burning in the Australian Western Desert. Department of Conservation and Land Management, Western Australia, pp. 1-20.
- Burrows, N., Ward, B. and Robinson, A. (2000). Behaviour and some impacts of a large wildfire in the Gngangara maritime pine (*Pinus pinaster*) plantation, Western Australia. *CALMScience* **3**. pp. 251-260.
- Burrows, N.D., Ward, B.G. and Robinson, A.D. (2001). Bark as fuel in a moderate intensity jarrah forest fire. *CALMScience* **3**. pp. 405-409.
- Byrne, M. (2000). Disease threats and the conservation genetics of forest trees. In: *Forest Conservation Genetics: Principles and Practice*. CSIRO, Melbourne. pp. 159-166.
- Byrne, M. (2001). The role of genetics in the conservation and utilization of *Acacia*. In: *Abstracts: Society for Conservation Biology: Macquarie University, Sydney, July 13-16, 1998*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Byrne, M. and Macdonald B. (2000). Phylogeography and conservation of three oil mallee taxa, *Eucalyptus kochii* ssp. *kochii*, ssp. *plenissima* and *E. horistes*. *Australian Journal of Botany* **48**. pp. 305-312.
- Byrne, M., Macdonald, B. and Francki, M. (2001). Incorporation of sodium sulfite into extraction protocol minimizes degradation of *Acacia* DNA. *BioTechniques* **30**. pp. 742-743.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2000). CALMScience communications. - January-October 2000. Department of Conservation and Land Management, Western Australia, pp. 1-15.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2000). CALMScience: Western Australian journal of conservation and land management. - Vol. 3, no. 2. Department of Conservation and Land Management, Western Australia, pp. 87-277.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2000). Nuytsia. - Vol. 13, no. 2. Department of Conservation and Land Management, Western Australia, pp. 265-409.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2000). Synopsis of achievements of anticipated outputs and outcomes: strategic plan, 1995-1999. Department of Conservation and Land Management, Western Australia, pp. 1-43.

- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). Business plan, January 2001-June 2002. Department of Conservation and Land Management, Western Australia, pp. 1-23.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). CALMScience communications. - February 2001-April 2001. Department of Conservation and Land Management, Western Australia, pp. 1-10.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). CALMScience communications. - November 2000-January 2001. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). CALMScience Division business plan: January 2001-June 2002. Department of Conservation and Land Management, Western Australia, pp. 1-23.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). CALMScience: Western Australian journal of conservation and land management. - Vol. 3, no. 4. Department of Conservation and Land Management, Western Australia, pp. 405-626.
- CALMScience Division, Department of Conservation and Land Management, Western Australia (2001). Nuytsia. - Vol. 13, no. 3. Department of Conservation and Land Management, Western Australia, pp. 410-616.
- Clarke, K. and Langley, M. (2000). The vegetation and flora of the Acourt Road bushland, north Banjup, City of Canning, Jandakot Regional Botanic Park: for the Bannister Creek Catchment Group (Inc.). Wildflower Society of Western Australia, Nedlands. pp. 1-53.
- Coates, D.J. (2000). Defining conservation units in a rich and fragmented flora: implications for the management of genetic resources and evolutionary processes in south-west Australian plants. *Australian Journal of Botany* **48**. pp. 329-339.
- Coates, D.J. and Atkins, K.A. (2001). Priority setting and the conservation of Western Australia's diverse and highly endemic flora. *Biological Conservation* **97**. pp. 251-263.
- Coates, D.J., Hopper, S.D. and Farrer, S.L. (2000). Genetics and conservation of Australian flora. *Australian Journal of Botany* **48**. pp. 287-416.
- Cochrane, A. (2001). Our frozen future. *Landscape* **16(4)**. pp. 23-27.
- Cochrane, A. (2001). Seed collection and long-term storage of some critically endangered and endangered taxa from the southwest of Western Australia: final report to BankWest Landscape Visa Conservation Card Trust. Department of Conservation and Land Management, Western Australia, pp. 1-5.
- Cochrane, A. and Barrett, S. (2000). Drummond's grass: from presumed extinct to perched on mountain summits. *Landscape* **16(2)**. pp. 43-47.
- Cochrane, A. and Monks, L. (2001). Partnerships in conservation: a collaborative approach to recovery of Western Australia's threatened flora. In: *Gardens 2001 Congress*. pp. 1-2.
- Cochrane, A., Monks, L. and Juskiewicz, S. (2000). Translocations trials for four threatened Western Australian plant taxa. *Danthonia* **9(3)**. pp. 7-9.
- Cooper, D. (2000). What are the optimal within row spacings and number of rows for mallee belt plantings?. *Dinkum Oil: Oil Mallee Association of W.A. Newsletter* **18**. pp. 10.
- Craig, G.F. and Coates, D.J. (2001). Declared rare and poorly known flora in the Esperance District. *Department of Conservation and Land Management, Western Australia, Wildlife Management Program* **21**. pp. 1-474.
- Crane, C. and Shearer, B. (2001). Impact of *Omphalotus nidiformis* in a climax *Banksia speciosa* community (POSTER ABSTRACT). In: *Fungimap National Conference 22-26 Jun 2001, Denmark, W.A.*
- Crombie, S. (2001). How much water do trees use?. *Western Wildlife: Newsletter of the Land for Wildlife Scheme* **5(1)**. pp. 11-12.
- Crombie, S., Harper, R., Smettem, K., Williamson, D. and Farrington, P. (2000). Reconciling productivity and drought risk in *Eucalyptus globulus*: a regional perspective (ABSTRACT). In: *Proceedings of Conference Soils 2000: Making our Science more Useable, Muresk Institute of Agriculture, Northam, Western Australia, 11-13 July, 2000*. Australian Society of Soil Science (W.A. Branch), Perth. pp. 199.
- Davis, J.A., Halse, S.A. and Friend, R.H. (2001). Factors influencing biodiversity in coastal plain wetlands of southwestern Australia. In: *Biodiversity in Wetlands: Assessment, Function and Conservation. Volume 2*. Elsevier, Amsterdam.
- Dawes, G., Wallace, K. and Northfield, P. (2000). Astronomy 2001 : a practical guide to the night sky. - Western Australian edn.. Quasar, Strathfield. pp. 1-112.
- De Tores, P. and Rosier, S. (2001). Operation Foxglove reaps rewards. *Western Shield Apr*. pp. 2.
- Dixon, K., Barrett, R. and Hollick, P. (2000). Orchid species interim recovery plans ESU 00006460: final report submitted to the Commonwealth Threatened Species and Communities Section, Biodiversity Group, Environment Australia. Department of Conservation and Land Management, Western Australia, pp. 1-52.
- Dumbrell, I.C. and McGrath, J.F. (2000). Effect of fertiliser and growth rate on angle of spiral grain in young *Pinus radiata* in Western Australia. *Australian Forestry* **63**. pp. 142-146.
- Dumbrell, I.C. and McGrath, J.F. (2000). Soil water depletion by *Pinus pinaster* plantations in the 400 mm to 600 mm rainfall zone of Western Australia. In: *Soil 2000: new horizons for a new century: Australian and New Zealand second joint soils conference. Volume 3, poster papers*. New Zealand Society of Soil Science, Canterbury. pp. 59-60.
- Farr, J. (2000). *Essigella californica* (Monterey pine aphid): a new pest of pines in Western Australia. Department of Conservation and Land Management, Western Australia, pp. 1-7.
- Farr, J.D., Dick, S.G., Williams, M.R. and Wheeler, I.B. (2000). Incidence of bullseye borer (*Phoracantha acanthocera*, (Macleay) Cerambycidae) in 20-35 year old regrowth karri in the south west of Western Australia. *Australian Forestry* **63**. pp. 107-123.
- FitzSimmons, N.N., Limpus C.J., Miller, J.D., Prince, R.I.T. and Moritz, C. (2000). Male marine turtles: questions beyond gene flow. In: *Proceedings of the Nineteenth Annual Symposium on Sea Turtle Biology and Conservation, 2-6 March, 1999, South Padre Island, Texas, U.S.A.* pp. 11-13.
- Franke, B., Gurner, R. and Friend, R. (2001). Wetland vegetation monitoring, 2000/2001 (Salinity Action Plan). Edith Cowan University, Centre for Ecosystem Management, Joondalup. pp. 1-260.
- Friend, T. (2000). Numbat Recovery Team: annual report, 1999. Department of Conservation and Land Management, Western Australia, pp. 1-20.
- Friend, J.A. (2000). Recovery of the numbat: a long road (POSTER ABSTRACT). In: *Australian Mammal Society 2000 Conference: Program and Abstracts: Alice Springs, 12-14 April 2000*. pp. 74.
- Friend, J.A. (2001). Medium-term radio-tracking of dibblers, Fitzgerald River NP: final report to BankWest Landscape Conservation VisaCard. Department of Conservation and Land Management, Western Australia, pp. 1-7.
- Friend, T. (2001). Tools of the trade. *Landscape* **16(3)**. pp. 41-47.
- Friend, T., Anthony, C. and Thomas, N. (2001). Return to Dryandra: marsupials hop away from extinction. *Landscape* **16(4)**. pp. 10-16.
- Froend, R.H. and Loomes, R. (2001). Relationships between water level, salinity and the emergent and fringing vegetation of Byenup-Muir wetlands: report to the Dept. of Conservation and Land Management. Edith Cowan University, Centre for Ecosystem Management, pp. 1-26.

- Gathe, J. (2000). 10,000 vouchers. *The Plant Press: Western Australian Regional Herbaria Newsletter* **82**. pp. 3.
- Gathe, J. (2000). Flora information systems and regional herbaria. *The Plant Press: Western Australian Regional Herbaria Newsletter* **8**. pp. 6.
- Gathe, J. (2000). Herbarium celebrates a milestone. *CALM News May/ Jun.* pp. 4.
- Gathe, J. (2001). Coastcare grant. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 1.
- Gathe, J. (2001). Regional Herbaria workshops 2000. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 2.
- Gathe, J. (2001). Rottneest acquires herbarium. *CALM News May/ Jun.* pp. 7.
- Gathe, J. (2001). Tidy Towns talk. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 3, 5-6.
- Gaynor, A. (2000). Report on the history of the arrival of the feral cat population in Western Australia. *CALMScience* **3**. pp. 149-179.
- Gibson, N., Burbidge, A.H., Keighery, G.J. and Lyons, M.N. (2000). The temperate to arid transition of the Irwin-Carnarvon phytogeographic boundary, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 155-173.
- Gibson, N. and Keighery, G.J. (2000). Flora and vegetation of the Byenup-Muir reserve system, south-west Western Australia. *CALMScience* **3**. pp. 323-402.
- Gibson, N., Keighery, G. and Keighery, B. (2000). Threatened plant communities of Western Australia. 1, the ironstone communities of the Swan and Scott coastal plains. *Journal of the Royal Society of Western Australia* **83**. pp. 1-11.
- Gibson, N., Keighery, G.J. and Lyons, M.N. (2000). The flora and vegetation of seasonal and perennial wetlands of the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 175-199.
- Gibson, N., Keighery, G.J. and Lyons, M.N. (2001). Vascular flora of Scott National Park, Camping Reserve 12951 and Gingilup Swamps Nature Reserve, Western Australia. *CALMScience* **3**. pp. 411-432.
- Gioia, P. and Pigott, J.P. (2000). Biodiversity assessment: a case study in predicting richness from the potential distributions of plant species in the forests of south-western Australia. *Journal of Biogeography* **27**. pp. 1065-1078.
- Graham, G., Start, T. and Kendrick, P. (2000). Methods. In: *A Land Management Assessment of Mandora Marsh and its Immediate Surrounds, October 1999*. Department of Conservation and Land Management, Western Australia, pp. 4-7.
- Groves, R.H., Hosking, J.R., Batianoff, G.N., Cooke, D.A., Cowie, I.D., Keighery, G.J., Lepschi, B.J., Rozefelds, A.C. and Walsh, N.G. (2000). The naturalised non-native flora of Australia: its categorisation and threat to native plant biodiversity. CRC for Weed Management Systems, Adelaide. pp. 1-167.
- Halse, S.A., Pearson, G.B., McRae, J.M. and Shiel, R.J. (2000). Monitoring aquatic invertebrates and waterbirds at Toolibin and Walbyring lakes in the Western Australian wheatbelt. *Journal of the Royal Society of Western Australia* **83**. pp. 17-28.
- Halse, S., Shiel, R.J., Froend, R.H. and Cale, D.J. (2001). Biodiversity is multifaceted: cross-taxon congruence in species richness patterns in wetlands (ABSTRACT). In: *Final Program & Abstracts: Fenner Conference on the Environment 2001: Biodiversity Conservation in Freshwaters, 5-8 July 2001, Canberra*. Australian Academy of Science, Canberra. pp. 35.
- Halse, S.A., Shiel, R.J., Storey, A.W., Edward, D.H.D., Lansbury, I., Cale, D.J. and Harvey, M.S. (2000). Aquatic invertebrates and waterbirds of wetlands and rivers of the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 217-267.
- Harper, R.J. (2000). Site evaluation for farmland revegetation: paper presented to Restoration with Native Species Workshop, Kings Park Botanical Gardens, Western Australia, 14 February 2000. Department of Conservation and Land Management, Western Australia, pp. 1-5.
- Harper, R.J. and Gilkes, R.J. (2001). Some factors affecting the distribution of carbon in soils of a dryland agricultural system in southwestern Australia. In: *Assessment Methods for Soil Carbon*. Lewis Publishers, Boca Raton. pp. 577-591.
- Harper, R.J., Hatton, T.J., Crombie, D.S. and Dawes, W. (2000). Phase farming with trees: a new weapon in the fight against dryland salinity?. In: *Proceedings of Conference Soils 2000: Making our Science more Useable, Muresk Institute of Agriculture, Northam, Western Australia, 11-13 July, 2000*. Australian Society of Soil Science (W.A. Branch), Perth. pp. 74-79.
- Harper, R.J., Hatton, T.J., Crombie, D.S. and Dawes, W. (2000). Phase farming with trees: the acceleration of farm-forestry to combat dryland salinity. In: *Soil 2000: new horizons for a new century: Australian and New Zealand second joint soils conference. Volume 3, poster papers*. New Zealand Society of Soil Science, Canterbury. pp. 85-86.
- Harper, R.J., Hatton, T.J., Crombie, D.S., Dawes, W.R., Abbott, L.K., Challen, R.P. and House, C. (2000). Phase farming with trees: a report for the RIRDC/LWRRDC/FWPRD Joint Venture Agroforestry Program. RIRDC publication **00/48**. pp. 1-53.
- Harper, R.J., Mauger, G., Robinson, N., McGrath, J.F., Smettem, K.R.J., Bartle, J.R. and George, R.J. (2001). Manipulating catchment water balance using plantation and farm forestry: case studies from south-western Australia. In: *Plantations, Farm Forestry and Water: Proceedings of a National Workshop, 20-21 July, 2000, Melbourne*. Rural Industries Research and Development Corporation, Canberra. RIRDC Publication **01/20**. pp. 44-50.
- Harper, R. and McGrath, J. (2000). Using soil survey for farm forestry and greenhouse sink site selection and management. *ACLEP Newsletter* **9(1)**. pp. 8-13.
- Harper, R.J., McKissock, I., Gilkes, R.J., Carter, D.J. and Blackwell, P.S. (2000). A multivariate framework for interpreting the effects of soil properties, soil management and landuse on water repellency. *Journal of Hydrology* **231/232**. pp. 371-383.
- Harper, R.J., Ryan, P.J., Booth, T.H., McKenzie, N.J. and Gilkes, R.J. (2000). Overview of The Australian farm forestry site selection manual. In: *Proceedings Australian Forest Growers Biennial Conference: Opportunities for the new Millennium, Cairns Convention Centre, Queensland, Australia, September 4-6, 2000*. pp. 8-9.
- Harper, R.J., Smettem, K.R.J. and Gilkes, R.J. (2000). Land assessment to integrate trees with agriculture for carbon sequestration, salinity control and profit. In: *Soil 2000: new horizons for a new century: Australian and New Zealand second joint soils conference. Volume 2, oral papers*. New Zealand Society of Soil Science, Canterbury. pp. 129-130.
- Harris, B. (2000). Perth Observatory vollie news. - April/May 2000. Department of Conservation and Land Management, Western Australia, pp. 1-10.
- Harris, B. (2000). Perth Observatory vollie news. - January/February 2000. Department of Conservation and Land Management, Western Australia, pp. 1-6.
- Harris, B. (2000). Perth Observatory vollie news. - June 2000. Department of Conservation and Land Management, Western Australia, pp. 1-3.
- Harris, B. (2000). Perth Observatory vollie news. - March 2000. Department of Conservation and Land Management, Western Australia, pp. 1-4.
- Harvey, J.M., Alford, J.J., Longman, V.M. and Keighery, G.J. (2001). A flora and vegetation survey of the islands of the Houtman Abrolhos, Western Australia. *CALMScience* **3**. pp. 521-623.

- Hingston, B. (2001). Growth plots established in Western Australia. *Agroforestry News* **10(1)**. pp. 17.
- Hislop, M. (2001). Collecting restdiads. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 8.
- Hobbs, R.J. and Yates, C.J. (2000). Priorities for action and management guidelines. In: *Temperate Eucalypt Woodlands in Australia: Biology, Conservation, Management and Restoration*. Surrey Beatty, Sydney. pp. 400-414.
- Hobbs, R.J. and Yates, C.J. (2000). Temperate eucalypt woodlands in Australia: an overview. In: *Temperate Eucalypt Woodlands in Australia: Biology, Conservation, Management and Restoration*. Surrey Beatty, Sydney. pp. 1-5.
- Hobbs, R.J. and Yates, C.J. (2000). Temperate eucalypt woodlands in Australia: biology, conservation, management and restoration. Surrey Beatty, Sydney. pp. 1-430.
- Hoey, B., Patrick, S. and Cochrane, A. (2000). Awash in colour: painting a path through the Murchison 2000. *Department of Conservation and Land Management, Western Australia, Landscape Expeditions* **37**. pp. 1-16.
- Hoey, B., Patrick, S. and Cochrane, A. (2000). Awash in colour: painting a path through the Murchison, August 4-13, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia. pp. 1-25.
- Hollebon, B. (2000). Make your own telescope mirror. Perth Observatory, pp. 1-14.
- Hollister, C., Coad, B., Campbell, R., Hislop, M. and Mahon, B.S. (2000). WA index of taxonomic literature (current as at 10 August 2000). Department of Conservation and Land Management, Western Australia. pp. 1-295.
- Hopkins, A.J.M. (2000). Poorly conserved and potentially threatened vegetation types in the Western Australian wheatbelt. I, associations: Project no. N722, National Reserves System Cooperative Program, Environment Australia: first report. Department of Conservation and Land Management, Western Australia. pp. 1-42.
- Hopkins, A.J.M. and Horwitz, P. (2000). Community and landscape decline in the moornongal-boodjar (ABSTRACT). In: *Book of Abstracts: International Symposium on Ecosystem Health, Carlton Crest, Brisbane, 12th-14th July, 2000*. International Society for Ecosystem Health, Brisbane. pp. 1.
- Hopkins, A.J.M. and Langley, M.A. (2000). West Midlands study: project status report. Department of Conservation and Land Management, Western Australia. pp. 1-12.
- Johnstone, R.E., Burbidge, A.H. and Stone, P. (2000). Birds of the southern Carnarvon Basin, Western Australia: distribution, status and historical changes. *Records of the Western Australian Museum Supplement* **61**. pp. 371-448.
- Kay, W.R., Halse, S.A., Scanlon, M.D. and Smith, M.J. (2001). Distribution and environmental tolerances of aquatic macroinvertebrate families in the agricultural zone of southwestern Australia. *Journal of the North American Benthological Society* **20**. pp. 182-199.
- Kay, W., Scanlon, M. and Halse, S. (2000). AusRivAS in Western Australia. *Rivers for the Future* **11**. pp. 32-36.
- Keighery, B. and Keighery, G. (2001). Biology and weed risk of *Euphorbia terracina* in Western Australia. In: *Euphorbia terracina (Geraldton Carnation Weed or Spurge): a Guide to its Biology and Control and Associated Safety Issues: Proceedings of a Workshop Conducted by Environmental Weeds Action Network, 7 October 2000*. Environmental Weeds Action Network, Perth. pp. 4-7.
- Keighery, G.J. (2000). *Grevillea manglesioides* subsp. *ferricola* Keighery, subsp. nov.. In: *Flora of Australia. Volume 17A, Proteaceae 2, Grevillea*. ABR/CSIRO, Melbourne. pp. 497.
- Keighery, G. (2000). Salinity: 5th horseman of the Apocalypse. *Wildflower Society of Western Australia Newsletter* **38(4)**. pp. 6-12.
- Keighery, G. (2000). Salinity: 5th horseman of the Apocalypse. Department of Conservation and Land Management, Western Australia, pp. 1-10.
- Keighery, G.J. (2000). Significant weed flora of the Greater Brixton Street Wetlands. In: *The Greater Brixton Street Wetlands Management Guidelines, Natural History and Research*. Friends of the Brixton Street Wetlands, Perth. pp. 33-34.
- Keighery, G. (2000). Wheatbelt wonders under threat. *Landscape* **16(2)**. pp. 37-42.
- Keighery, G.J. (2001). *Calectasia browneana* Keighery, K.W.Dixon & R.L.Barrett. *Nuytsia* **13**. pp. 419-424.
- Keighery, G.J. (2001). *Calectasia gracilis* Keighery. *Nuytsia* **13**. pp. 424-426.
- Keighery, G.J. (2001). Cyperaceae of Western Australia. In: *Knowing the Sedges of Perth: Background Papers for the Workshop held at Murdoch TAFE, April 28, 2001*. South Metropolitan College of TAFE, Murdoch. pp. 1-28.
- Keighery, G. (2001). Knowing the sedges of Perth: background and generic conspectus. In: *Knowing the Sedges of Perth: Background Papers for the Workshop held at Murdoch TAFE, April 28, 2001*. South Metropolitan College of TAFE, Murdoch. pp. 1-8.
- Keighery, G.J. (2001). A new species of *Chamaesilla* (Anthericaceae) from Western Australia. *Nuytsia* **13**. pp. 475-478.
- Keighery, G.J. (2001). A new subspecies of *Isotropis cuneifolia* (Fabaceae). *Nuytsia* **13**. pp. 471-474.
- Keighery, G. (2001). Taxonomic notes on the genus *Johnsonia* (Anthericaceae). *Nuytsia* **13**. pp. 479-481.
- Keighery, G.J., Keighery, B.J., Gibson, N. and Gunness, A.G. (2001). The vegetation and flora of the Quairading Nature Reserve, Shire of Quairading. Wildflower Society of Western Australia, Nedlands. pp. 1-60.
- Keighery, G.J., Gibson, N., Lyons, M.N. and Burbidge, A.H. (2000). Flora and vegetation of the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 77-154.
- Keighery, G., Halse, S. and McKenzie, N. (2001). Why wheatbelt valleys are valuable and vulnerable: the ecology of wheatbelt valleys and threats to their survival. In: *Conference Papers: Dealing With Salinity in Wheatbelt Valleys: Processes, Prospects and Practical Options, Merredin, 30 July-1 August 2001*. State Salinity Council, Perth. pp. 55-65.
- Keighery, G.J., Halse, S., McKenzie, N., Gibson, N., Burbidge, A.H. and Gomboso, J. (2000). Salinity: driving the catastrophic collapse of our ecosystem. *Life Lines* **6(3)**. pp. 29-30.
- Keighery, G.J. and Keighery, B.J. (2000). Flora of the Greater Brixton Street Wetlands. In: *The Greater Brixton Street Wetlands Management Guidelines, Natural History and Research*. Friends of the Brixton Street Wetlands, Perth. pp. 15-33.
- Keighery, G.J. and Keighery, B.J. (2001). Cyperaceae of the southern Swan Coastal Plain. In: *Knowing the Sedges of Perth: Background Papers for the Workshop held at Murdoch TAFE, April 28, 2001*. South Metropolitan College of TAFE, Murdoch. pp. 1-7.
- Keighery, G. and Keighery, B. (2001). Perth's bushland plant biodiversity. In: *Skills for Nature Conservation: Seminar Series Program, 2001: Exploring Perth's Unique Natural Environment, 9 June 2001*. pp. 1-2.
- Kendrick, P., van Leeuwen, S., Bromilow, B. and Hughes, M. (2000). Rock pools and rugged ranges: wildlife of the Nullagine River, 2000. *Department of Conservation and Land Management, Western Australia, Landscape Expeditions* **36**. pp. 1-20.
- Kendrick, P., van Leeuwen, S., Hughes, M. and Bromilow, B. (2000). Rock pools and rugged ranges: wildlife of the Nullagine River, May 22-31, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia, pp. 1-18.

- Kenneally, K., Coate, K., Edinger, D. and Morris, K. (2000). Montebellos magic: sailing the Pilbara coast, 2000. *Department of Conservation and Land Management, Western Australia, Landscape Expeditions* **40**. pp. 1-24.
- Kenneally, K., Edinger, D., Coate, K. and Morris, K. (2000). Montebellos magic: sailing the Pilbara coast, October 21-29, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia, pp. 1-23.
- Kinal, J. (2001). Using ground-based electromagnetic induction to estimate soil salt storage in south west forests: final report on SPP 1999/09. pp. 1-33.
- Lamont, B.B., Swanborough, P.W. and Ward, D. (2000). Plant size and season of burn affect flowering and fruiting of the grass tree *Xanthorrhoea preissii*. *Austral Ecology* **25**. pp. 268-272.
- Lander, N. (2000). Everlastings. *Western Wildlife: Newsletter of the Land for Wildlife Scheme* **4(4)**. pp. 6-7.
- Lane, J., Jaensch, R., Lynch, R. and Elscot, S. (2001). Western Australia. In: *A Directory of Important Wetlands in Australia, 3rd edn.* Environment Australia, Canberra. <http://www.environment.gov.au/wetlands/wet2.html> pp. 103-115.
- Lepschi, B.J. (2000). A review of the genus *Lythrum* (Lythraceae) in Western Australia, including typification of *L. paradoxum*. *Nuytsia* **13**. pp. 273-282.
- Lepschi, B.J. and Manning, J.C. (2000). A taxonomic review of the naturalized species of *Babiana* (Iridaceae) occurring in Western Australia. *Nuytsia* **13**. pp. 283-292.
- Lewington, M. (2000). The plant press : Western Australian Regional Herbaria newsletter. - Volume 8. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Lewington, M. (2001). The plant press : Western Australian Regional Herbaria newsletter. - Volume 9. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Lewington, M. (2001). Treasures of the Turquoise Coast: Jurien community conference. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 7.
- Liddelow, G. and Ward, B. (2000). Buckshot and breakaways: plants and animals of the Gibson Desert, 2000. *Department of Conservation and Land Management, Western Australia, Landscape Expeditions* **38**. pp. 1-12.
- Liddelow, G., Ward, B., Adams, P. and Charand, O. (2000). Buckshots and breakaways: plants and animals of the Gibson Desert, September 4-15, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia, pp. 1-20.
- Longman, V.M., Harvey, J.M. and Keighery, G.J. (2000). *Bryophyllum delagoense* (Crassulaceae): a new weed for Western Australia and a potentially serious problem for the Abrolhos Island. *Nuytsia* **13**. pp. 399-401.
- Lyons, M.N., Keighery, G.J., Gibson, N. and Wardell-Johnson, G. (2000). The vascular flora of the Warren bioregion, south-west Western Australia: composition, reservation status and endemism. *CALMScience* **3**. pp. 181-250.
- Macfarlane, T. (2000). Useful native grasses in south west Western Australia. In: *Native Grasses: Revegetation on Farms Information Kit*. Agriculture Western Australia, pp. 1-5.
- Marchant, N. (2000). Karri forest in microcosm: William Bay National Park. *Landscape* **16(1)**. pp. 42-47.
- Marchant, N. (2000). We need operating funds. *The Plant Press: Western Australian Regional Herbaria Newsletter* **8**. pp. 1, 4.
- Marchant, N. (2001). The CALM Herbarium's Weed Information Network (WIN). *Western Wildlife: Newsletter of the Land for Wildlife Scheme* **5(2)**. pp. 12.
- Marchant, N. (2001). Funding issues. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**. pp. 1.
- Marlow, N.J., Thomson, P.C., Algar, D., Rose, K., Kok, N.E. and Sinagra, J.A. (2000). Demographic characteristics and social organisation of a population of red foxes in a rangeland area in Western Australia. *Wildlife Research* **27**. pp. 457-464.
- Martin, R. (2000). The detection of synthetic supernovae in galaxy images. Perth Observatory, pp. 1-9.
- Maslin, B. (2000). *Acacia* seed for human consumption in the wheatbelt region of south-west Western Australia. In: *Proceedings of Native Foods Symposium, Muresk, 18 April 2000*.
- Maslin, B.R. (2001). Australian dryland acacias with edible seeds (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Maslin, B.R. (2001). Is systematics critical for effective utilisation and conservation of *Acacia*? (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1-2.
- McCarthy, A. (2001). Oil mallee establishment and carbon credits. *Dinkum Oil: Oil Mallee Association of W.A. Newsletter* **19**. pp. 11.
- McCauley, R.D., Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M.-N., Penrose, J.D., Prince, R.I.T., Adhitya, A., Murdoch, J. and McCabe, K. (2000). Marine seismic surveys: a study of environmental implications. *APPEA Journal* **40**. pp. 692-708.
- McCauley, R.D., Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M.-N., Penrose, J.D., Prince, R.I.T., Adhitya, A., Murdoch, J. and McCabe, K. (2000). Marine seismic surveys: analysis and propagation of air-gun signals and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid: prepared for Australian Petroleum Production Exploration Association. Curtin University of Technology, Centre for Marine Science and Technology, Perth. pp. 1-198.
- McCaw, L. (2000). Synopsis of the knowledge used in prescribed burning in Victoria, Kevin G. Tolhurst and N.P. Cheney (BOOK REVIEW). *Australian Forestry* **63**. pp. 235.
- McCaw, L., Gould, J.S. and Cheney, N.P. (2001). Prediction of high-intensity forest fires in eucalypt forests (ABSTRACT). In: *Conference proceedings: Forests in a Changing Landscape: 16th Commonwealth Forestry Conference jointly with the 19th Biennial Conference of the Institute of Foresters of Australia, Fremantle, Western Australia, 18-25 April 2001*. pp. 1.
- McCaw, L., Hagan, R. and Gould, J. (2001). Managing fire in regrowth eucalypt forests. In: *Intensive Management of Regrowth Forests for Wood Production in Australia: a Review of Current Practice and Future Potential*. CSIRO Forestry and Forest Products, Canberra. pp. 39-43.
- McCaw, W.L., Smith, R.H. and Neal, J.E. (2000). Post fire recruitment of red tingle (*Eucalyptus jacksonii*) and karri (*Eucalyptus diversicolor*) following low-moderate intensity prescribed fires near Walpole, south-west Western Australia. *CALMScience* **3**. pp. 87-94.
- McDonald, M.W. and Maslin, B.R. (2000). A taxonomic revision of salwoods: *Acacia aulacocarpa* Cunn. ex Benth. and its allies (Leguminosae: Mimosoideae: section Juliflorae). *Australian Systematic Botany* **13**. pp. 21-78.
- McEvoy P. and Pinder, A.M. (2000). Aquatic oligochaetes of South Australia (POSTER ABSTRACT). In: *Book of Abstracts: VIII International Symposium on Aquatic Oligochaeta: Bilbao, 18-22 July 2000*. University of the Basque Country, Bilbao, Spain. pp. 64.
- McKenna, S. and Burrows, N. (2001). Colin a finalist in top science awards. *CALM News* **May/June**. pp. 5.
- McKenzie, N.L., Hall, N. and Muir, W.P. (2000). Non-volant mammals of the southern Carnarvon basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 479-510.
- McKenzie, N.L., Halse, S.A. and Gibson, N. (2000). Some gaps in the reserve system of the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 547-567.

- McKenzie, N.L., Keighery, G.J., Gibson, N. and Rolfe, J.K. (2000). Patterns in the biodiversity of terrestrial environments in the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 511-546.
- McKenzie, N.L. and Muir, W.P. (2000). Bats of the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 465-477.
- McKenzie, N.L., Rolfe, J.K., Aplin, K., Cowan, M. and Smith, L.A. (2000). Herpetofauna of the southern Carnarvon basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**. pp. 335-360.
- McNamara, K., Brandis, T. and Hopkins, A. (2000). Filling the gaps: building a reserve system in the Gascoyne-Murchison region. *Landscape* **15(4)**. pp. 43-48.
- Millar, M.A., Byrne, M., Coates, D.J., Stukely, M.J.C. and McComb, J.A. (2000). Mating system studies in jarrah, *Eucalyptus marginata* (Myrtaceae). *Australian Journal of Botany* **48**. pp. 475-479.
- Miller, J., Maslin, B.R., Andrew, R. and Bayer, R. (2001). Towards an understanding of variation within the mulga complex (*Acacia anura* and relatives) using nuclear DNA techniques (ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Monks, L. and Coates, D. (2001). The translocation of two critically endangered *Acacia* species (POSTER ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Monks, L. and Gibson, N. (2000). Changes in peripheral vegetation of the Peel-Harvey Estuary 1994-1998. Department of Conservation and Land Management, Western Australia, pp. 1-98.
- Moore, R. (2001). Eucalypts for sawlogs: a pilot project in Western Australia. *Agroforestry News* **10(1)**. pp. 16.
- Moro, D. (2001). Evaluation and cost benefits of controlling house mice *Mus domesticus* on islands: an example from Thevenard Island, Western Australia (ABSTRACT). In: *Eradication of Island Invasives: Practical Actions and Results Achieved at the University of Auckland, 19-23 February 2001*. IUCN Species Survival Commission, Invasive Species Specialist Group, Auckland. pp. 26.
- Moro, D. and Morris, K. (2000). Population structure and dynamics of sympatric house mice, *Mus domesticus*, and Lakeland Downs short-tailed mice, *Leggadina lakedownensis*, on Thevenard Island, Western Australia. *Wildlife Research* **27**. pp. 257-268.
- Morris, K. (2000). Dasyurid recovery in Western Australia: the role of captive breeding and translocation (ABSTRACT). In: *Marsupial CRC Science Meeting, Akaroa, NZ 17-20 February 2000*.
- Morris, K. (2000). Fauna translocations in Western Australia, 1971-1999: an overview. In: *Biodiversity and the Re-Introduction of Native Fauna at Uluru-Kata Tjuta National Park: Proceedings of the Uluru-Kata Tjuta National Park Cross-Cultural Workshop on Fauna Re-Introduction, September 1999*. Bureau of Rural Sciences, Canberra. pp. 64-74.
- Morris, K.D. (2000). The status and conservation of native rodents in Western Australia. *Wildlife Research* **27**. pp. 405-419.
- Morris, K. (2000). Western Shield: the recovery of W.A.'s vertebrate fauna (ABSTRACT). In: *Australian Association of Veterinary Conservation Biologists Annual Conference 26 June, 2000*.
- Morris, K.D. (2001). The control of the introduced black rat on Barrow and adjacent islands off the north west coast of Western Australia (ABSTRACT). In: *Eradication of Island Invasives: Practical Actions and Results Achieved at the University of Auckland, 19-23 February 2001*. IUCN Species Survival Commission, Invasive Species Specialist Group, Auckland. pp. 26.
- Morris, K.D. and Burbidge, A.A. (2001). Translocations of threatened vertebrates to islands and peninsulas in Western Australia (ABSTRACT). In: *The Ecology of Insular Biotas, Victoria University of Wellington, 11-17 February 2001*. Victoria University of Wellington, Wellington. pp. 32.
- Morris, K., Liddelow, G. and Johnson, B. (2000). Beyond the dreaming: Project Eden, September 22-29, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia, pp. 1-17.
- Morris, K., Speldewinde P. and Orell, P. (2000). Djoongari (Shark Bay mouse) recovery plan, 1992-2001. - 3rd edn.. *Department of Conservation and Land Management, Western Australia, Wildlife Management Program* **17**. pp. 1-16.
- Morris, K., Varley, J., Liddelow, G. and Ward, B. (2000). Beyond the dreaming: Project Eden, 2000. *Department of Conservation and Land Management, Western Australia, Landscape Expeditions* **39**. pp. 1-12.
- Nguyen, V. (2000). A diet study of Australia's most critically endangered mammal, Gilbert's potoroo, *Potorous gilbertii* (Marsupialia: Potoroidae). Thesis (B.Sc.(Hons.)) — Edith Cowan University. pp. 1-104.
- Obbens, F. (2000). Critically endangered W.A. flora: monitoring and weed control research (1998 to 2000): ESP project number 564: final report submitted to the Commonwealth Threatened Species and Communities Section, Biodiversity Group, Environment Australia. Department of Conservation and Land Management, Western Australia, pp. 1-52.
- Paczkowska, G. and Chapman, A.R. (2000). The Western Australian flora: a descriptive catalogue. Wildflower Society of Western Australia, Nedlands. pp. 1-652.
- Patrick, S.J. (2000). Threatened flora management plan for CALM's Geraldton District: project no. 446: annual report, January 2000. Department of Conservation and Land Management, Western Australia, pp. 1-4.
- Patrick, S. (2001). Awash with colour : a Landscape Expedition with a difference. *Landscape* **16(3)**. pp. 28-35.
- Patrick, S. (2001). Botanical survey with the aid of volunteers: a study of the vegetation on a Murchison station (POSTER ABSTRACT). In: *Acacia Symposium: the Conservation and Utilisation Potential of Australian Dryland Acacias: 13-14th July, 2001, Dalwallinu, Western Australia*. Shire of Dalwallinu, Dalwallinu. pp. 1.
- Patrick, S. (2001). Declared rare and poorly known flora in the Geraldton District. *Department of Conservation and Land Management, Western Australia, Wildlife Management Program* **26**. pp. 1-664.
- Patrick, S.J. and Brown, A.P. (2001). Declared rare and poorly known flora in the Moora district. *Department of Conservation and Land Management, Western Australia, Wildlife Management Program* **28**. pp. 1-639.
- Pearson, D. (2000). Great desert skink. *Landscape* **16(2)**. pp. 36.
- Pearson, D. (2000). Research project: mulgaras and associated rare dasyurids of the north-eastern goldfields: annual report 2000 for Western Mining Corporation, Mt Keith Operations. Department of Conservation and Land Management, Western Australia, pp. 1-10.
- Pearson, D. and Jones, B. (2000). Lancelin Island Skink recovery plan. *Department of Conservation and Land Management, Western Australia, Wildlife Management Program* **22**. pp. 1-14.
- Pearson, D. and Turner, J. (2000). Marsupial moles pop up in the Great Victoria and Gibson deserts. *Australian Mammology* **22**. pp. 115-119.
- Pearson, G., Goeij, P. de, Honkoop, P., Lavaleye, M., Piersma, T. and Rogers, D. (2000). Flying for a feast: shorebird heaven on the Eighty Mile Beach, October 8-14, 2000: expedition briefing. Department of Conservation and Land Management, Western Australia, pp. 1-20.
- Perth Observatory (2000). Stars and telescopes: Perth Observatory tours, September 2000 to August 2001 (PAMPHLET). Department of Conservation and Land Management, Western Australia, pp. 1-6.

- Pilbeam, R.A., Colquhoun, I.J., Shearer, B. and Hardy, G.E. St. J. (2000). Phosphite concentration: its effect on phytotoxicity symptoms and colonisation by *Phytophthora cinnamomi* in three understory species of *Eucalyptus marginata* forest. *Australasian Plant Pathology* **29**, pp. 86-95.
- Pinder, A.M. (2000). Diversity and zoogeography of freshwater oligochaetes from Australia (ABSTRACT). In: *Book of Abstracts: VIII International Symposium on Aquatic Oligochaeta: Bilbao, 18-22 July 2000*. University of the Basque Country, Bilbao, Spain. pp. 75.
- Pinder, A.M. and Brinkhurst, R.O. (2000). A review of the Tubificidae (Annelida: Oligochaeta) from Australian inland waters. *Memoirs of Museum Victoria* **58**, pp. 39-75.
- Pinder, A.M. and Erséus, C. (2000). New Phreodrilidae (Annelida: Clitellata) from Tasmanian estuaries. *Papers and Proceedings of the Royal Society of Tasmania* **134**, pp. 29-33.
- Pinder, A.M., Halse, S.A., Shiel, R.J. and McRae, J.M. (2000). Granite outcrop pools in south-western Australia: foci of diversification and refugia for aquatic invertebrates. *Journal of the Royal Society of Western Australia* **83**, pp. 149-161.
- Pinder, A.M., Halse, S.A., Shiel, R.J., McRae, J.M., Cale, D.J. and Penniford, M.G. (2001). Diversity, endemism and conservation of the invertebrate fauna of saline wetlands in south-western Australia. In: *Book of Abstracts: Societas Internationalis Limnologiae 2001, XXVIII Congress, Monash University, Melbourne, Australia*. Monash University, Melbourne. pp. 167.
- Porter, W.M., Bartle, J. and Cooper, D. (2001). Fitting perennials into an annual world. In: *Conference Papers: Dealing With Salinity in Wheatbelt Valleys: Processes, Prospects and Practical Options, Merredin, 30 July-1 August 2001*. State Salinity Council, Perth. pp. 127-148.
- Prince, R.I.T. (2000). The Western Australian Marine Turtle Project. In: *Sea Turtles of the Indo-Pacific: Research, Management & Conservation*. ASEAN Academic Press, London. pp. 94-99.
- Prince, R.I.T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna: Pilbara coastal and offshore region, WA: completion report. Department of Conservation and Land Management, Western Australia, pp. 1-39.
- Robinson, R.M. (2000). The effect of wildfire on the fruiting of macrofungi in regrowth karri forests. II, results from the second year of monitoring: SPP 98/0015 progress report. Department of Conservation and Land Management, Western Australia, pp. 1-26.
- Robinson, R.M. (2001). The effect of wildfire on the fruiting of macrofungi. III, results from the third year of monitoring: SPP 98/0015 progress report. Department of Conservation and Land Management, Western Australia, pp. 1-30.
- Robinson, R. (2001). Fruits of fire. *Landscape* **16(4)**, pp. 48-53.
- Robinson, R.M., Sturrock, R.N., Davidson, J.J., Ekramoddoullah, A.K.M. and Morrison, D.J. (2000). Detection of a chitinase-like protein in the roots of Douglas-fir trees infected with *Armillaria ostoyae* and *Phellinus weirii*. *Tree Physiology* **20**, pp. 493-502.
- Rolfe, J.K. and McKenzie N.L. (2000). Comparison of methods used to capture herpetofauna: an example from the Carnarvon Basin. *Records of the Western Australian Museum Supplement* **61**, pp. 360-370.
- Ryan, P. and Brand, J. (2001). Sandalwood: a lucrative solution to salinity problem. *CALM News Jan/Feb*, pp. 6.
- Rye, B.L. (2000). (1472) Proposal to conserve the name *Dicrasyllis* against *Lachnocephalus* and *Mallophora* (Prostantheroideae: Lamiaceae). *Taxon* **49**, pp. 815-816.
- Rye, B.L. (2000). *Brachysola* (Lamiaceae: Prostantheroideae), a new Western Australian genus. *Nuytsia* **13**, pp. 331-338.
- Rye, B.L. (2000). *Trymalium monospermum* (Rhamnaceae), a new species from south-western Australia. *Nuytsia* **13**, pp. 339-343.
- Rye, B.L. (2001). A taxonomic update of *Stenanthemum* (Rhamnaceae: Pomoderreae) in Western Australia. *Nuytsia* **13**, pp. 495-507.
- Rye, B.L. and Trudgen, M.E. (2000). *Aluta*, a new Australian genus of Myrtaceae. *Nuytsia* **13**, pp. 345-366.
- Rye, B.L. and Trudgen, M.E. (2001). A taxonomic revision of *Thryptomene* section *Thryptomene* (Myrtaceae). *Nuytsia* **13**, pp. 509-528.
- Sage, L.W. (2000). New taxa in *Goodenia* (Goodeniaceae) from the south-west of Western Australia, with an update to the *Goodenia* key in the Flora of Australia. *Nuytsia* **13**, pp. 367-377.
- Sage, L.W. (2001). New taxa in *Goodenia* (Goodeniaceae) from the Kimberley region of Western Australia. *Nuytsia* **13**, pp. 529-536.
- Sage, L.W., Lloyd, S.G. and Pigott, J.P. (2000). *Sagittaria platyphylla* (Alismataceae), a new aquatic weed threat in Western Australia. *Nuytsia* **13**, pp. 403-405.
- Shearer, B.L. and Smith, I.W. (2000). Diseases of eucalypts caused by soilborne species of *Phytophthora* and *Pythium*. In: *Diseases and Pathogens of Eucalypts*. CSIRO, Collingwood. pp. 259-291.
- Shiel, R.J., Green, J.D. and Halse, S.A. (2001). Copepods of ephemeral waters in arid and temperate Australia. In: *Program & Abstracts: Fifth International Crustacean Congress and Summer 2001 Meeting of The Crustacean Society, 9-13 July 2001, the University of Melbourne, Melbourne, Victoria, Australia*. University of Melbourne, Melbourne. pp. 132.
- Simmons, L.W., Beesley, L., Lindhjem, P., Newbound, D., Norris, J. and Wayne, A. (2000). Nuptial feeding by male bushcrickets: an indicator of male quality?. *Behavioral Ecology* **10**, pp. 263-269.
- Smith, G.T. and McKenzie, N.L. (2000). Biogeography of scorpion communities in the southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum Supplement* **61**, pp. 269-279.
- Speldewinde, P. and Morris, K. (2000). The re-introduction of the woylie, *Bettongia penicillata*, to Peron Peninsula, Shark Bay (ABSTRACT). In: *Australian Mammal Society 2000 Conference: Program and Abstracts: Alice Springs, 12-14 April 2000*. pp. 22.
- Spooner, A. and Gioia, P. (2001). Gaps in our knowledge of the distribution of our flora. *The Plant Press: Western Australian Regional Herbaria Newsletter* **9**, pp. 4.
- Start, A.N., Anstee, S.D. and Endersby, M. (2000). A review of the biology and conservation status of the ngadji *Pseudomys chapmani* Kitchener, 1980 (Rodentia: Muridae). *CALMScience* **3**, pp. 125-147.
- Start, T. and Graham, G. (2000). Quadrat analysis. In: *A Land Management Assessment of Mandora Marsh and its Immediate Surrounds, October 1999*. Department of Conservation and Land Management, Western Australia, pp. 59-65.
- Start, A.N., Handasyde, T. and Barrett, R.L. (2001). Environmental management issues on the Yampi Sound Defence Training Area (YSTA), Derby, Western Australia: recommendations for the Australian Heritage Commission. Department of Conservation and Land Management, Western Australia, pp. 1-9.
- Start, T. and Kendrick, P. (2000). Fauna. In: *A Land Management Assessment of Mandora Marsh and its Immediate Surrounds, October 1999*. Department of Conservation and Land Management, Western Australia, pp. 33-45.
- Storey, A.W., Halse, S.A. and Shiel, R. (2000). Aquatic fauna and water chemistry. In: *A Land Management Assessment of Mandora Marsh and its Immediate Surrounds, October 1999*. Department of Conservation and Land Management, Western Australia, pp. 66-77.
- Thomas, N.D. and Whisson, L. (2001). Farewell felines of Faure: follow-up survey of feral cats on Faure Island. Department of Conservation and Land Management, Western Australia, pp. 1-5.
- Thomson, P.C. and Algar, D. (2000). The uptake of dried meat baits by foxes and investigations of baiting rates in Western Australia. *Wildlife Research* **27**, pp. 451-456.
- Thomson, P.C., Marlow, N.J., Rose, K. and Kok, N.E. (2000). The effectiveness of a large-scale baiting campaign and an evaluation

- of a buffer zone strategy for fox control. *Wildlife Research* **27**. pp. 465-472.
- Tommerup, I.C., Dobrowski, M.P., Hüberli, D., O'Brien, P.A., Hardy, G.E. St. J. and Shearer, B.L. (2000). Risks and threats due to genetic variation in *Phytophthora cinnamomi* for disease management in natural vegetation ecosystems. In: *Phytophthora Diseases of Forest Trees: IUFRO Working Party 70.02.09 First International Meeting on Phytophthoras in Forest and Wildland Ecosystems, Grants Pass, Oregon, USA, August 30-September 3 1999*. pp. 55-63.
- Utting, M. (2000). Astronomy in Western Australia. Volume III, 1940-1962. Perth Observatory, pp. 1-131.
- Van Heurck, P.F., Burbidge, T. and Wheeler, I. (2000). Invertebrate biodiversity in the tingle and other forests of the Walpole-Nornalup National Park in south western Australia. Department of Conservation and Land Management, Western Australia, pp. 1-80.
- Vernes, T. (2000). Sandalwood research newsletter. - Issue 9. Department of Conservation and Land Management, Western Australia, pp. 1-5.
- Vernes, T. (2000). Sandalwood research newsletter. - Issue 10. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Vernes, T. (2000). Sandalwood research newsletter. - Issue 11. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Vernes, T. (2000). *Santalum album* in the Top End, Northern Territory, Australia. *Sandalwood Research Newsletter* **9**. pp. 2-3.
- Vernes, T. (2001). Preliminary results from *Santalum macgregorii* ex situ conservation planting. *Sandalwood Research Newsletter* **13**. pp. 6-7.
- Vernes, T. (2001). Sandalwood research newsletter. - Issue 12. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Vernes, T. (2001). Sandalwood research newsletter. - Issue 13. Department of Conservation and Land Management, Western Australia, pp. 1-8.
- Ward, D. (2000). Trouble in the tuart: a brief fire history. Department of Conservation and Land Management, Western Australia, pp. 1-25.
- Ward, D.J. and Lamont, B.B. (2000). Probability of grasstrees (*Xanthorrhoea preissii*) flowering after fire. *Journal of the Royal Society of Western Australia* **83**. pp. 13-16.
- Wardell-Johnson, G.W. (2000). Responses of forest eucalypts to moderate and high intensity fire in the tingle mosaic, south-western Australia: comparisons between locally endemic and regionally distributed species. *Austral Ecology* **25**. pp. 409-421.
- Wardell-Johnson, G. and Williams, M. (2000). Edges and gaps in mature karri forest, south-western Australia: logging effects on bird species abundance and diversity. *Forest Ecology and Management* **131**. pp. 1-21.
- Watts, C.H.S. and Pinder, A. (2000). Two new species of *Antiporus* Sharp from Western Australia (Coleoptera: Dytiscidae). *Records of the South Australian Museum* **33**. pp. 17-19.
- Wayne, A., Rooney, J., Ward, C., Wheeler, I. and Mellican, A. (2001). Spotlight surveys to investigate the impacts of timber harvesting and associated activities within the jarrah forest of Kingston State Forest, with particular reference to the koomal (*Trichosurus vulpecula*) and ngwayir (*Pseudocheirus occidentalis*): Kingston Project progress report. Department of Conservation and Land Management, Western Australia, pp. 1-30.
- Wayne, A., Ward, C., Rooney, J. and Wheeler, I. (2000). The immediate impacts of timber harvesting and associated activities on the ngwayir (*Pseudocheirus occidentalis*) in the jarrah forest of Kingston State Forest Block: progress report, December 2000. Department of Conservation and Land Management, Western Australia, pp. 1-46.
- Wayne, A., Wheeler, I., Ward, C., Rooney, J. and Mellican, A. (2001). The impacts of timber harvesting and associated activities on the small terrestrial vertebrates of the jarrah forest: Kingston Project progress report. Department of Conservation and Land Management, Western Australia, pp. 1-37.
- Webb, B., Murphy, D., Harper, R., Warren, J. and Jasper, D. (2000). Tree-crops can increase the labile soil organic matter content in sandy soils of Western Australia (ABSTRACT). In: *Remade Lands: International Conference on the Remediation and Management of Degraded Lands: Book of Abstracts, Fremantle, Western Australia, 30 November-2 December 2000*. Murdoch University, Institute for Environmental Science, Murdoch. pp. 156-157.
- Wheeler, I. (2001). Owls in the south west of Western Australia. *Western Wildlife: Newsletter of the Land for Wildlife Scheme* **5(1)**. pp. 5-6.
- Wheeler, J.R. (2000). *Hibbertia porongurupensis*, a new name for a species of Dilleniaceae endemic to the Porongurup Range. *Nuytsia* **13**. pp. 395-398.
- Wheeler, J.R. (2000). Review of *Hibbertia mucronata* and its allies (Dilleniaceae). *Nuytsia* **13**. pp. 379-394.
- Wheeler, J.R., Marchant, N.G. and Robinson, C.J. (2001). *Agonis fragrans* (Myrtaceae), a new species from Western Australia. *Nuytsia* **13**. pp. 567-570.
- Whitford, K.R. (2001). Dimensions of tree hollows used by birds and mammals in the jarrah forest: improving the dimensional description of potentially usable hollows. *CALMScience* **3**. pp. 499-511.
- Whitford, K.R. and Williams, M.R. (2001). Survival of jarrah (*Eucalyptus marginata* Sm.) and marri (*Corymbia calophylla* Lindl.) habitat trees retained after logging. *Forest Ecology and Management* **146**. pp. 181-197.
- Wilkinson, C.J., Shearer, B.L., Jackson, T.J. and Hardy, G.E. St. J. (2001). Variation in sensitivity of Western Australian isolates of *Phytophthora cinnamomi* to phosphite in vitro. *Plant Pathology* **50**. pp. 83-89.
- Williams, A. (2000). Perth Observatory DNS and WWW proxy services. Perth Observatory, pp. 1-5.
- Williams, A. (2000). An unusually late marbled *Xenica* observation. *Newsletter of the Western Australian Insect Study Society* **Apr**. pp. 4.
- Williams, A.R. (2001). An illustrated key to the perennial grasses of the Avon wheatbelt of Western Australia. Western Australian Herbarium, Perth. pp. 1-43.
- Williams, A. (2001). Long-tailed pea-blue (*Lampides boeticus*). *Newsletter of the Western Australian Insect Study Society* **Feb**. pp. 2-3.
- Williams, A.A.E. and Powell, R.J. (2000). Butterflies on Rottneest Island. *Landscape* **15(4)**. pp. 23-27.
- Williams, M. (2000). Northern butterflies visiting Perth. *Newsletter of the Western Australian Insect Study Society* **Feb**. pp. 4-5.
- Williams, M.R. (2001). Grasstrees and woody plants as bio-indicators of past growing conditions and the patchiness of past fires: final report to the Department of Conservation and Land Management. Curtin University of Technology, Perth. pp. 1-15.
- Williams, M. (2001). More on wedge skippers. *Newsletter of the Western Australian Insect Study Society* **Jun**. pp. 8.
- Willing, T. and Handasyde, T. (2000). Vegetation & flora. In: *A Land Management Assessment of Mandora Marsh and its Immediate Surrounds, October 1999*. Department of Conservation and Land Management, Western Australia, pp. 19-32.
- Wills, A., Tay, F., Stukely, M. and Burbidge, T. (2000). Crown decline in wandoo, 1999-2000. Department of Conservation and Land Management, Western Australia, pp. 1-17.
- Wilson, P.G. (2001). *Leiocarpa*, a new Australian genus of the Asteraceae tribe Gnaphalieae. *Nuytsia* **13**. pp. 595-605.

- Wilson, P.G. (2001). *Leptorhynchos* (Asteraceae: Gnaphalieae), notes, new taxa and a lectotypification. *Nuytsia* **13**. pp. 607-611.
- Wilson, P. (2001). Salacious samphires. *Western Wildlife: Newsletter of the Land for Wildlife Scheme* **5(2)**. pp. 6-8.
- Yates, C., Coates, D. and Cochrane, A. (2000). *Verticordia* (6) interim recovery plans (implementation): ESU 00006465: final report submitted to the Commonwealth Threatened Species and Communities Section, Biodiversity Group, Environment Australia. Department of Conservation and Land Management, Western Australia, pp. 1-41.
- Yates, C., Cochrane, A., Buist, M. and Coates, D. (2000). *Acacia* (6) interim recovery plans (implementation): ESU 00006465: final report submitted to the Commonwealth Threatened Species and Communities Section, Biodiversity Group, Environment Australia. Department of Conservation and Land Management, Western Australia, pp. 1-64.
- Yates, C.J., Hobbs, R.J. and Atkins, L. (2000). Establishment of perennial shrub and tree species in degraded *Eucalyptus salmonophloia* (salmon gum) remnant woodlands: effects of restoration treatments. *Restoration Ecology* **8**. pp. 135-143.
- Yates, C.J., Hobbs, R.J. and True, D.T. (2000). The distribution and status of eucalypt woodlands in Western Australia. In: *Temperate Eucalypt Woodlands in Australia: Biology, Conservation, Management and Restoration*. Surrey Beatty, Sydney. pp. 86-106.
- Yates, C.J., Norton, D.A. and Hobbs, R.J. (2000). Grazing effects on plant cover, soil and microclimate in fragmented woodlands in south-western Australia: implications for restoration. *Austral Ecology* **25**. pp. 36-47.
- Young, A.M., Bougher, N.L. and Robinson, R.M. (2000). Hygrophoraceae of Western Australia. II, further taxa. *Australasian Mycologist* pp. 41-48.
- Yung, F.H. (2001). Literature review in sustainability, stochastic methods & PVA and nonlinear dynamics (chaos) for ecological modelling. Department of Conservation and Land Management, Western Australia, pp. 1-56.

