

**annual
REPORT
1999-2000**



**Department of Conservation
and Land Management**

CALM'S MISSION

We conserve and manage Western Australia's native plants and animals, and the lands, waters and resources entrusted to CALM for the benefit of present and future generations.

WHAT WE DO

Western Australia has a beautiful, diverse and supportive natural environment which provides material, aesthetic and spiritual benefits. It is an essential part of Western Australians' livelihood and quality of life.

In keeping with our mission, the Department of Conservation and Land Management has the following objectives.

Conservation: To conserve indigenous plants, animals and ecological processes in natural habitats throughout the State.

Value and Use of Resources: To optimise the value and economic return to the community of wildlife, lands, waters and resources entrusted to CALM without compromising conservation and other management objectives.

Recreation and Tourism: To identify and provide opportunities and services to the community which allow them to enjoy and value the wildlife, lands, waters and resources entrusted to CALM without compromising conservation and other management objectives.

Knowledge: To seek and provide an up-to-date and sound scientific and information basis for CALM's conservation and land management activities.

Community Support: To promote community awareness and appreciation of the values of the wildlife, lands, waters and resources entrusted to CALM, and to develop community understanding and support for CALM's conservation and land management activities.

CALM People: To recruit, develop, reward and retain knowledgeable and talented staff, and to provide a stimulating, safe, productive and supportive work environment where staff can pursue individual goals consistent with those of CALM.

Corporate Efficiency: To optimise the efficiency, effectiveness and responsiveness of CALM in the achievement of conservation and other management objectives.



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


Department of Conservation and Land Management

17 Dick Perry Avenue
KENSINGTON WA 6151
Telephone (08) 9334 0333

www.naturebase.net

HON MINISTER FOR THE ENVIRONMENT

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.



Dr Wally Cox
EXECUTIVE DIRECTOR
30 August 2000

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Highlights

- ✓ Reintroduction of the bilby (*Macrotis lagotis*) to Dryandra State Forest (p. 14)
- ✓ Release of the Ministerial Advisory Group report on karri and tingle management (Ferguson report) (p. 17)
- ✓ Construction of the Windy Hill extension to the CALM Manjimup Nursery and opening by the Premier (p. 23)
- ✓ 35,000 walkers spent 215,000 days on the Bibbulmun Track (p. 33)
- ✓ New telescope enclosure for Star Viewing Night visitors (p. 37)

EXECUTIVE DIRECTOR'S REVIEW

1999–2000

Community awareness of environmental issues has increased significantly in the last decade. This recognition is critical: resolution of many of the issues relies on partnerships between Governments and the community, with Governments providing the necessary frameworks, coordination and some resources, and the community and individuals working to address issues within their direct control.

It is this framework that has guided the Department of Conservation and Land Management (CALM) to introduce a major public participation initiative during 1999–2000. There are a number of components to the initiative: developing a Public Participation Strategy, training a number of CALM staff, and finally engaging the community in several of the decision processes. This has already been common practice in the development of management plans for national parks, marine parks and other conservation reserves. It will be expanded to include the preparation of logging plans.

This policy of open communication is not without risks from individuals and groups who want a platform for their views. A mature approach by participants will ensure that the wider community obtains a better conservation outcome.

Another aspect of CALM's partnership with the community is the involvement of volunteers in a range of CALM activities. More than 1400 people work closely with CALM staff in important projects such as vegetation surveys, monitoring of animal populations, identification of plant species at the

Herbarium and provision of information to groups and individuals. The contribution of all CALM volunteers is very much appreciated, for without their contribution the community would be the poorer in nature conservation.

1999–2000 saw the start of a number of changes that will significantly impact on the future directions of nature conservation in Western Australia.

Government has announced its intention to separate the conservation role from the native forest harvesting and plantation roles through the establishment of two new Commissions. The first is the Conservation Commission, which replaces the National Parks and Nature Conservation Authority and the Lands and Forest Commission. The other is the Forest Products Commission, which manages plantations, the harvesting of native forests, the sale of forest products, the promotion of value adding, and general development of the timber industry. The Forest Products Commission replaces, in part, the Forest Production Council.

These changes do not affect the Marine Parks and Reserves Authority, which will retain its responsibility for marine parks and reserves.

In future, therefore, CALM will operate without its former roles in timber harvesting and plantations. These will be transferred to the Forest Products Commission. As at 30 June 2000 the CALM Amendment Bill 1999 and Forest Products Bill 1999 had passed through the Legislative Assembly and were with the Legislative Council.

The proposed separation of roles will provide very clear direction for each agency and will improve accountability. CALM will support the Conservation Commission and the Marine Parks and Reserves Authority, and will manage more than 22 million hectares of lands and waters set aside for conservation, State forest and timber reserves.

The change process to establish the new agencies has been well supported by CALM staff, who have nonetheless maintained their focus on delivering services to the community. This support and the support of the Minister for the Environment, Cheryl Edwardes MLA, and the Minister for Forest Products, Paul Omodei MLA, has turned a potentially difficult task into a productive process to establish a suite of capable agencies to drive further progress.

This year also saw the founding Executive Director, Dr Syd Shea, transfer to a special project on Carbon Accretion with the Ministry of the Premier and Cabinet. Dr Shea helped establish the Department of Conservation and Land Management in 1985. Under his leadership major initiatives such as Western Shield, bluegum plantations, oil mallees, maritime pine and Walpole's Tree Top Walk have had a major impact on Western Australia. The staff of CALM wish him well in his new role as Professor of Environmental Science at Notre Dame University.



Dr Wally Cox
EXECUTIVE DIRECTOR
30 August 2000

THAT WAS THE YEAR ...

1999–2000

CALM is an integrated agency which is responsible for conserving the State's rich diversity of native plants, animals and natural ecosystems, and manages lands and waters to conserve the native plants and animals they sustain, for the recreation and tourism they can support, and for the renewable resources they provide.

CALM's primary responsibility is to manage these lands and waters on an ecologically sustainable basis so that the needs of the present are met without compromising the choices of future generations.

A NEW DIRECTION FOR CALM...

Legislation to create a new structure for the future management of Western Australia's conservation estate—including national parks, conservation parks and multiple-use State forests—was introduced into State Parliament on 25 November 1999. The proposed changes were outlined in the Conservation and Land Management Amendment Bill and the Forest Products Bill.

The Bills had two aims. The first was to create a new Conservation Commission of Western Australia that would replace the existing National Parks and Nature Conservation Authority; all conservation lands, including multiple-use State forests, would be vested in the Commission. The second was to create a new Forest Products Commission that would be responsible for harvesting and selling the State's forest resources. This Commission also would be responsible for ensuring that the forest industries remained viable and sustainable into the future to protect jobs and communities in the south-west.

The changes were foreshadowed by the State Government following the signing of the Regional Forest Agreement in May 1999.

In preparation for the transition to the new structure, and to ensure that the changes would be implemented with minimal disruption to the Department's work, CALM created a new Forest Products Division to oversee the commercial operations of native forest, plantation and sandalwood management. The new Division has separate headquarters in Perth with regional offices in Bunbury, Manjimup, Nannup and Harvey.

A new program of Sustainable Forest Management was created within the Department. This program is responsible for the implementation of ecologically sustainable forest management initiatives.

At the time of reporting, the legislation is still before the Legislative Council. Key amendments include incorporating the principles of ecologically sustainable forest management as outlined in the Regional Forest Agreement, and to retain the CALM name and logo. It is expected that the legislation will be passed to enable the two new Commissions to be created during the latter part of 2000.

...AND FOR FOREST MANAGEMENT

A new course in forest management that encourages a greater community

involvement was charted in December with the release of the report of a Ministerial Advisory Group on Karri and Tingle forest management. The report (known as the Ferguson report after the Advisory Group's chairman, Professor Ian Ferguson of Melbourne University's School of Forestry) outlined a series of recommendations in relation to ecological sustainability, product delivery and end use as well as the development of silvicultural prescriptions, soil conservation, environmental performances, research, social issues and forest planning.

Key recommendations accepted by the State Government included:

- an immediate end to logging in old-growth karri/tingle forest as well as two-tiered karri/tingle forest (forest that has been selectively logged in the past);
- an end to logging in sensitive areas of old-growth karri within 16 blocks (Beavis, Burnett, Carey, Dawson, Deep, Gardner, Giblett, Jane, Keystone, Northcliffe, Ordinance, Sharpe, Swarbrick, Thomson, Wattle and Wye);
- an end to harvesting old-growth karri after the year 2003;
- the maximum old-growth karri coupe size to be 40 ha, half the current size (the average clearfell patch is expected to be reduced to 13–15 ha); and

- clearfelling to be the preferred harvesting method for old growth and two-tiered karri forest due to the safety hazards associated with mature karri trees.

Negotiations to 'buy out' contracts have begun with the timber industry. These aim to reduce the level of karri sawlogs harvested to an average 149,000 cubic metres per annum. The contracted level in the year under review was 168,000 cubic metres a year. From the year 2004 the annual yield will be 50,000 cubic metres.

A key effect of the adoption of these recommendations was that at least 86 per cent of existing old-growth karri would be in conservation reserves or otherwise not available for timber harvesting. This represents an increase of more than 9000 hectares of karri under protection, an additional 15 per cent on the level set out in the Regional Forest Agreement.

COMMUNITY CONSULTATION— THE WAY AHEAD

The release of the Ferguson report also heralded a new approach to public involvement in forest management issues, particularly timber harvesting plans.

In response to the report's recommendations, CALM proposed improved processes to involve the community at various stages of planning, including a 'whole of forest' approach as well as in relation to regional and local logging plans.

At the time the report was released, some timber harvesting plans for 2000 and some indicative plans for the period 2001–03 were released for public comment. An independent environmental consultant was appointed to summarise the public submissions.

The Department also engaged independent consultants to assist in strengthening the public participation processes. CALM is committed to involving the community in conserving the natural resources of Western Australia, whether it be day-to-day management of our natural environment or input to the making of policy.

JARRAH—TAKING A STRATEGIC APPROACH...

A third initiative after the Ferguson report was the framework for a jarrah strategy that would emphasise local community involvement in decisions about management and harvest operations. The strategy was foreshadowed in the Premier's announcement of a new direction in forest management on 27 July 1999.

The strategy would consider value-adding requirements for the timber industry, including regular audits of all jarrah supply contracts and a capacity to end contracts to businesses that did not meet value-adding targets. It would also consider other methods of selling sawlogs, including competitive tendering, to encourage greater use of lower-value jarrah logs. There would be limits on using native timbers for products such as railway sleepers or structural timber unless it could be demonstrated that the resource would otherwise be wasted.

...AND AN INDEPENDENT REVIEW OF SUSTAINED YIELD

An independent review of sustained yield in the south-west native forests was announced during the year. The review is in line with the objectives established under the Regional Forest Agreement and the Government's new initiatives. The aim of ecologically sustainable forest management is to ensure that the forest is managed in

such a way that all its values are sustained at a regional level. These include biodiversity as well as ecological processes and forest resources.

Draft terms of reference for the independent review were circulated to key stakeholders for comment. Stakeholders also were asked to comment on the disciplines from which the members of the review panel should be drawn.

The Department also brought forward an independent review of royalties with the appointment in June of consultants Chandler Fraser Keating. The review previously had been scheduled for 2003 as part of the lead-up to the forest management plan to operate from 2004.

The review will focus on the method of calculating native forest timber prices and will recommend a new schedule of prices and timeframes for future reviews.

WESTERN SHIELD— WILDLIFE RECOVERS

Western Shield – CALM's nature conservation program aimed at bringing back 30 native animal species from the brink of extinction – continued strongly throughout the year with the reintroduction of several species into their former range. These included woylies into Peron Peninsula in the World Heritage Listed Shark Bay region, tammar wallabies into the jarrah forest around Dwellingup, and further releases of the world's rarest tortoise, the western swamp tortoise, into Twin Swamps Nature Reserve to the north of Perth. Dibblers were released on Escape Island off Jurien on the State's mid-west coast.

A major advance was the reintroduction of bilbies into the

Dryandra woodland, north-west of Narrogin in the western wheatbelt. The release of the bilbies in April marked the beginning of Return to Dryandra, a new sub-program of *Western Shield*. It will focus on restoring the range of native fauna once found in the wheatbelt before agricultural clearing and predation by the European fox and feral cat. Other animals scheduled for release include boodies, banded hair-wallabies, western barred bandicoots and mala.

In the long term, it is envisaged that Return to Dryandra will provide a distinctive nature-based tourism experience where people can see a diverse range of native wildlife in high densities, similar to those that existed before feral predators and agricultural clearing. This will be helped by a Commonwealth Government grant of \$80,000 from the Regional Tourism Program for the establishment of a two-hectare viewing enclosure at Dryandra.

Fifteen banded hare-wallabies also were translocated to the confinement of the field breeding centre at Dryandra. The animals have not been recorded on the mainland since 1906. They were once found in the southern wheatbelt and south-west areas of the State.

The success of *Western Shield* hinges on using one of Western Australia's natural advantages to control one of native wildlife's biggest threats: the European fox. The natural advantage is the toxin 1080, which occurs naturally in 'poison peas' (*Gastrolobium* spp.) Because Western Australia's native animals have evolved alongside these plants, they can tolerate high doses of the poison. But even tiny doses are lethal to foxes and feral cats. The program began in 1996 following the success of the initial broadscale fox-baiting initiative, *Operation Foxglove*, in the forests between Mundaring and

Collie. In the past four years, almost 1000 native animals have been reintroduced into parts of their former range. Almost 3.5 million hectares of conservation lands and State forest are now in the baiting program.

SEEDLINGS BY THE MILLIONS

A \$9 million expansion program at CALM's tree nursery at Manjimup was officially opened in May. Total capacity at the nursery is now 45 million seedlings. This year, 41.5 million seedlings were produced, the main species being bluegums (20.5 million), maritime pines (13 million), radiata pine (2 million), oil mallees (760,000), karri (3.7 million), and other native species (1.64 million).

The nursery also houses a seed centre that stores approximately 3200 kg of seed from more than 540 native and exotic species. The seed is used for CALM land rehabilitation and conservation programs as well as being available to the public.

The nursery has been expanded to meet the needs of the burgeoning tree crops industry and to develop major plantings of maritime pines on cleared farmland in the medium rainfall belt (400–600 mm a year). This is part of CALM's integrated approach to tackling land and water degradation, which has occurred as a result of salinity.

NEW HORIZONS FOR MARINE CONSERVATION

Marine conservation took a further step forward with the formation of advisory committees to examine the creation of two marine conservation reserves in the waters of the State's north-west coast. The proposed reserves are the waters of the Dampier Archipelago/ Cape Preston area and the Montebello/

Barrow islands area. The advisory committees will assist the Marine Parks and Reserves Authority and CALM in planning for the sustainable management of these two areas.

The Dampier Archipelago/Cape Preston area is one of the Pilbara's conservation treasures. Its marine plants and animals are of considerable significance, with environmental values characteristic of both the clear-water communities of the Ningaloo Marine Park and the more turbid waters of the Kimberley Coast.

The Montebello/Barrow islands area has a maze of shallow channels, lagoons and bays which provide an array of important habitats for marine animals and contain significant coral reefs. Both areas are significant for the petroleum and pearling industries, but tourism is an increasing activity.

In conjunction with the committees, CALM will be undertaking a broad community consultation program to involve the public in the planning process.

Membership of the committees has been drawn from nominations from the local community and other stakeholders. These include the petroleum industry, resources sector, commercial and recreational fishing, pearling and aquaculture, tourism, Aboriginal people, local government, conservation interests and science.

Management arrangements for three new sanctuary zones also were implemented in the Marmion Marine Park off Perth's northern beaches. One of the new zones, Little Island, is a haul-out area for Australian sea lions. The arrangements mean that fishing and collecting in the zones are now no longer possible.

Another significant marine conservation initiative was the start of a field survey of the major seabed habitats for a proposed southern extension of the Ningaloo Marine Park. The proposed extension, covering approximately 70 km of coastline between Amherst Point and Gnaraloo Station, was among the recommendations in a report on possible marine conservation areas released in 1994. That report identified about 70 sites along Western Australia's 12,500 km coastline that were worthy of further consideration as marine conservation reserves.

The survey was coordinated by CALM's Marine Conservation Branch in collaboration with CALM Regional staff, and was funded by CALM and Environment Australia through the Coasts and Clean Seas Marine Protected Areas Program, part of the Natural Heritage Trust.

PLANNING FOR MANAGEMENT

The preparation of management plans is a key part of CALM's activities in looking after the conservation estate. Draft management plans are prepared in consultation with local community advisory committees. These draft plans are released for broader community consultation before being adopted by the National Parks and Nature Conservation Authority and the Minister for the Environment.

During the year, draft plans were released for Yellagonga Regional Park, and Rowles Lagoon Conservation Park.

Final plans were released for the Swan Estuary Marine Park and Adjacent Nature Reserves, and the Stirling Range and Porongurup National Parks.

AN ICON FOR RECREATION

Recreation opportunities for people visiting the south-west native forests were further enhanced with the announcement of a \$1 million forest drive in the Pemberton area and a public competition to create a \$2 million tourist attraction in the Manjimup-Nannup area. Both tourism initiatives stemmed from commitments under the Regional Forest Agreement.

The drive, to be known as the Karri Forest Discovery Tour, will link several major attractions in the Pemberton area. These include wineries, accommodation and aquaculture ventures as well as popular visitor sites such as Big Brook Dam, Beedelup Falls, Warren National Park, and the Dave Evans Bicentennial Tree. The final route for the discovery tour was planned after community consultation and the close involvement of private tour operators.

The 'forest icon project' was launched in December when the public were invited to propose a major new tourist attraction. More than 70 entries were received and ranked against selection criteria by an independent judging panel. A wide range of suggestions came forward, including sculpture parks, laser light shows, bike trails, river trails, a virtual tree, railways, Aboriginal interpretive centre, theme parks, mazes, and many variations on getting into the canopy of the forest: lifts, gondolas, flying foxes, monorails and sky rails. Suggested sites were mainly in the Diamond Tree area, the One Tree Bridge area, and a steep part of the Donnelly Valley 30km west of Manjimup. Six prizes for individuals and families were awarded in the form of a holiday provided by Broadwater Resorts, with education institutions attracting a \$500 cash prize.

In the next phase of the project, expressions of interest will be called from professional groups or other interested parties to put forward proposals to develop any of the 71 concepts produced by the public competition.

Visitor services in the Purnululu National Park—which takes in the impressive Bungle Bungle massif in the Kimberley region—were improved with a new \$100,000 centre. This provides a focal point for visitors, giving them information on the area's heritage, conservation and cultural values.

Visitor facilities also were improved with new tourism developments completed at Mirima National Park and Parry Lagoons Nature Reserve near Kununurra. At Marlgu Lagoon in Parry Lagoons Nature Reserve, a bird hide and elevated walkway were built with funding from the Commonwealth Department of Tourism's National Ecotourism Program. Western Power sponsored the installation of interpretive signs painted by Kununurra artist Kimberley Kohan.

In Mirima National Park, the improved Derdbegerring Banan Lookout Trail Staircase was opened. This lookout trail provides spectacular views over the eroded sandstone range of Mirima and the Ord Valley. CALM undertook works to improve safety and access to the trail as well as installing new signs featuring Miriwoong names provided by the members of the Mirima Dawang Woorlab-gerring Language and Cultural Centre. Other additional visitor facilities included new toilets, shade shelters, access for people with disabilities, and car park barriers. CALM's commitment to Aboriginal culture and heritage was further extended with the launch of a guided Aboriginal walk tour in Fremantle. The

tour, which highlights the Aboriginal heritage of the historic port city, was prepared by CALM's Aboriginal Tourism, Education and Training Unit.

COMMENDATION FOR BUSH RANGERS

Western Australia's innovative conservation cadet unit, CALM Bush Rangers, was highly commended in the Young Australia Award for Environmental Achievement in Schools. CALM Bush Rangers, developed and coordinated by CALM, is the first conservation-oriented school cadet corps in Australia and has attracted strong interest from other States. It is part of the WA Cadets Scheme of the Office of Youth Affairs.

The Young Australia Award was open to all primary and secondary schools to recognise an outstanding project or program that promotes awareness of environmental issues and sustainable solutions. In less than two years, CALM Bush Rangers have grown from nothing to a contingent of 800 students. They come from 23 schools in many areas ranging between Kalbarri, Mullewa and Tardun in the north, Coolgardie, Norseman and Esperance in the east, Manjimup, Bunbury and Waroona in the south and west, and a variety of locations in the Perth metropolitan area.

The Bush Rangers put in more than 100,000 hours to nature conservation projects over the past year. Projects were as varied as their locations. For example, Bush Rangers at Esperance are creating an underwater dive trail around Woody Island as well as helping CALM rid the island of feral predators such as cats. In Perth, Bush Rangers at John Forrest Senior High are

producing termites for the numbat captive-breeding program at Perth Zoo. Bush Rangers also worked alongside CALM scientists, monitoring threatened species such as chuditch, numbats and ring-tail possums in the Perup Nature Reserve east of Manjimup.

ACCESS FOR ALL

The Department's Universal Access Policy for people with disabilities was recognised on the International Day of People with a Disability on 3 December 1999 when CALM was presented with two major Action on Access awards.

These were the award for State Government agencies as well as the Dr Louisa Alessandri Award for Excellence. The awards, established by the Disability Services Commission in partnership with People with Disabilities (WA), attracted more than 70 nominations.

The Award for Excellence is named in honour of the late Dr Alessandri, former Chair of the WA Advisory Council for Disability Services and a board member of the Disability Services Commission.

CALM's Universal Access Policy aims to enable all Western Australians to be a part of the State's natural heritage.

BOOKS, PICTURES AND CYBERSPACE

A new edition of one of CALM's most popular books, *Wild Places, Quiet Places*, was released in December. *Wild Places, Quiet Places* is the quintessential guide to State forests, national parks and reserves, walk trails and coastal scenery throughout the

south-west. The first edition sold more than 40,000 copies. The new edition has been completely revised, and includes new attractions such as the 960km-long Bibbulmun Track and the Tree Top Walk in the Valley of the Giants tingle forest.

Other publication milestones included the *Wonders of Western Waters* and two more titles in the very successful Bush Books series – *Orchids of the South-West* and *Threatened and Rare Birds of WA*.

NatureBase, CALM's award-winning internet site, continued to expand during the year and now includes more than 2500 'pages'. Its popularity also increased with more than 40,000 'hits' a day being recorded.

MORE LAND FOR WILDLIFE

Land for Wildlife, a voluntary scheme that encourages landholders to manage habitat for native wildlife, also continued to increase in popularity. The scheme now involves 478 landholders and covers 77,800 hectares. The program is part of the integrated approach CALM is taking in response to the State Salinity Strategy, a combined government–community approach to combating the State's major environmental problem.

Under *Land for Wildlife*, CALM assists private landowners to manage parts of their properties for wildlife habitat values. CALM ecologists show landholders how to maintain and enhance the nature conservation values of areas of remnant vegetation, or how to rehabilitate areas so that they can provide wildlife habitat.

NATURE CONSERVATION

OUTPUT 1

Highlights

- ✓ Reintroduction of the bilby (*Macrotis lagotis*) to Dryandra State Forest (p. 14)
- ✓ Biological surveys undertaken under the Salinity Action Plan identify two further Natural Diversity Recovery Catchments (p. 8)
- ✓ Management program implemented for the harvesting of *Banksia hookeriana* (p. 11)
- ✓ Dugong surveys reveal larger numbers occur in Shark Bay, demonstrating the importance of this area to these fauna (p. 9)

Outcome

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

Output Description

The production and implementation of management plans and programs for flora and fauna conservation, for threatened species and ecological communities and for commercially exploited species according to the principles of ecological sustainability, for the acquisition, conservation and protection of representative ecosystems and for conducting emergency actions to save wildlife, minimising adverse effects of fire, weeds, feral animals and disease and developing public awareness, understanding and support for the nature conservation programs, services and policies.

Note: CALM 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 Output 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. CALM meets the cost of servicing the Committee and obtains contributions towards the Committee's operations from Main Roads Western Australia and Westrail.

WILDLIFE AND HABITAT MANAGEMENT

Western Shield: Fauna Recovery

CALM's predator control program under Western Shield continues to bait almost 3.5 million hectares of CALM-managed lands to control foxes and cats, with over 700,000 poison baits being used annually. Significant corporate sponsorship has been provided to Western Shield, notably from Alcoa Australia Limited for Operation Foxglove in the northern jarrah forest (\$120,000 per annum), Cable Sands Pty Ltd for Coastal Storm along the south coast (\$60,000 per annum), and Iluka Resources for New Dawning in the south-west (\$40,000 per annum).

Research continued at the bait production facility at Harvey. Development of the improved fox bait

'Pro-bait' has proceeded. Development is expected to finish in 2000-01. Trials have continued into the effect of the new sausage bait on non-target species, such as the mulgara and brush-tail phascogale.

Cat bait development also continued during the year. Preliminary work was conducted on the extent of the cat population at Purnululu National Park as a prelude to a cat control program, and permanent fauna monitoring sites were established in the park for this program.

The objective of Western Shield is to control introduced predators so that populations of native fauna can recover naturally, or through reintroductions of fauna back into their natural habitat. During the past year a number of threatened and conservation-dependent fauna were reintroduced to sites throughout the south-west as part of this program (see the translocation section under **Threatened Species Management** below).

Monitoring of previous fauna translocations also continued to demonstrate the recovery of these populations where predator control is occurring.

The Western Shield community education program, which included

activities at the Hills Forest Discovery Centre and field camps for schools at four locations across the south-west forest, maintained its successful interaction with the public by involving 9,026 students and teachers this year.

Salinity Action Plan

A new Salinity Strategy and Salinity Actions document were released this year by the State Salinity Council, of which CALM is a member. These documents build on the 1996 Salinity Action Plan, and the 1998 Draft Update to that plan, and incorporate a strong community focus to the approach to salinity management in this State.

Projects begun by the Department under the 1996 Salinity Action Plan continued through the biological surveys which have contributed to the identification of Natural Diversity Recovery Catchments, the Land for Wildlife program, farm forestry initiatives involving maritime pines and oil mallees, and the management of Crown reserves within the south-west.

Within the biological survey project, sampling in 21 of the 24 terrestrial survey cells, and in 180 of the 200 wetland sites, was completed during the year. All 25 monitoring wetlands have been established and reports prepared.

As a result of the biological surveys, two new recovery catchments have been proposed north of Perth, one in the Julimar/Bolgart area, the other in the Watheroo area. These are in addition to the four already established: Toolibin Lake, Lake Muir-Unicup, Lake Warden and Lake Bryde-East Lake Bryde.

Land Assessment

Biological surveys were completed of the Great Sandy Island Nature Reserve (islands between Dampier and Onslow) and Jaurdi Station. Eight non-CALM land reserves and six private property remnants were also surveyed in the

Wheatbelt, and pastoral leases in the Gascoyne-Murchison Region were assessed, for potential acquisition to add to the conservation estate. A flora and surface geology survey of Burnerbinmah Station was also completed using volunteers on a *LANDSCOPE* Expedition.

Volunteers with *LANDSCOPE* Expeditions, and with Green Corps, also continued to undertake surveys in the Cane River/Mount Minnie Stations near Onslow, and began an ecological survey of Meentheena Station, east of Marble Bar. Thirty-two vertebrate survey sites have been established in the former area, and 20 at Meentheena Station. Very productive collections were made at both sites. Fauna surveys were also begun in Kalbarri National Park.

A land management assessment of Mandora Marsh, part of the Eighty-mile Beach Ramsar Site in the Kimberley, was undertaken.

Marine Conservation

The Marine Parks and Reserves Authority (MPRA) met six times during the year and undertook numerous initiatives in implementing and managing marine conservation reserves. A review of the marine reserve planning framework was undertaken to improve the pre-declaration stages, including decisions to appoint independent chairs of advisory committees and to appoint members for their expertise in marine conservation and not as representatives of particular stakeholder groups.

The management plan was released for the Swan Estuary Marine Park and Adjacent Nature Reserves, enshrining management measures to protect important feeding habitats for migratory wading birds from the northern hemisphere. The Rowley Shoals Marine Park Draft Management Plan and the Indicative Management Plan for the extensions to the existing Marine Park were also endorsed for release for public comment.

Sanctuary zones in the Marmion Marine Park were gazetted. They will enable CALM to detect human impacts on the park ecosystem, which will assist in the conservation of representative examples of the coastal marine communities off Perth.

The Jurien Marine Reserve Advisory Committee concluded its deliberations in September 1999 and assisted CALM to develop a draft indicative management plan and associated draft zoning scheme. This was presented to the MPRA for their consideration and comment. The indicative management plan will be released by the Minister for the Environment for public comment, once endorsed by the Ministers for Fisheries and Mines.

Planning work for proposed marine conservation reserves in the Dampier Archipelago/Cape Preston and the Montebello/Barrow islands and the Geographe Bay/Capes/Hardy Inlet areas is now well advanced. The Minister for the Environment announced the membership of the advisory committees for the former two areas. CALM, with funding assistance from the Natural Heritage Trust Marine Protected Areas Program, has commenced field investigations and public consultation for these areas.

Data collection, including mapping of natural communities and human impacts, and oceanographic studies, has begun in preparation for the planned review of the management plan for the State waters of the Ningaloo Marine Park. More than 30 long-term monitoring sites were established in the Ningaloo Marine Park to monitor the potential impacts of human activity and periodic natural, physical and biological processes (e.g. cyclones and coral predators) and to set up scientific control sites.

New regulations have been drafted to replace existing ones under the CALM Act. They will facilitate more effective management of conservation lands and waters. In regard to marine conservation

reserves, the new regulations are intended to control activities that could impact on the conservation values of marine reserves. These include mooring, anchoring, littering and pollution. A CALM draft policy on boat moorings in marine conservation reserves has been prepared to regulate the impact of this activity.

Work continued by CALM, the WA Museum and the WA branch of the Australian Marine Conservation Society under the Marine Community Monitoring Program, including the development of a package of tools to enable community groups to become more involved in the conservation and management of their local marine and coastal environments. A manual of user-friendly monitoring protocols and an Internet-based data storage, retrieval and display facility were developed. Funding for the program has been provided by Coastwest/Coastcare and CALM.

The Western Australian Government committed \$10 million to be provided to a Strategic Research Fund for the Marine Environment over the next six years. This sum matches a contribution by CSIRO Marine Research over the same period. Work leading to this funding was coordinated by the interdepartmental Marine Science Working Group. The Fund will complement existing strategic marine research programs in tropical Western Australia and contribute significantly to understanding Western Australia's marine environment.

A comprehensive aerial survey of dugong abundance was conducted in Shark Bay, Ningaloo Reef and Exmouth Gulf in July 1999. This was the third in a series of three five-yearly surveys. An estimated 16,000 dugongs live in Shark Bay, substantially more than the 10,000 estimated during the previous surveys, and demonstrates the importance of this area for this species. Surveys of Australian sea lion

abundance (based on pup production estimates) have continued on islands on the west and south coast throughout 1999 and 2000. Pup production appears to have decreased or remained stable at the sites investigated. This is in marked contrast to the rapidly expanding population of New Zealand fur seals surveyed in January 1999.

The latest satellite and microprocessor technology was used to investigate the foraging behaviour of dugongs and sea lions. Dive recorders and GPS tags were fitted to dugongs in the Shark Bay region in collaboration with the local Aboriginal community as well as Edith Cowan and James Cook Universities. This project will continue for the next few years. Female sea lions were also tracked at sea from three Western Australian islands, and their diving behaviour was measured. This work is conducted with the University of California, Santa Cruz, and partially funded by the Federal government. It aims to understand why sea lions are not increasing as quickly as fur seals.

Departmental officers attended 34 reported strandings of whales and dolphins, both live and dead. There were 38 animals of nine species, including minke whale, dwarf sperm whale, Grey's beaked whale, striped dolphin, sperm whale, false killer whale, humpback whale and pygmy killer whale. The most commonly stranded cetacean was the bottlenose dolphin.

No mass strandings or entanglements of cetaceans occurred during the year.

Officers also attended 15 pinniped strandings, including eight sub-Antarctic fur seals, one leopard seal, one southern elephant seal and five Australian sea lions. In most cases, these animals were ill or injured. One sub-Antarctic fur seal was taken into captive management, rehabilitated successfully and released.

Off-Reserve Conservation

CALM's Land for Wildlife Scheme is a voluntary program to increase the area of wildlife habitat on lands under private management. Landowners or leaseholders are invited to register their properties in the scheme; an assessment is made of the quality of wildlife habitat, and advice is provided on sound ecological land management. Advice is also provided on fencing, replanting and managing habitats.

During the year, 128 properties were inspected and assessed for registration to the scheme, including one pastoral lease. The total area of the properties visited was more than 200,000 ha, of which a total of 54,726 ha was wildlife habitat.

From commencement of the Scheme in 1997 to 30 June 2000, a total of 396 applications have received full registration (77,104 ha of land), 82 applications have been given interim registration (691 ha) and 181 properties have yet to be assessed (659 applications in total). Staff gave talks to 58 community groups during the year, attended 13 agricultural shows, and presented 22 field days/workshops.

The CALM nature conservation covenant program was initiated and promoted during the year. A number of landowners have entered into negotiations for the placement of covenants over their land.

CALM continues to manage the Commonwealth's Natural Heritage Trust's Bushcare Program in this State. The Bushcare Coordinator and four Bushcare Facilitators provide community support for regional conservation strategies. Support is also provided to the assessment process for applications to the Trust, through the Technical, Regional and State Assessment Panels. A total of \$9,995,068 was provided to the State through Bushcare funding during the year, with 87 per cent of this going to community groups.

The Bushcare Reference Group met four times during the year, to provide advice to CALM and Environment Australia on the delivery of the Bushcare Program in the State. The Group includes State government, non-government agency, and community group representation. Advice was provided on recommendations included in the Bushcare mid-term review undertaken for the Commonwealth by the International Centre for Economics, and on gaps identified in the current mix of projects within the State.

Weeds

CALM staff contributed to a draft State Weed Plan. This was a cooperative project led by Agriculture Western Australia, building on the Environmental Weed Strategy produced by CALM in 1999.

As an adjunct to this, CALM developed a set of criteria so that each weed species can be assigned a rating to indicate the degree of invasiveness. A total of 1,092 out of the 1,159 weedy taxa included in the Herbarium's data management system, *FloraBase*, have been assigned a category.

A large outbreak of the serious environmental weed bellyache bush (*Jatropha gossypifolia*) was brought under control at Parry Lagoons Nature Reserve. This plant has the potential to damage riparian areas, resulting in the loss of local species.

Weed control work continued on arum lily, blackberry, benched onion weed, bidgee widgee, periwinkle and tee-tree in the south-west.

Mining Management

Liaison with the mining industry continued through various liaison groups and direct contact with mining companies.

Staff reviewed numerous annual reports for mining on CALM-managed

lands and assisted other agencies to review reports and proposals that impacted on conservation values of reserves.

CALM's Environmental Protection Branch commented on 20 formal assessments by the Environmental Protection Authority. A total of 92 mining tenement applications were processed in consultation with the National Parks and Nature Conservation Authority and Lands and Forest Commission, and appropriate conditions were imposed.

The Department continues to pursue conservation opportunities by identifying land to replace/offset mined land and bringing these to the attention of mining companies. A total of \$3.06 million was received in mining compensation payments.

The WA Herbarium

The Herbarium flora collection currently comprises the following total number of specimens:

Algae	5,002
Mosses	4,499
Liverworts	1,017
Fungi	6,799
Lichens	5,080
Ferns	2,747
Gymnosperms (Pines, Cycads)	1,533
Flowering Plants (Monocots)	77,588
Flower Plants (Dicots)	384,510
Total number of databased specimens	488,775

Records of all specimens in the WA Herbarium are entered into the Specimen Database (WAHERB), which is updated constantly. During the year, a total of 25,359 records were added to WAHERB. Of special note, 1,271 Priority Flora and 261 Declared Rare Flora specimens were added to the State Collection, bringing the total collection of Priority and Declared Rare Flora to 28,650 specimens.

There were 6,277 loans of WA specimens to other institutions, and 3,108 loans from other herbaria. The WA Herbarium received 1,558 exchanges from other institutions to add to our collection and distributed 2,152 others.

Biosystematics and conservation studies of the flora continued, with specific work on *Leucopogon* (Epacridaceae) and the grasses *Amphipogon* and *Austrostipa* being undertaken during the year, and collaborative work on Myrtaceae species, *Lomandra* and samphires (*Halosarcia* and relatives in Chenopodiaceae). Taxonomic work has also been undertaken on Declared Rare and Priority Flora.

The public access Reference Herbarium now comprises 12,425 specimens, each vouchered and linked to a databased specimen in the main herbarium collection. The reference herbarium is extensively used by both amateur and professional botanists, including the Wildflower Society and Landcare and Bushcare groups, for flora identification and verification.

There are now 85 regional Herbaria in the Regional Herbaria scheme, which plays a most significant role in both the collection of flora information and the dissemination of this knowledge to the regional community. In November 1999 the processing of the 10,000th specimen was celebrated (half of these were submitted in the past year alone). A number of training workshops were held, and the number of trained collectors increased. The Regional Herbaria scheme is helping to locate rare and threatened plant species, with 30 reports being received, as well as making discoveries of new taxa.

The Census of Western Australian Plants (WACENSUS) now contains more than 16,000 records, representing 12,500 currently recognised vascular plant taxa for the

State. The Database of Plant Descriptions (DESCAT) contains data on a small number of characters scored for these 12,500 species. During the year this dataset was maintained and refined to prepare the manuscript of a hard-copy version to be published jointly by a consortium of the WA Herbarium, the WA Wildflower Society and the Botanic Parks and Gardens Authority, currently in press. This project also provides the descriptive component of *FloraBase*.

FloraBase is the WA Herbarium's on-line information system, which integrates corporate biodiversity information by providing global access to descriptive, nomenclatural, geographic and image data through the Internet. *FloraBase* now has 1,947 registered users who have made a total of 861,012 requests.

The Plant Image Database is rapidly growing, through the assistance of volunteers, who scan and edit photographs before archiving them at high resolution. Composite images illustrating habitat, habit and detail of some 1,700 species are now available on-line via *FloraBase*.

Two issues of *Nuytsia* were published, providing up-to-date information on botanical matters to the scientific and broader communities. The text for *Flora of the South-West Forest Region* was completed and prepared for publication.

The involvement of the WA Herbarium in the Regional Forest Agreement (RFA) process has recently concluded with the acceptance for publication of a paper on species richness in the *Journal of Biogeography*. This will give international attention to the research as well as the unique role of the Herbarium in conservation. The research identified two new areas with high species richness, which were subsequently identified for reservation under the RFA process.

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. Management operated under the plans approved by the State and Federal Ministers for the Environment for the period 1998–2002. Under these plans, commercial harvest quotas were set for each species for the 2000 calendar year. During 1999 aerial population surveys were undertaken over an area one-third of the rangeland area normally surveyed in triennial surveys (the southern survey zone). This will approximate the previous triennial surveys. 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 revised population estimates for the three harvested species of kangaroo based on 1997, 1998 and 1999 surveys are shown on page 58, along with the 1999 commercial harvest quotas, and 1999 commercial harvest.

The management program for saltwater crocodiles and freshwater crocodiles in Western Australia continued. It 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 harvests 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 6,246 fauna (other than damage, but including non-commercial) licences were issued during the year, an increase of 0.9 per cent over the previous year (see Appendix 15). The increase was partially due to an increase in the licensing of marine fauna interactions. The total number of flora licences/permits issued was 2,099, an increase of 1.6 per cent over the previous year. Commercial flora licences decreased by 6.5 per cent during the same period. This decrease was general across Crown land activities and private property, and may reflect some rationalisation within the industry, plus the licensing of multiple private properties on single licences.

The management program for *Banksia hookeriana* was implemented for the 1999 flowering season. This program is designed to control the number of pickers and to ensure that harvesting is sustainable. Maximum picker numbers have been set and quotas and royalties have been introduced.

The Flora Industry Data Management System was updated. The database is now web-based.

Intensive management of *Boronia megastigma*, *Stirlingia latifolia*, *Verticordia nitens* and *Dryandra formosa* continued this year. 1999 was the last season of the five-year phase-out period for *D. formosa*, and this species has now been banned from Crown land harvesting.

Three species are currently subject to special monitoring on Crown land to determine the effects of flora harvesting, and what conditions are

required to ensure that harvesting is sustainable. These three species are *Melaleuca uncinata*, *Boronia purdieana* and *Andersonia caerulea*.

The Western Australian Flora Industry Advisory Committee (WAFIAC) met twice during the year. The Minister appointed a new committee in February 2000 following the expiry of the term of appointment of the previous committee.

There are currently four CALM flora industry management teams: Southern, Swan Region, Central Forest and Northern Sandplains. These groups meet as necessary to coordinate the industry and to discuss management issues.

Marine Interactions

A total of 104 whale-watch boat-tour operators are licensed State-wide, an increase of 22 per cent on last year. Licensed operators from various centres around the State, but mainly from Perth, conveyed a total of 22,672 passengers. This is a decline of 20 per cent from the previous season: the fleet conducted 31 per cent fewer trips because of bad weather. 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 52 boat-platform dolphin interaction licences, three in-water dolphin interaction licences and five boat-platform dugong interaction licences issued. Nine in-water sea lion interaction licence and 21 boat-platform sea lion/Australian fur seal interaction licences were issued.

Problem Wildlife and Offences

Eight reports of problem crocodiles were received by officers in the Kimberley and Pilbara. Licences to remove six saltwater crocodiles from the wild were issued because of the threat they posed to public safety.

Departmental staff provided guidance to many people about wildlife conservation legislation. Verbal warnings were issued for minor offences, and 272 offences under the Wildlife Conservation Act and Regulations were the subject of written reports. To date, action in 180 matters has been completed. A summary of reported offences is presented below (see also Appendix 17 for further details of offences).

CALM wildlife officers investigated the unusual deaths of the only three bottlenose dolphins held in captivity in Western Australia. It was established that they had been deliberately poisoned. Investigations are continuing.

Departmental staff also 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 roofs and frogs and ravens making a noise; dangerous fauna, including venomous snakes and swooping magpies; and other fauna, such as kangaroos, ducks and parrots, causing damage to private property and primary production. A summary of licences issued is at Appendix 15.

The total number of damage licences issued for birds was 162, a decrease of 25 per cent from 1998–99 (see Appendix 16).

THREATENED SPECIES MANAGEMENT

Changes to the lists of threatened flora and fauna under the Wildlife Conservation Act, recommended by the Threatened Species Scientific Committee, were gazetted on 17 December 1999.

With respect to fauna the approved changes to the Threatened Fauna list included five additions and one deletion. The deleted taxon (Nullarbor quail-thrush) was added to CALM's Priority fauna list, and four of the taxa added to the Threatened Fauna list were transferred from the Priority fauna list (Hermite Island worm lizard, Buccaneer burrowing skink, grey nurse shark, and great white shark). The giant desert skink was a new addition. There are currently 120 taxa listed as threatened with extinction, 13 presumed to be extinct, 30 bird species specially protected because of their listing under the Japan-Australia Migratory Bird Agreement, and 11 otherwise specially protected. The Priority fauna list has 173 taxa.

With respect to flora the changes included seven additions (including a species of moss), two deletions, two transfers from the 'presumed extinct' category to the 'extant' category, one transfer from 'extant' to the 'presumed extinct' category, and 18 nomenclatural changes. A further 46 taxa were added

1998–2000 Reported Offences			1999–2000 Reported Offences	
	30-6-99	Revised	As at 30-6-2000	
Total Offences Reported	575	572	Total Offences Reported	272
Convictions	51	169	Convictions	28
Dismissals	0	10	Dismissals	0
Letters of Warning	135	165	Letters of Warning	114
No Further Action	24	81	No Further Action	38
Pending	365	147	Pending	92
Total Fines	\$17,575.00	\$42,375.00	Total Fines	\$11,450.00
Total Costs	\$3,506.50	\$14,039.40	Total Costs	\$1,943.00

Note 1: Figures for 1998–1999 reported offences are updated from those included in last year's report under the Revised column.

Note 2: See Appendix 17 for details of 1999–2000 offences.

Note 3: Wildlife Protection Section also processed 38 offences under the CALM Act and Regulations.

to CALM's Priority flora list, and 14 taxa were deleted from the Priority list on the basis of further survey and taxonomic review. There are currently 334 taxa of extant declared rare flora, 22 presumed extinct, and 1,984 priority flora taxa.

Volunteers continue to make a significant contribution to the survey effort for declared rare and priority flora, accounting for 18 per cent of the year's surveys. A threefold increase in the surveys by CALM staff also occurred during the year with the appointment of new flora conservation officers in several Districts. Of the 1,719 populations inspected during the year, 239 were new declared rare flora populations, and 415 new priority flora populations.

Another 19 posters depicting "critically endangered" flora have been prepared using funds from the BankWest LANDSCOPE Conservation Visa Card and the Natural Heritage Trust. These can be downloaded from *NatureBase*, CALM's web site.

Flora and Fauna and Ecological Communities Recovery Teams

Implementation of recovery plans continued for the following species of threatened fauna: Gilbert's potoroo, chuditch, numbat, dibbler, western ringtail possum, djoongari (Shark Bay mouse), south coast threatened birds (including noisy scrub-bird, western bristlebird and western whipbird), western swamp tortoise, Lancelin Island skink, and orange-bellied and white-bellied frogs. Two new recovery plans have been written for Carnaby's cockatoo and Muir's corella, which now have recovery teams at work.

The State Network for the Malleefowl continues to meet, with frequent direct contact between individual members.

Regional and District Threatened Flora Recovery Teams coordinated the recovery of threatened flora and in

some cases Threatened Ecological Communities, in the Central Forest, Southern Forest and Swan Regions, and the Geraldton, Merredin, Albany, Moora, Katanning and Narrogin Districts. Recovery teams also operate for threatened ecological communities: Toolibin Lake, sedgelands in Holocene dune swales, thrombolites of Lake Richmond, aquatic root mat community of caves of the Swan Coastal Plain, and montane thickets (Stirling Range). The North West Cape Karst Management Advisory Committee oversees recovery plans for Camerons Cave and Cape Range remipede (Bundera Sinkhole) communities, and the Lake Bryde Recovery Catchment Team covers two *Muehlenbeckia* and *Tecticornia* lake bed communities.

Ecological Communities Recovery

Two three-year partly Natural Heritage Trust-funded projects to identify and conserve Threatened Ecological Communities in Western Australia are now in their final year. Fifteen Threatened or Data Deficient Ecological Communities and one Lower Risk community have been identified through the project 'Conserving Threatened Ecological Communities in Agricultural Areas'. Interim Recovery Plans have been completed for two of these communities, and are currently being drafted for another four of the most threatened communities.

Eleven Threatened or Data Deficient communities have been identified through the project 'Conserving Threatened Ecological Communities Throughout WA'. Interim Recovery Plans are being drafted for the three most threatened communities. The partly Natural Heritage Trust-funded project 'Implementing Recovery Plans for Critically Endangered Ecological Communities' is in its second year. Major outcomes to date include on-ground recovery actions completed by a Green Corps Team for

many occurrences of Threatened Ecological Communities that occur on the Swan Coastal Plain. The works, which included weed control, seed collection, and fence construction, were the result of a cooperative effort between CALM, World Wildlife Fund and Green Corps.

Recovery Plans and Interim Recovery Plans

Two Recovery Plans have been endorsed by the Minister for the Environment and approved for publication in CALM's Wildlife Management Program series: Djoongari (Shark Bay Mouse) Recovery Plan (No. 17) and Lancelin Island Skink Recovery Plan (No. 22).

A total of 40 Interim Recovery Plans (IRPs) were approved by the Director of Nature Conservation, including 28 for flora, one for fauna and 11 for ecological communities IRPs (see page 14).

Populations of conservation-dependent fauna were also translocated as part of the Western Shield program. Quenda were reintroduced to Paruna Sanctuary in the Avon Valley, tammar wallabies were reintroduced into Bennelaking Forest and Julimar Forest, and also Alcoa Australia's Huntley mine site near Dwellingup, and woylies were reintroduced to Kalbarri National Park, Wellington National Park, Davies State Forest and Paruna Sanctuary.

Western ringtail possums were also translocated to Lane Poole Reserve and Yalgorup National Park using animals displaced from housing developments in the Bunbury-Busselton area. 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. For example, woylies are successfully breeding in Francois Peron National Park as part of Project Eden.

Interim Recovery Plans Approved in 1999–2000

Blunt Wattle, <i>Acacia aprica</i> ms (No. 22).	Milky Emu Bush, <i>Eremophila lactea</i> (No. 38).	Quartz-loving Synaphea, <i>Synaphea quartzitica</i> (No. 50).
Orange-flowered Wattle, <i>Acacia auratiflora</i> ms (No. 23).	Dwarf Spider Orchid, <i>Caladenia bryceana</i> subsp. <i>bryceana</i> (No. 39).	McCutcheon's Grevillea, <i>Grevillea maccutcheonii</i> (No. 51).
Spiral Fruited Wattle, <i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i> ms (No. 24).	Pinnate-leaved Eremophila, <i>Eremophila pinnatifida</i> ms (No. 40).	Montane Thicket and heath of the South West Botanical Province, approximately 900 m above sea level (No. 52).
Spreading Grevillea, <i>Grevillea humifusa</i> (No. 25).	Scott River Boronia, <i>Boronia exilis</i> (No. 41).	Aquatic Root Mat Communities numbers 1-4 of caves of the Leeuwin-Naturaliste Ridge (No. 53).
Green Hill Thomasia, <i>Thomasia</i> sp. Green Hill (No. 26).	Split-leaved Grevillea, <i>Grevillea althoferorum</i> (No. 42).	Ironstone Grevillea, <i>Grevillea elongata</i> (No. 54).
Gingin Wax, <i>Chamelaucium</i> sp. Gingin (No. 27).	Mallee Box, <i>Eucalyptus cuprea</i> (No. 43).	Thick-billed Grasswren (western subspecies), <i>Amytornis textilis textilis</i> (No. 55).
Rough Emu Bush, <i>Eremophila scaberula</i> (No. 28).	Shrubland Association on Southern Swan Coastal Plain Ironstone (Busselton area) (Southern Ironstone Association) (No. 44).	Community of Tumulus Springs (organic mound springs) of the Swan Coastal Plain (No. 56).
Hinged Dragon Orchid, <i>Drakonorchis drakeoides</i> ms (No. 29).	Cinnamon Sun Orchid, <i>Thelymitra manginii</i> ms. (No. 45).	Shrublands and Woodlands on Muchea Limestone (No. 57).
Giant Andersonia, <i>Andersonia axilliflora</i> (No. 30).	Small-flowered Snottygobble, <i>Persoonia micranthera</i> (No. 46).	Eastern shrublands and woodlands (Swan Coastal Plain community 20c) (No. 58).
Prostrate Flame Flower, <i>Chorizema humile</i> (No. 31).	<i>Acacia rostellifera</i> low forest with scattered <i>Eucalyptus camaldulensis</i> on Greenough River Alluvial Flats (No. 47).	<i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils (No. 59).
Pungent Jackson, <i>Jacksonia pungens</i> ms (No. 32).	Unwooded fresh water wetlands of the southern Wheatbelt of Western Australia, dominated by <i>Muehlenbeckia horrida</i> subspecies <i>abdita</i> and <i>Tecticornia verrucosa</i> across the lake floor (No. 48).	<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands (No. 60).
Trigwell's Rulingia, <i>Rulingia</i> sp. Trigwell Bridge (No. 33).	Scaly-leaved Featherflower, <i>Verticordia spicata</i> subsp. <i>squamosa</i> (No. 49).	Shrublands and woodlands on Perth to Gingin ironstone (No. 61).
Abba Bell, <i>Darwinia</i> sp. Williamson (No. 34).		Dwellingup synaphea, <i>Synaphea stenoloba</i> (No. 62).
Winged-fruited Lasiopetalum, <i>Lasiopetalum pterocarpum</i> ms (No. 35).		
Western Prickly Honeysuckle, <i>Lambertia echinata</i> subsp. <i>occidentalis</i> (No. 36).		
Cunderdin davisia, <i>Daviesia cunderdin</i> (No. 37).		

Translocation Proposals for threatened flora and fauna 1/7/1999 – 30/6/2000

Species	Source and destination
Boodie (Burrowing Bettong)	Heirisson Prong to Roxby Downs, South Australia.
Noisy Scrub-bird	Two Peoples Bay to Darling Range (near its type locality).
Bilby	Perup Captive Breeding Centre to Francois Peron National Park.
Bilby	Captive breeding colonies in WA to Dryandra State Forest..
Mala	Cental desert to the breeding facility at Peron National Park.
Numbat	South Australia (ex WA), Dryandra State Forest and captive bread to Karakamia Sanctuary and Stirling Range National Park.
Greater Stick-nest Rat	Salutation Island to Heirisson Prong, Shark Bay.
Western Bristlebird	Two Peoples Bay to Nuyts wilderness in the Walpole-Nornalup National Park.
Phalanx grevillea	Seed from subpopulations germinated at CALM's Threatened Flora Seed Centre, propagated at Botanic Gardens and Parks Authority (BGPA) to a Ballidu Shire Reserve.
<i>Acacia aprica</i> , <i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i> <i>Daviesia bursarioides</i> , <i>Dryandra ionthocarpa</i> , <i>Grevillea calliantha</i> <i>Lambertia echinata</i> subsp. <i>echinata</i> <i>Lambertia echinata</i> subsp. <i>occidentalis</i> <i>Lambertia orbifolia</i>	Additional seedlings to be planted in 2000 following the 1998 and 1999 translocations.
<i>Grevillea maccutcheonii</i>	Seedlings raised at BGPA from cuttings collected over a period of 4 years from adult plants to enhance present populations and introduce to a site in the Negus Block.
<i>Lambertia echinata</i> subsp. <i>occidentalis</i>	Cutting material collected between 1995–98 and raised at BGPA to enhance present population and introduced to Negus Block.

Western Everlasting

CALM's Threatened Flora Seed Centre continues to provide an important focus for the Department's flora recovery programs. Currently the Centre genebank holds collections from 676 populations of rare and threatened flora, with 76 of the 95 critically endangered flora represented. Research conducted in the Centre has shown that seeds from rare and threatened species from the south-west 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.

Ongoing flora recovery research includes the use of DNA-based molecular markers to identify conservation units, resolve systematic problems in threatened flora, and assess the effects of changing population sizes on genetic diversity levels of critically endangered species.

Research has recently begun on 12 critically endangered plants to investigate the flux of individuals (births and deaths) within populations. This work should provide guidelines on how many individuals and how many populations are necessary for taxa to persist. It will also provide techniques for increasing population size in these critically endangered plants.

Phosphite Program

The phosphite spray program to control the spread and impact of *Phytophthora* dieback disease continued, with 12 sites (171 hectares) aerially sprayed in the Albany and South West Capes Districts. Two of these sites (in the Stirling Range, and Williamson Road) were resprayed earlier than scheduled after monitoring showed increased dieback activity.

Funding for spray programs was obtained from Bankwest *LANDSCOPE* Visa Card, the Natural Heritage Trust and Iluka Resources.

Eight *Phytophthora*-susceptible species of declared rare flora were treated in Albany District, four in South West Capes (including a threatened ecological community) and one in Narrogin District. Four Priority Flora taxa were also sprayed in Walpole District. This continued CALM's program of treating nature conservation areas which are of high value and which can be protected.

All sprayed sites are monitored for phytotoxic impacts of the phosphite, and target plant health and survival. The results of the monitoring are used to modify the spray program as necessary.

Research into the application of phosphite also continued, with attention being given to the type of surfactant. The surfactant has been changed as a result of this work, and further work will be undertaken.

ROADSIDE CONSERVATION COMMITTEE

The Terms of Reference of the Roadside Conservation Committee (RCC) 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 RCC has no powers of enforcement. It works through liaison and education, aimed at maintaining safe and efficient roads while ensuring roadside conservation. This is supported by promotion of knowledge (via brochures, manuals, etc.), funding and encouragement of research, and the collation and provision of management advice.

Current RCC membership is:

- Department of Conservation and Land Management;
- Main Roads Western Australia;
- Westrail;
- Western Australian Municipal Association;
- Western Australian Wildflower Society;
- Agriculture Western Australia;
- Fire & Emergency Services Authority;
- Greening Australia Western Australia;
- Western Power;
- Water Corporation;
- AlintaGas; and
- Telstra Corporation.

CALM and Main Roads Western Australia each pay half of the Executive Officer's salary. CALM also meets the cost of servicing the RCC. Westrail contribute to research funding.

A workshop entitled Vision 2000 was attended by more than 40 people, most from community groups. The purposes of the workshop were to ensure that the RCC is fulfilling its obligations, review its past operations, ensure its relevance to community needs, and provide RCC members with the opportunity for external input into the development of strategies for the RCC to achieve its objectives.

Information Programs

Roadside conservation values have been surveyed and mapped since 1987, involving local community groups. Training and support is provided by the RCC for the volunteer surveyors. The data is collated and processed by the RCC and CALM. GIS maps for the Shires of Corrigin, Gnowangerup, Harvey and Woodanilling were completed during the year, and presented to the Shires to assist in their management of road reserves.

Current roadside surveys include the occurrence of environmental weeds on roadsides, which will provide an overview of the extent of weed infestation. Surveys are currently being completed in the Shires of Kojonup, Jerramungup, Dumbleyung and the City of Albany.

The RCC is currently sponsoring a Curtin University Honours project to prepare detailed roadside management plans for roads of high conservation value or strategic importance within the Shire of Chittering

Communications and Training

Information on roadside conservation has been published by a variety of media, including print, radio, country show displays, and responses to public

complaints or enquiries. A paper entitled *Roadside Flora: What's It Worth?* was presented to the Transport Corridors Management Conference in Brisbane.

Liaison continued with State and local government and community groups, such as Main Roads WA, CALM, Fire & Emergency Services Authority, Greening Australia WA, and landcare groups on roadside conservation issues. Activities included workshops at Margaret River for Edith Cowan University and the National Carbon Accounting Strategy, presentations to Bushcare Officers, the Mallee Fowl Preservation Group and Kojonup LCDC, a TAFE training course for road workers at Beverley, and input in the development of training for Main Roads WA Contract Surveillance Officers.

The RCC provided a presentation on Special Environmental Areas on roadsides to the Annual Conference of the Local Government Work Supervisors Association (CALM's Midwest Region), including representatives from the Shires of Irwin, Mingenew, Mullewa, Perenjori, Three Springs, Greenough, Chapman Valley and Morawa.

During the last year there has been a strong demand for roadside conservation training by local government and community groups on roadside conservation matters. The RCC collaborated with C Y O'Connor TAFE to present courses to staff from the Shires of Beverley, Wickelpin, Plantagenet, Cranbrook, Wagin, Wandering, Woodanilling, Kellerberrin, Nungarin, Merredin, Trayning, Albany, Gnowangerup, Denmark and Jerramungup.

Performance Measures			Output 1
	1999-2000 Target	1999-2000 Actual	Explanation of significant variation
Quantity			
Nature Conservation area managed (hectares)	22 million	21.7 million	Area now recorded to first decimal place.
Quality			
Threatened Species	430	454	
Change in number of Threatened Species	-4	+20	Additional listings and revised methodology in listing subspecies in lieu of some species.
Timeliness			
Completion of Management Plans within specified timeframes	100%	100%	
Cost			
Cost per hectare managed	\$1.96	\$2.05	

NATIVE FOREST MANAGEMENT

OUTPUT 2

Highlights

- ✓ State Government plan for the accelerated restructure of the forest industry (p.17)
- ✓ Release of the Ministerial Advisory Group report on karri and tingle management (Ferguson report) (p. 17)
- ✓ Framework for development of a jarrah strategy announced (p. 17)
- ✓ Re-opening of the Greenbushes mill, with a clear focus on increased employment and adding value to native timber in April 2000—a result of industry restructuring (p. 17)

Outcome

Long-term maintenance of the forest ecosystem and provision of sustainable wood production.

Output Description

The sustainable regeneration, protection, management and harvesting of native forests while maintaining or enhancing nature conservation, water, recreation, landscape and other values in the long term, management of the sandalwood industry on Crown land and developing public awareness, understanding and community support.

FOREST MANAGEMENT

Following the signing of the Regional Forest Agreement (RFA) in May 1999, a number of developments occurred. In July 1999 the Government announced a series of changes to the management of native forest in the south-west. This new course in forest management includes encouraging greater community involvement in decisions about forest management, together with an accelerated program to restructure the timber industry. A key aspect of that announcement was plans for the development of a jarrah strategy, limiting of harvesting to approved uses and strengthened value adding and auditing requirements. A Ministerial Advisory Group (MAG) on

karri and tingle forest management was appointed to advise on implementation of this new policy direction. Data management, analysis and support services were provided to the group by CALM.

In December 1999, the Ministerial Advisory Group report was released and the Government announced it is committed to acting on the following key recommendations:

- an immediate end to logging in karri-tingle old growth and karri-tingle two-tiered forest;
- no logging in the sensitive areas of karri old growth forest within 16 forest blocks;
- an end to harvesting old growth karri forest after the year 2003;
- the maximum old growth karri coupe size to be 40 ha, half the current size;
- clearfelling to be the preferred harvesting method for karri old growth and karri two-tiered forest; and
- negotiations to buy-out to commence with the timber industry to reduce the level of karri sawlogs harvested to an average of 149,000 cubic metres per year from the contracted level of 168,000 cubic metres per year, with the annual yield to be 50,000 cubic metres from 2004.

The RFA included a number of commitments by the State which are the responsibility of CALM. As a result of awaiting the outcomes and commitment of resources to the Ministerial Advisory Group on karri and tingle forest management, the intended timelines for implementation of RFA commitments have been delayed. Nevertheless, substantial progress in relation to these commitments has been made.

The following commitments have been completed:

- initiating State processes for reserve creation;
- introduction to Parliament of amendments to the *CALM Act 1984* in relation to revocation of Forest Conservation Zones;
- archiving of data;
- introduction to Parliament of amendments to the *CALM Act 1984* in relation to membership of CALM's controlling bodies;
- review of CALM/fire processes in relation to weightings for values; and
- development of protocols and linkage with Aboriginal Affairs Department information to enable protection of identified Aboriginal sites.

Substantial progress has been made for the following commitments:

- mechanisms for the five-yearly review/report;
- development of an environmental management system conforming to international standards;
- legislative review and competitive neutrality review in relation to wood-based businesses;
- finalisation of reserve design at 1:25,000 scale;
- public examination of 'look ahead' operational plans;
- publication of medium term fire management plans;
- pre-logging fauna assessment; and
- assessment, data-basing and integration of cultural heritage resources into forest planning.

STATE FOREST RESOURCES BUSINESS UNIT

The State Forest Resources Business Unit (SFRBU) was responsible for the commercial harvesting, associated regeneration and commercial sales of log timber from State forests and timber reserves in accordance with the Forest Management Plan 1994–2003. In April 2000 a new Forest Products Division (FPD) was created within CALM and the SFRBU became the Native Forests Operations Division within the FPD.

In 1999, 14,200 ha of jarrah forest were harvested with the following silvicultural objectives:

	Hectares
Thinning	1,260
Release of regeneration	3,560
Establishment of regeneration	5,720
Single tree selection	590
Selective	2,000
Other	1,070
Total	14,200

Regeneration of approximately 220 ha of the above area was achieved through commercial harvesting operations. Silvicultural objectives for a further

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

10,320 ha harvested in this or previous years were achieved by follow-up treatment.

In 1999, 1,890 ha of karri forest were clearfelled or cut to seed trees, 360 ha were thinned and cutting was not completed in 19 ha as a result of the Ministerial Advisory Group on karri and tingle forest management report. Regeneration was completed on 1,780 ha harvested in either this or previous years.

The Kingston project, which examines the impacts of timber harvesting on the flora and fauna of the jarrah forest, is continuing. The integrated series of studies examining the impacts on the flora, soil structure, hollow-bearing trees, invertebrates, frogs, reptiles, mammals, and birds began in 1994. An associated study specifically examining the impacts of harvesting on the ngwayir (western ringtail possum, *Pseudocheirus occidentalis*) began in

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.

1997. Most of these studies, except the ngwayir study, have been in the post-disturbance phase since late 1996.

Since early 2000 the emphasis for the majority of these studies has switched from intensive field data collection to a less intensive field-monitoring program and the focus is on data analysis and the publication of results.

During the year a study into the incidence and impact of bullseye borer in karri regrowth was completed and the fruiting of macrofungi has been monitored for two years following a wildfire in karri regrowth forests. In addition, the third survey of the occurrence of the forest red-tailed black cockatoo *Calyptorhynchus banksii naso* across south-west WA was completed. The species was found to occur widely throughout the forest. The latest survey discovered previously unrecorded populations east of Albany and near Gidgegannup.

Forest Management Information

Forest Management Branch designed and implemented a number of enhancements to computer modelling systems and datasets used for the evaluation of forest management alternatives and their impact on sustained yield, regional economies and employment. Data management, analysis and support services were provided to the Ministerial Advisory Group appointed to review karri and tingle management.

The implementation of the RFA was progressed by completion of a detailed mapping of reserve boundaries.

Disease in Native Forest

The presence of dieback (*Phytophthora cinnamomi*) disease symptoms and the protectability of the forest are mapped prior to operations such as harvesting, mining and the provision of public utilities such as roads, reservoirs and powerlines. Mapping is done either from interpretation of large-scale colour aerial photographs or from intensive ground survey. In both cases interpretation is supported by laboratory analysis of soil and plant samples. With this information and the implementation of strict hygiene measures, operations can proceed with minimal spread of the disease. Because of the potential for the disease to spread naturally, the maps have a limited reliable life. In some instances, areas mapped several years earlier must be re-mapped before operations begin.

During 1999–2000, Forest Management Branch staff mapped the presence of *Phytophthora cinnamomi* disease symptoms and defined protectable areas on 32,884 ha of forest, and rechecked the boundaries of 9,501 ha that had been previously mapped. Interpreters under contract to Alcoa of Australia mapped or rechecked 5,663 ha of forest. CALM interpreters monitored the interpretation and mapping standards of this work. A further 603 ha were mapped on a

recoup basis for other agencies or companies.

During 1999–2000, aerial photography was acquired over 20,825 ha of forest in shadowless (full cloud) conditions to assist in the disease mapping program.

Wood Utilisation

CALM Timber Technology continued to support the Government and timber industry's efforts to add greater value to WA timbers.

This year's works reflect the increasing diversification of the timber industry in WA, which is beginning to source more and different logs from plantations and arid lands as well as the traditional south-west forests.

Work on sawing, drying and processing timber from bluegum (*Eucalyptus globulus*) is increasing as plantations grown for pulp wood mature. Knowledge of how to use other plantation eucalypts is also increasing as it becomes clear which species are most likely to be planted widely.

To promote the greater use of specialty timbers from the south-west and goldfields, CALM Timber Technology have hosted two auctions of specialty timbers during the year. Buyers of these timbers also have the option to have their timber sawn and dried at Harvey. The auction in June was the

third and each has been more successful than the one previous.

A study of the machining properties of commonly used hardwoods has been completed and is being prepared for publication. Using jarrah as a benchmark (because of its well known properties) the study compares such things as the quality of planing, routing and sanding. Over time the study will expand the number of species tested and include gluing and finishing as well as machining.

Further support was provided to the Department's promotion of bole harvesting with a trial conducted at six sawmills with bole logs from four forest areas.

Parts of the research and development program continue to be carried out in conjunction with non-government bodies and CALM Timber Technology expects this to increase in the future.

LOG TIMBER SALES

The total of log timber harvested from Crown land in 1999–2000 was 2,002,731 tonnes (see Appendix 7). Of this amount, 1,445,190 tonnes (72 per cent) were harvested from the State's native forests, and 557,541 tonnes (28 per cent) from State-owned plantations. A further 105,455 tonnes of log timber were harvested by CALM from private property during 1999–2000.

**Native Hardwood Sawlog Production
by CALM from Crown Land and Private Property 1999–2000**

Species	High Quality Sawlogs (m ³)	1 st & 2 nd Grade Sawlogs (m ³)	Bole Logs (m ³)	Other Sawlogs (m ³)	Total (m ³)
Jarrah	4,110	302,919	6,220	16,619	329,868
Karri	2,044	157,619		17,258	176,921
Marri	349	0		14,666	15,015
Other Species	2,487	1,885		850	5,222
Total	8,990	462,423	6,220	49,393	527,026
	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)
Jarrah	5,369	398,340	8,179	20,607	432,495
Karri	2,536	194,575		21,390	218,501
Marri	451	0		18,186	18,637
Other Species	2,605	2,471		861	5,937
Total	10,961	595,386	8,179	61,044	675,570

* includes logs from Crown land sold under Forest Produce Licences

	Crown Land 1997-98		Crown Land 1998-99		Crown Land 1999-2000	
	(m ³)	(tonnes)	(m ³)	(tonnes)	(m ³)	(tonnes)
<i>Marri Logs:-</i>						
bolewood	413,327	507,883	317,544	391,044	319,259	394,197
branchwood	0	0	52	64	0	0
<i>Karri Logs:-</i>						
bolewood	179,826	217,615	189,123	227,336	127,063	154,131
branchwood	7,973	9,887	7,882	9,773	0	0
<i>Other Logs:-</i>						
bolewood	0	0	27	33	0	0
branchwood						
Total	601,126	735,385	514,628	628,250	446,322	548,328

Note that the tables included in this section detail production of log timber by CALM only. The tables no longer include production of log timber from non-CALM-managed operations.

Log Type	1997-1998	1998-1999	1999-2000
Firewood	54,595	56,085	51,853
Charcoal	75,417	68,433	149,485
Total	130,012	124,518	201,338

SANDALWOOD BUSINESS UNIT

The total amount of sandalwood harvested from Crown land in 1999-2000 was 1,390 tonnes. Of this amount 691 tonnes was deadwood and the remaining 699 tonnes green wood. An increase in sales to traditional markets was brought about by a concentrated effort to re-focus customers on WA sandalwood's two major strengths, dependable supply and consistent quality. This was achieved by extensive consultation with buyers in all markets and in particular a visit to Taiwan by senior CALM staff. The result was an increase in sales of 55 per cent, which equates to sales of 1,814 tonnes in 1999-2000 compared with 1,166 tonnes in 1998-1999.

Approval was given for *Santalum spicatum* to be offered as a sharefarm tree crop during the year. This will greatly enhance the establishment of the sandalwood plantation resource within the State. CALM will continue to research establishment and nursery techniques to assist in the further development of sandalwood plantations.

Joint research commenced with the Great Southern Regional College at Albany to further develop and improve

genetic material that will be made available to the sandalwood plantation industry, which is likely to expand over the coming years.

Unseasonable weather affected harvesting operations in most areas of the State and resulted in a decrease in production of 1,390 tonnes, down 340 tonnes from the 1998-1999 total of 1,730 tonnes. It is anticipated that production levels will need to be increased to meet increasing demand over the coming year.

	1995-96	1996-97	1997-98	1998-99	1999-2000
green	926	1,029	925	807	699
dead	974	742	728	923	691
Total	1,900	1,771	1,653	1,730	1,390

Performance Measures

	1999–2000 Target	1999–2000 Actual	Explanation of significant variation
Quantity			
Native Forest – tonnes harvested	1,555,000	1,445,190	
Native Forest – hectares managed	1,870,000	1,870,000	
Sandalwood – tonnes harvested	1,800	1,390	Cyclone Steve and unseasonal rains
Sandalwood – square kilometres managed	188,310	190,144	
Quality			
Native Forest – satisfaction of contractual log 'quality' specifications	100%	100%	
Native Forest – compliance with management standards	100%	100%	
Sandalwood – satisfaction of contractual quality specifications	100%	100%	
Sandalwood – compliance with management standards	100%	100%	
Timeliness			
Native Forest – satisfaction of contractual harvesting obligations	100%	100%	
Native Forest – satisfaction of programmed management	100%	100%	
Sandalwood – satisfaction of contractual harvesting obligations	100%	100%	
Sandalwood – satisfaction of programmed management	100%	100%	
Cost			
Native Forest – cost per tonne harvested	\$27.24	\$30.05	Mainly due to lower log production.
Native Forest – cost per hectare managed	\$14.94	\$17.00	Reflects operational and environmental constraints.
Sandalwood – cost per tonne harvested	\$2,552.76	\$3,217.71	Mainly reflecting lower than expected harvest.
Sandalwood – cost per square kilometre managed	\$2.82	\$2.98	

PLANTATION MANAGEMENT

OUTPUT 3

Highlights

- ✓ Construction of the Windy Hill extension to the CALM Manjimup Nursery and opening by the Premier (p. 23)
- ✓ The continuation of the government-funded Maritime Pine Project as part of the long-term State Salinity Action Plan (p. 24)
- ✓ The introduction of a CALM seed and seedling growth and form rating system (p. 23)

Outcome

Long-term maintenance of the forest ecosystem and provision of sustainable wood production.

Output Description

The establishment, regeneration, protection, management and harvesting of plantations while maintaining or enhancing nature conservation, water, recreation, landscape and other values in the long term, and developing public awareness, understanding and community support for plantations.

GENERAL

On 16 May 2000 the Premier, Richard Court, opened the Windy Hill extension to the Manjimup nursery. The expansion in the capacity of the Nursery enables the growing of Maritime Pine seedlings as part of CALM's contribution to the State Salinity Strategy. At the opening the Premier announced a continuation of funding for the Project for 2000–2001. The Nursery now has a capacity to grow some 40 million plants.

A system to rate the genetic improvement of seed and seedling sold by CALM was introduced. The CALM Growth and Form rating provides a comparison between the level of gain over unimproved stock. It has to date applied to *Eucalyptus globulus* and *Pinus pinaster*.

The 2000 planting season saw the completion of the 20,000 hectare plantation target for Albany Plantation Forest Company of Australia Pty Ltd. Commencing in 1993 under a State Agreement, CALM as agent has achieved this goal three years ahead of schedule. APFL plan to continue to expand their operation.

CALM ESTATE PLANTATIONS UNIT

In 1999 a total of 36 ha of CALM Estate coniferous plantation was established, comprising 32 ha of *P. radiata* and 4 ha of *P. pinaster* and other species. 1,006 ha of coniferous plantation were replanted, comprising 822 ha of *P. radiata* and 184 ha of *P. pinaster* and other species.

As a part of the Department's ongoing strategy to optimise value and growth on its existing estate, 9047 ha of coniferous plantation were fertilised during 1999.

First commercial thinning of coniferous plantations is behind schedule due to the demand for industrial wood logs remaining relatively low.

The softwood sawlog market improved during 1999–2000 as Wespine continued the Dardanup Mill's expansion to meet its planned capacity. The potential for the continued expansion of the State's softwood production was the subject of considerable debate.

CALM SHAREFARMS BUSINESS UNIT

The Maritime Pine Project was expanded to the Esperance Region during the 1999 planting season and some 496 ha were planted. The total area of pines planted under Maritime Pine Project in 1999 was 2,849 ha, which includes 288 ha of CALM Sharefarm properties planted and assigned on behalf of BP Refinery (Kwinana) under a Deed of Agency and Indemnity. This brings the total pine planted under the Maritime Pine Project since 1995 to 6,842 ha. This area includes 592 ha planted and assigned on behalf of for BP Refinery (Kwinana) since 1997. In addition 19 ha of sandalwood were assigned to BP Refinery Kwinana and approximately 171 ha of supplementary plantings of native species were established under the Maritime Pine Project as biodiversity plantings to complement landcare objectives of salinity and erosion.

In November 1999 the Government announced further funding of the Manjimup Nursery to accommodate the expansion of the Maritime Pine Project targets. At the same time a package to encourage larger areas of plantings was promoted. The package has been well accepted and much effort will be needed to ensure that appropriate avenues to funding are found and secured.

In 1998–99 CALM established 5,797 ha of *Eucalyptus globulus* plantations as agent for Albany Plantations Forest Company of Australia Pty Ltd (APFL), Hansol Australia Pty Ltd and Bunbury Treefarms Pty Ltd (BTP). There were no plantings on CALM-owned sharefarms. During 1999–2000 CALM completed the assignment of an additional 121 ha of *E. globulus* plantations to APFL. This brings the total area of *E. globulus* plantations owned and/or managed by CALM to 38,887 ha (see Appendix 4).

FARM FORESTRY UNIT

The Farm Forestry Unit’s role is to develop new tree crop opportunities for farmland and to provide information on all aspects of farm forestry.

The Farm Forestry Unit continued its support for the developing oil mallee industry. The Oil Mallee Association planted an additional three million mallees in winter 1999 to bring the total planted over six years to 12 million. Some 700 farmers have now planted oil mallee. The Association and its processing arm the Oil Mallee Company continue to make good progress on developing the harvest and processing parts of the industry. In addition they raised the funds to undertake a detailed commercial feasibility investigation of the integrated mallee-processing concept in conjunction with Western Power. The investigation showed that this process should be commercially viable, including a mallee feedstock price that is competitive with farmers’ alternative crop options. This is a major advance for revegetation in the wheatbelt— a commercial prospect has been developed to drive large-scale revegetation using native species.

The Farm Forestry Unit promotes adoption of farm forestry throughout the agricultural areas. Support for the now well recognized ‘Master Tree Growers’ courses continued with major input by CALM. The course graduates form an effective local interest group

and create a strong ‘grass roots’ confidence in farm forestry in the main forestry areas of the south-west. Farm planning support for the maritime pine project developed strongly during the year and this will be a future major focus for the group. The inaugural Farm Forestry Expo was held at Boyup Brook and was very successful.

MANJIMUP PLANT PROPAGATION CENTRE

During the 1999–2000 propagation season, the Manjimup Nursery raised over 38.8 million plants for sale and dispatch to afforestation programs throughout south-west WA and parts of south-eastern Australia. A small number of these plants will be carried over for planting in 2001.

This is once again a record level of production, easily beating the previous record of 26 million in 1999, and comprised the following species:

Number of seedlings and cuttings raised 1999–2000	
Hardwood	
<i>E. globulus</i>	16,596,000
<i>E. diversicolor</i>	3,450,000
Western Bluegum	3,301,000
Mixed species	1,137,000
Oil Mallees – Seedlings	184,396
Oil Mallees – Mini Plugs	798,760
Softwood	
<i>P. radiata</i> (container seedlings)	926,600
<i>P. radiata</i> (open rooted)	2,012,450
<i>P. pinaster</i> (container seedlings)	8,738,100
<i>P. pinaster</i> (container cuttings)	1,656,000
TOTAL	38,800,306

The highlight of the year was the completion of the new Windy Hill Nursery, which will produce seedlings and cuttings for the Maritime Pine Project. This culminated in an official opening by the Hon Premier, Richard Court, on 16 May 2000.

Approximately 26,000 new genetically superior seedlings were planted at the nursery to replace genetically inferior and ageing mother plants.

GENETIC DEPLOYMENT UNIT

The focus of this year was to monitor the transfer of the Maritime Pine Project into the new nursery and finalise the Maritime Pine propagation systems with the last year’s Natural Heritage funding. To this end, a final 11 field trials were established for the project.

The seven eucalypt hybrid trials planted between 1996 and 1999 were measured and a summary presented at a ‘Symposium on Hybrid Breeding and Genetics’ at Noosa, Australia. A further two hybrid trials have been established this year. The first trial was from CALM-generated *E. globulus* x *E. camaldulensis* hybrid material, and the second trial was established in partnership with Rivers and Water Commission, Peter Coffey and incorporating ‘Saltgrow’ eucalypt hybrids. The early measurement of the hybrid trials has identified superior clones and families for low productivity *E. globulus* sites, which will now be bulked for wider testing. Two propagation methods are being developed, a rooted mini-cutting system and a mass control pollinated system using bees to pollinate an isolated tree of one species with pollen from another. To further improve the quality of the hybrids produced for south-west Western Australia, a *Eucalyptus grandis* family breeding trial was established from which selections for hybrid parents can be made.

The CALM Growth and Form genetic rating for seed produced from the Plantations Group breeding programs was formulated based on concepts developed for the *Pinus radiata* program in New Zealand. Customers can now specify the level of genetic improvement when purchasing seed from the Seed Centre.

The Tree Breeding group has contributed its breeding knowledge and access to research trials to the Rural Industries Research

Development Corporation sponsored Australian Low Rainfall Tree Improvement group. The aim of the project is to accelerate the breeding progress of the hardwoods, *Eucalyptus camaldulensis*, *Corymbia maculata*, *E. occidentalis*, *E. cladocalyx*, *E. sideroxylon*, *E. tricarpa* and *C. variegata* and the softwoods, *P. brutia* and *P. halapensis*. CALM also provided a series of *Pinus pinaster* trials to demonstrate the relevance of its breeding program in other states across Australia.

SEED CENTRE

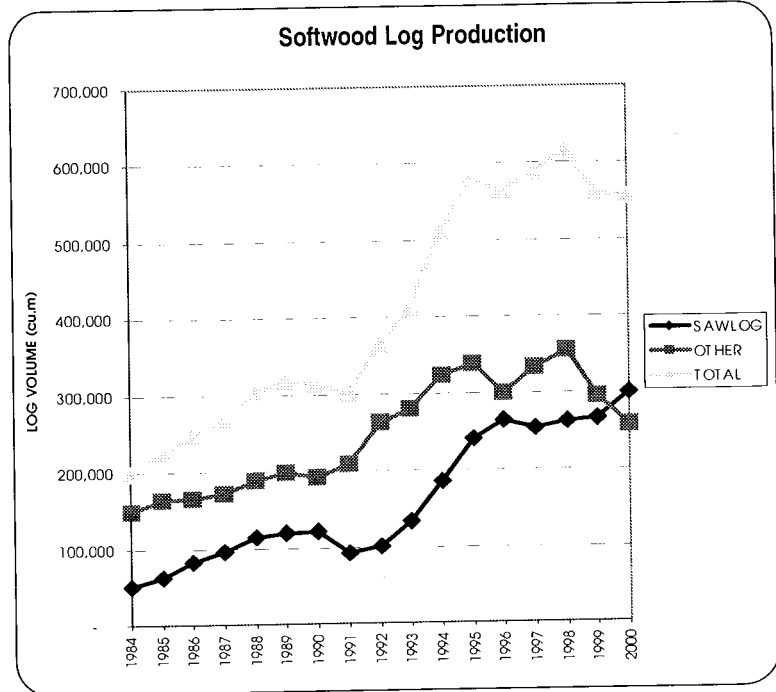
Seeds of the principal species needed for CALM's plantations, rehabilitation and conservation projects, as well as for public sales, were acquired, processed and stored at the Manjimup Seed Centre. A total of 580 native and exotic species totaling 3200 kg are stored at the Centre.

A total of 2116kg of seed (276 orders) were despatched from the Centre in 1999–2000, mostly within Western Australia (86.2 per cent). Some small quantities were despatched to other Australian States and to other countries, including Japan, New Zealand, Switzerland and the United States of America.

A total of 2568 kg of seed was acquired through collection and purchase.

Native collections

Species	Weight (kg)
<i>Corymbia spp.</i> (eg. Marri)	10
<i>Eucalyptus diversicolor</i>	2
<i>Eucalyptus globulus</i>	262
<i>Eucalyptus marginata</i>	30
Other <i>Eucalyptus</i> species	160
<i>Leguminaceae spp.</i> (eg. Acacias, Hoveas, Kennedias)	127
<i>Santalum spicatum</i> (Sandalwood)	240
Other species.	485
Seed Orchard collections	
Species	Weight (kg)
<i>Eucalyptus globulus</i> (Western Blue Gum)	202
<i>Eucalyptus camaldulensis</i>	50
<i>Pinus radiata</i>	13
<i>Pinus pinaster</i>	987



The Seed Centre is currently managing various seed orchards totaling an area of 147.4 ha. In September 1999, a large-scale controlled pollination program of *Pinus pinaster* took place at Manjimup and Nannup seed orchards. A total of 5619 flowers were pollinated with the intention of producing around 500,000 high quality seeds for mother stool cuttings program.

Seed production from *Pinus pinaster* seed orchards had increased from 509 kg in 1998–1999 to 987kg in 1999–2000.

TROPICAL PLANTATIONS UNIT

CALM is continuing with its support of the commercial development of sandalwood (*Santalum album*) on the Ord River Irrigation area through the Tropical Plantations Unit. Sandalwood seed is collected from the Unit's mature trees at the Kununurra Agriculture Research Station and is provided to companies developing sandalwood plantations. The 2000 planting will be

in the vicinity of 300 hectares and indications are that planting will continue into the following year.

The CALM Nursery produced a range of seedlings for research, small-scale private plantings and for demonstration purposes. Production included two species of sandalwood, a range of short-term and long-term host plants, as well as some timber species for demonstration on Cununurra clay soils. A small area of raised beds has been constructed at the Nursery to trial the propagation of bare-rooted stock which will be on-planted at the Research Station. Species being trialed in these beds include teak (*Tectona grandis*) and three species of American mahogany (*Swietenia humilis*, *Swietenia macrophylla* and *Swietenia mahoganii*).

A trial plantation of teak planted on levee soil is being monitored and the establishment of a small trial on the Cununurra clay soils is planned.

Softwood Production by CALM from Crown Land and Private Property 1999–2000

SPECIES	SAWLOGS					Sub-Total Sawlogs	Industrial Wood* ¹	Wood chips* ²	Pine Rounds	Grand Total
	By mid. Diam.class	Premium Grade	2nd Grade	3rd Grade	Small					
RADIATA										
m ³	236,950	14	10,996		27,114	275,074	151,156	1,338	14,571	442,139
tonnes	236,950	14	10,996	0	27,114	275,074	151,156	1,338	14,571	442,139
PINASTER										
m ³	8,452		2,302		24,461	35,215	12,157	84,517	118	132,007
tonnes	8,452	0	2,302	0	24,461	35,215	12,196	93,370	118	140,899
TOTAL										
m ³	245,402	14	13,298	0	51,575	310,289	163,313	85,855	14,689	547,146
tonnes	245,402	14	13,298	0	51,575	310,289	163,352	94,708	14,689	583,038

*¹ including particleboard logs

*² including bark product

Note: This table includes softwood logs from Crown land sold under Forest Produce Licences.

In addition 2,066 Christmas trees were sold.

Plantation Hardwood Production by CALM 1999–2000

SPECIES		Sawlogs	Chiplogs*	Firewood	Fencing	TOTAL
Globulus	m ³	63	72,053			72,116
	tonnes	75	78,644			78,719
Mallet	m ³	260		854	64	1,178
	tonnes	309		854	76	1,239
TOTAL	m ³	323	72,053	854	64	73,294
	tonnes	384	78,644	854	76	79,958

*includes chipwood derived from inforest chipping

Performance Measures

Output 3

	1999–2000 Target	1999–2000 Actual	Explanation of significant variation
Quantity			
Tonnes harvested	617,030	662,996	
Hectares managed	123,474	120,236	
Quality			
Satisfaction with log quantity output	100%	100%	
Compliance with plantation Code of Practice	100%	93%	
Timeliness			
Satisfaction of log targets	100%	100%	
Cost			
Cost per tonne harvested	\$27.50	\$27.18	
Cost per hectare managed	\$307.40	\$323.49	

TOURISM AND RECREATION OUTPUT 4

Highlights

- ✓ 35,000 walkers spent 215,000 days on the Bibbulmun Track (p. 33)
- ✓ Management of all Regional Parks transferred from WA Planning Commission (p. 34)
- ✓ Management Plans for Swan Estuary Marine Park and Adjacent Nature Reserves, Stirling Range and Porongurup National Parks gazetted (p. 27)
- ✓ 121,000 volunteer hours for helping CALM care for the environment (p. 35)

Outcome

Community enjoyment of wildlife and the natural environment without compromising conservation and other management objectives.

Output Description

Dealing with public recreation in the natural environment on lands and waters managed by the Department, including preparing and implementing management plans and the provision, management and maintenance of appropriate access, recreation opportunities and visitor facilities; protecting visitors and facilities from wildfire; training of staff and Conservation and Land Management volunteers, involvement of Aboriginal people in park management and the provision of visitor facilities and services, designing and initiating educational information and activities concerning nature-based tourism and recreation, and developing greater community awareness and support for nature-based tourism and recreation services and policies.

RECREATION PLANNING AND DESIGN

Area and Regional Management Plans

Section 33 of the CALM Act requires that the Department 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 is given an opportunity to contribute to the content of management plans. CALM achieves this through public workshops, advisory committees, newsletters and inviting comment on draft plans.

Priorities for plan preparation are guided by six principles, namely threats to the area, visitor attractions, the presence of exceptional features or

poorly conserved habitat, the need to develop different approaches to planning, existing commitments and government directions.

During the past year, final management plans were gazetted for Swan Estuary Marine Park and Adjacent Nature Reserves, and Stirling Range and Porongurup National Parks. The release of these two plans brings the tally of formally approved management plans to 41. An amendment to the Fitzgerald River National Park Management Plan was also completed. Two draft management plans were released for public comment: Yellagonga Regional Park, and Rowles Lagoon Nature Reserve. Work continues on 24 management plans.

Approximately 70 per cent of visits to CALM-managed estate were to areas covered by either approved or draft management plans (excluding regional parks).

Areas Covered by Management Plans

Tenure classification	Area covered by plan (ha)	Total tenure area (ha)	% covered
National Park	1,694,662	4,938,916	34.3
Nature Reserve	292,253	10,775,263	2.7
Marine Reserve	1,115,125	1,145,940	97.3
Other Recreation/ Conservation Reserves	90,972	444,141	20.5
Total CALM Conservation Estate	3,193,012	17,304,260	18.5

Management Plans as of 30 June 2000

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, Central Forest	14/12/90
Shannon Park - D'Entrecasteaux National Park	Southern Forest	8/1/88
Benger Swamp Nature Reserve (5 year term)	Central Forest	12/2/88
Cape Range National Park	Pilbara	23/3/90
Northern Forest Region	Swan	12/2/88
Central Forest Region	Central Forest	12/2/88
Southern Forest Region	Southern Forest	12/2/88
Ningaloo Marine Park	Pilbara	24/11/89
Leeuwin-Naturaliste National Park	Central Forest	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	Central Forest	16/3/90
Logue Brook Reservoir and Catchment Area	Central Forest	16/3/90
Shoalwater Islands Nature Reserves	Swan	20/10/92
Walpole-Nornalup National Park	Southern Forest	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 - Coomaloo 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, Nilgen and	Midwest	11/9/98
Southern Beekeepers Nature Reserves		
Leschenault Peninsula Conservation Park	Central Forest	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	(awaiting release)
Serpentine National Park	Swan	(awaiting release)
Shark Bay Terrestrial Reserves	Midwest	(awaiting release)
Final Management Plans (being prepared)		Submission Period
Monkey Mia Reserve	Midwest	29/10/93 - 6/1/94
Perup Forest and Lake Muir-Unicup Nature Reserves	Southern Forest	13/11/98 - 15/1/99
Shoalwater Islands Marine Park	Swan	27/10/95 - 29/12/95
Rowles Lagoon Nature Reserve	Goldfields	5/11/99 - 7/1/00
Yellagonga Regional Park	Swan	9/5/00 - 12/7/00
Draft Management Plans (in preparation)		
Beeliar Regional Park	Swan	
Darling Range Regional Park	Swan	
Gnangara Park	Swan	
Herdsmen Regional Park	Swan	
Woodman Point Regional Park	Swan	
Jandakot Regional Park	Swan	
Rockingham Lakes Regional Park	Swan	
Millstream-Chichester National Park - Mungaroo Range NR	Pilbara	
Montebello/Barrow Islands Marine Conservation Reserve (Indicative Management Plan)	Pilbara	
Dampier Archipelago/Cape Preston Marine Conservation Reserve (Indicative Management Plan)	Pilbara	
Kimberley Region	Kimberley	
Rowley Shoals Marine Park (Indicative Management Plan)	Kimberley	
Lower Ord and Parry Lagoons Nature Reserve	Kimberley	
Shark Bay World Heritage Area Strategic Plan	Midwest	
Jurien Marine Park (Indicative Management Plan)	Midwest	
Kalbarri National Park	Midwest	
Turquoise Coast Islands Nature Reserves	Midwest	
Shannon-D'Entrecasteaux National Park (Revision)	Southern Forest	
Wheatbelt Region	Wheatbelt	

The associated tables list the area of each tenure category managed by CALM for which plans are now completed, and the status of plans in preparation or already approved as at 30 June 2000.

SITE AND FACILITY PLANS

Recreation and Tourism Assessment Reports and Master Plans were produced for the Wellington Dam and kiosk area (Mornington District), Pemberton Parks Drive (Pemberton District), Toolibin Lake (Wheatbelt Region), Niagara Dam (Goldfields Region), Victoria Bonapart Gulf Recreation Suitability Assessment (Kimberley Region), Glen Mervyn Dam (Mornington District), Mitchell Plateau Interim Management Guideline (Kimberley Region), Albany Wind Farm (South Coast Region and Western Power), Karijini Visitor Centre, (Pilbara Region), Esperance District Parks and Reserves Assessment, (Esperance District), Kalbarri National Park – Murchison River Precinct (Geraldton District).

Site Development and/or Concept

Plans were completed for Big Brook day use area, Heartbreak Trail camping and day-use areas (Pemberton District), Drakes Brook Dam (Mornington District), Loop Lookout, Hawkshead, Meanarra Hill, Ross Graham, Z-Bend and The Loop in Nature's Window in Kalbarri National Park (Geraldton District), Cape le Grand entry station precinct (Esperance District), Wrights Bridge campground and Golden Valley Tree Park (Blackwood District), Mt Herbert and Python Pool day use sites in Millstream-Chichester National Park (Pilbara Region), Wolfe Creek Crater camping area and Wolfe Creek day use area (East Kimberley District), Exmouth District Office precinct (Exmouth District).

Design and/or Construction

Documentation drawings were prepared for Nature's Window lookout (D'Entrecasteaux National Park), Beedalup board-walk and lookout

(Beedalup National Park), Cape le Grand entry station (Cape le Grand National Park), Lake Clifton-toilet (Yalgorup National Park), Nornalup shelter (Bibbulmun Track), Mt Wells Lookout Tower (Swan Region), Yanchep Experience Shelter (Perth District), Riverton Bridge board-walk (Canning River Regional Park), Golden Valley and Wrights Bridge toilets (Blackwood District), Exmouth Office (Pilbara Region) and various other shelters, toilets, barriers and site furniture.

Planning, training and design

consultancies included Kalbarri Management Plan. Training in recreation and tourism planning and design was provided to CALM staff on a project by project basis throughout the year. Formal training was provided at Advanced Recreation Planning and Management Courses held in August 1999 and June 2000. Numerous lectures were provided during the year for TAFE Joondalup. Representation on the Standards Australia working party resulted in a final standard for Walking Track Classification and Infrastructure Design.

VISUAL LANDSCAPE MANAGEMENT

The landscape management section undertook a broad range of visual landscape management projects and assessments in 1999–2000.

A major Landscape Study, including management recommendations and development guidelines, was produced for the Shark Bay World Heritage Area.

Native forest harvest plans and impact assessments (including community consultation) were prepared for Collins, Dombakup, Big Brook and Crowea blocks in the (Pemberton District) and Donnybrook and Lowden Blocks (Central Forest Region). Plantation harvest and establishment assessment and plans were prepared for Lewana and Ferndale (Blackwood District), and Cooke and Murray

plantations (Mundaring and Dwellingup Districts).

Visual landscape management guidelines for a wide range of impacts and developments were begun with Main Roads WA and the Ministry for Planning. Visual landscape impact assessment, recommendations, guidelines and advice were provided for Lake Coogee Pipeline (Regional Parks), Jarrahdale Communications Tower (Jarrahdale District), Albany Windfarm (South Coast Region), and numerous road proposals, telecommunications towers (Perth District, Narrogin District, South West Capes District, Gasgoyne District) and housing and tourism developments across the State.

A major review of Landscape Management program objectives was undertaken in consultation with Region and District staff. CALM's VLM System was reviewed and updated. Internal guidelines for Native Forest Harvest and Plantation Management were reviewed and reprinted. Publications, including 'Reading the Remote: Landscape Character Types of WA' are being edited and reprinted.

Landscape management planning advice was provided for the D'Entrecasteaux National Park (Pemberton District) and Kalbarri National Park (Geraldton District) Management Plans.

PARK MANAGEMENT AND VISITOR OPPORTUNITIES

Regional Achievements

South Coast: The Minister launched the Management Plan for the Stirling Ranges and Porongurup National Parks and the award-winning children's book *Jeemuluk* (a story of the noisy scrub-bird), written by CALM Officer Corinn Hine and illustrated by local artist Carol Ann O'Connor, in Albany in December.

Roadworks improved the access to the western sections of the Stirling Ranges

National Park, while new boardwalks and bitumen paths have upgraded pedestrian access and safety at Torndirrup National Park.

The City of Albany completed the last section of a sealed road surface all the way into Two Peoples Nature Reserve.

Roads and visitor facilities were improved in the western part of Fitzgerald River National Park.

The Bibbulmun track continues to gain popularity on the South Coast. The Friends of the Bibbulmun Track have started a new chapter in Albany, providing valuable volunteer maintenance support.

Tree hazard surveys, which are a component of visitor risk management programs, were completed during the year for West Cape Howe, Torndirrup, Porongurups and Stirling Range National Parks. Dangerous trees and branches were removed in the latter two parks.

Work began on the new entry station for Cape LeGrand National Park. The walktrail to Frenchmans Peak was upgraded, two new footbridges built and a section of degraded track repaired. New steps were constructed at Hellfire Bay and a footbridge was constructed at Lucky Bay.

Roads and visitor facilities at Stokes Inlet National Park were improved with paths and a footbridge to enable disabled access to the existing Heritage Trail, which provides extensive views across the inlet.

Three kilometres of walktrails and boardwalks have been constructed in and around the wetlands of Esperance Lakes. Also, two bird hides were constructed at Lake Wheatfield and two picnic shelters at Lake Windabout.

Information panels and trailhead and trailside signs were developed for Cape Le Grand, Stokes and Cape Arid

National Parks, Helms Arboretum, Woody Island and the Esperance Lakes wetlands.

Southern Forest: Beedelup Falls redevelopment (carparks, visitor facilities and park infrastructure) was completed, and stage one of Point D'Entrecasteaux redevelopment (four kilometres of coastal drive, carparks and infrastructure) was completed.

Staff conducted visitor risk management surveys, removed various hazards and increased the use of camp ground hosts and other volunteers. Coastal weekend ranger patrols were increased to undertake public education.

A review of the Shannon and D'Entrecasteaux National Parks Management Plan is under way and a master plan for Lake Muir Observatory was completed.

New roading was completed at the Perup Ecology Centre, where guided interpretation walks generated approximately \$20,000 revenue. New boardwalks were established at Mt Chudalup and five kilometres of new dual-use paths were installed adjacent to Donnelly Mill.

Central Forest: A systematic Visitor Risk Management program was implemented and each District has undertaken action to reduce risks at sites where risks were significant.

The 'Wellington Dam Experience', a joint project with the South West Development Commission, was completed. The Experience comprises a series of signs, linked by pathways, interpreting the cultural history of the dam precinct.

Rationalisation and upgrading of the picnic sites in the lower Collie Valley was planned and partially implemented. Two picnic sites, Rapids and Long Pool, were re-developed. Several other sites were closed and rehabilitated for public safety and environmental reasons.

The Wellington Forest Recreation and Tourism Master Plan was updated to include the proposed Wellington National Park, Wellington Discovery Forest, and the Lake Wellington 'eco resort'. This long-term plan is designed to help visitors continue to enjoy the Forest without compromising its conservation, landscape and catchment values.

Facilities have continued to improve in the St John's Brook area. A 15 km-long walktrail following the old rail formations, and passing several historic trestle bridges, is nearing completion. The trail will include two Bibbulmun Track-style campsites, each with views over the tranquil pools of the Brook.

The program to protect Giants and Calgardup Caves conservation values and enhance visitor experiences has continued. A cave guide hut was built at Giants with the support and voluntary labour of the local caving fraternity. Fifty metres of additional elevated walkways were installed and new ablution facilities were built.

An experienced Cave Manager was appointed to look after all caves in the National Park. Visitors can now enjoy the 'adventure' experience with the assurance that experienced guides are available for their safety and protection of the caves.

A major redevelopment of the Warner Glen camping area was completed and a permanent water supply was installed at the Cape Leeuwin water wheel to protect this historic structure from further deterioration.

The Conto's camping area continued to be redeveloped and expanded. Dune rehabilitation in Leeuwin-Naturaliste National Park was undertaken with the help of the local communities at Rabbits (near Yallingup), Boodjidup and Hamelin Bay.

Stairs and an elevated boardwalk that permits safe access for walkers on the Cape to Cape trail and visitors seeking

views from the cliff top were installed at Hamelin Bay. Other work continued on the Cape to Cape trail with the assistance of an active Friends group. A new walkway and footbridge were completed at Canal Rocks.

Swan Region: The Swan Estuary Marine Park and Nature Reserves management plan was released. The Penguin Island jetty was replaced.

The management of the Lane Poole Reserve continued to reduce anti-social behaviour, including problems caused by excess alcohol and irresponsible use of off-road vehicles during peak times such as Easter.

Minor works are under way in Gngangara Park in accordance with the concept plans, and additional site and management planning is being conducted.

Cabaret cave was refurbished and opened during the year at Yanchep National Park, and Villa Nova Pty Ltd secured the lease to operate and redevelop the Yanchep Inn.

Wheatbelt: The Dryandra Woodland Focus Group secured a grant from Trails West to construct an interpretive walk trail between the Congelin Dam and the Congelin Camp Ground. A sign construction and maintenance plan was developed and new entrance signs were constructed. Road improvements to Kawana and Gura Roads in the Dryandra Woodland were undertaken.

The 'Wonders of the Woodland' school holiday program and the Dryandra Woodland Ecology Course were successfully run in July and September 1999 and April 2000. Other interpretive activities such as spotlighting and trapping were carried out during the remainder of the year. In total 51 groups participated in interpretive activities at Dryandra.

A grant from the Federal Governments Regional Tourism Program in conjunction with CALM funds will be

used over the next 12 months to construct an animal viewing enclosure at Dryandra.

A Tourism and Recreation Plan for the Narrogin District was developed and will be implemented progressively over future years as funding allows.

Goldfields: The Kalgoorlie Arboretum has continued to be improved with new toilet facilities, an interpretive shelter and other works. A community action project sponsored by North Ltd and Kanowna Belle Goldmines through the Landcare foundation was completed in the arboretum. BFI Pacific Waste sponsored a successful rubbish removal program and the Ministry for Justice commenced an ongoing parkland maintenance program.

Several special events, including stargazing, woodworking and conference weekends, were conducted at Goongarrie Station.

A site and interpretive plan was prepared for Rowles Lagoon and assistance provided for the development of the site and concept plans for the Karlkurla Bushland park adjacent Kalgoorlie-Boulder.

A Landscape and Recreation site development master plan for the Niagara Dam Nature Reserve was prepared to assist the conversion to a Shire-managed recreation site.

Midwest: The management plan for Nambung National Park and Wanagarren, Nilgen and Southern Beekeepers Nature Reserves was released by the Minister for the Environment. The draft Shark Bay Terrestrial Reserves Management Plan was released for public comment, and work began on a draft Management Plan for Kalbarri National Park.

A draft master plan for the redevelopment of Grey and Wedge squatter settlements was completed and will be released for public comment.

Pedestrian boardwalks were completed on Lancelin Island using Coastcare funding. New information panels relating to the Shark Bay World Heritage Property were completed for Denham, and refurbishment of the Peron Homestead continues in Francois Peron National Park. A new bore was established at Peron Homestead to provide water for visitors and the Project Eden native animal captive breeding program.

Pilbara: The construction of Karijini Visitor Centre, which is being developed by the Pilbara Development Commission is progressing and expected to be completed this year. A new lookout platform was built at Circular Pool and the Weano Recreation area in the western end of Karijini was upgraded with four shade shelters, information shelter, new toilets (including one for disabled) and walk trails to Oxers and Junction Pool lookouts.

Fern Pool facilities (Karijini) were reconstructed after the destruction caused by Cyclone John and several kilometres of gravel road were resheeted along Banjima Drive.

A "Master Development Plan" was prepared for the Deepreach area of Millstream Chichester National Park and a prison work camp was established in the park with the cooperation and management of the Ministry of Justice.

Kimberley: A visitor centre providing information and interpretive displays, a park registration location, ranger base and shopfront for souvenirs at the Purnululu National Park was opened by the Minister for the Environment.

A walktrail in Mirima National Park that was previously difficult to negotiate because of the steep terrain has been made safer and more accessible through the construction of several sections of stairways and an upgrade of the trail surface.

An interpretive display, incorporating art works by a local artist of birds that might be seen on Marlgu Lagoon, has been included in display panels for the bird hide at Parry Lagoons Nature Reserve.

The CALM Kimberley Tourism Manual, prepared by the Visitor Services Interpretation Section with assistance from the Kimberley Tourism Association and Western Australian Tourism Commission, was released. It has received wide acclaim as it provides a comprehensive range of information for all people operating within the tourism industry in the Kimberley Region.

The extent of the 1999–2000 wet season has had a major impact on the activities of the region. Several popular destinations could not be opened in time for the tourist season, and extensive road and infrastructure repairs were needed to enable safe visitor access.

Tourism Licences

All commercial tour operators conducting activities on lands and waters vested in the National Parks and Nature Conservation Authority (NPNCA) or the Marine Parks and Reserves Authority (MPRA) and managed by CALM are required to obtain a licence in accordance with the CALM Act 1984 and Regulations 1993.

As of 30 June 2000, a total of 322 licences were in place to allow tour operators to operate on CALM estate, with a further 17 applications being assessed. This represents an 11 per cent increase in licences for the financial year. There is now a total of 54 restricted and 269 unrestricted tourism-based licences on CALM-managed lands and waters. Of the 322 licences, 70 are marine-based and 252 are land-based.

Tour operator information regarding contact details can also be found on *NatureBase*, CALM's internet website at <http://www.calm.wa.gov.au>.

Leases

CALM currently has 188 leases for a wide range of purposes, including grazing, utilities, dams, rubbish disposal, gravel extraction, tourism and recreation.

Twenty-five leases were issued during the year, 22 of which were formalised with Telstra for telecommunications facilities. The others were issued to Western Power for a coal storage site, Yanchep Inn Nominees for the operation and refurbishment of the historic Inn at Yanchep National Park, and Ralston Bay Holdings for a campground at Broome.

The strong demand for new communications towers led to a policy review which promotes co-location and a revised set of arrangements for communications facilities on CALM lands.

Apiary Site Management

Funding assistance has been provided for a research project being conducted by a PhD student from the Zoology Department of UWA into the effect of honeybees on native bees. The findings of the research are expected to assist with reviews and development of policies in relation to apiary siting in conservation reserves.

A Discussion Paper inviting public comment on recommendations about changes to the management of apiary sites was released during the year.

New criteria for granting apiary sites on pastoral lands were developed, and are expected to assist apiarists in accessing pastoral lease areas.

Number of current Apiary Sites in each CALM District/Region

CALM District	Number of Sites
Moora	516
Mundaring	383
Kalgoorlie	298
Dwellingup	214
Mornington	209
Geraldton	181
Pemberton	171
Perth	168
Esperance	152
Merredin	117
Narrogin	115
Albany	82
Manjimup	81
Walpole	69
South West Cape	59
Blackwood	38
Pilbara	14
Katanning	8
Total	2,875

Bibbulmun Track Project

The past financial year has seen continued improvement to the Track and to the maintenance program, the latter in partnership with the eight southern districts and the Friends of the Bibbulmun Track volunteers. The relationship between CALM's Bibbulmun Track Office and the Friends in marketing, tourism development and information management continues to prosper. In addition the Track has built partnerships with many community groups and organisations, other CALM divisions and other agencies including the Ministry of Justice.

Volunteer maintenance programs are now in place in all eight districts through which the Track passes. Around 300 volunteers are actively involved in track and campsite maintenance, and all districts are operating effective works programs for ongoing Track maintenance.

Apiary Site Management

Permits	1997–1998	1998–1999	1999–2000
New permits	131	50	141
Permits transferred	44	59	81
Permits cancelled	52	39	55
Permits relocated	21	10	10
Totals	248	158	287

A Ministry of Justice prisoner work crew continues to operate part-time, doing maintenance tasks on the Track. A crew and supervisor from Karnet Prison Farm have been trained in building trails and structures in environmentally sensitive areas and have built rock steps, erosion control structures and raised walkways on Mt Cooke in the Monadnocks Conservation Park.

A survey conducted at 17 campsites indicates that over the previous 12 months 35,000 walkers used the Track. The average walk length was six days, and there were 215,000 walk days altogether. Results also indicate a good spread of Track users across all age groups and both sexes, and show that while day walks are popular, most people engage in multi-day hikes.

The relative proportions of regional, interstate and overseas walkers have almost doubled since the 1997–98 walker survey. The Bibbulmun Track is performing very well in meeting its objectives of providing an exceptional, accessible walking experience in the natural environment of the south-west while at the same time contributing to regional economies.

The Track Coordinator is in regular contact with districts and ensures that activities affecting them are communicated to walkers either directly or via the Friends of the Bibbulmun Track. The regular Track Condition Report is updated daily and published on the Bibbulmun Track Web pages in *NatureBase*. The Coordinator also closely monitors all safety issues relating to the Track.

CALM staff worked with the Friends of the Bibbulmun Track on tourism ideas for the Bibbulmun Track. Photographs have been provided to many media outlets and tourism industry marketing bodies (e.g. *Outdoor Australia* magazine, *The West Australian*). Staff also worked with Trailswest in organising a very successful State Trails Conference, and

were involved with CALMtex and other trade shows.

Other activities conducted with the Friends have included a GIS-based Track management information system, which will be made available to volunteers and CALM district offices on the World Wide Web.

Trailhead shelters have been constructed and will be installed in towns the Track passes through in September 2000, when interpretation panels are completed. In conjunction with CALMfire, information on wildfire and prescribed burning programs will be provided to maintenance volunteers and in selected campsites. CALMfire are also giving talks as part of the Bibbulmun Track Friends event calendar and providing regular articles on fire in the Bibbulmun News. Support has been given to Herbarium volunteers in preparation of a publication on the flora of the Bibbulmun Track. *NatureBase* continues to be an important and regularly accessed means of providing information about the Track to the general public.

Both CALM's Bibbulmun Track Office and the Friends receive hundreds of enquiries a week from prospective walkers and groups by phone or email. An identical package of information compiled by both groups is posted to all enquirers.

VISITOR INTERPRETATION SERVICES

Interpretation officers provided visitor communication perspectives for management plans, recreation site development plans and other projects. Of particular note are the Leeuwin Lighthouse precinct within Leeuwin-Naturaliste National Park, the Perth Observatory, an arid-lands bioregions display within the Kalgoorlie Arboretum, John Forrest National Park, and the Shark Bay World Heritage Area.

CALM's Sign Design Studio met regional needs for signs and displays for 97 projects, including exhibits for the Purnululu National Park Visitor Centre and panels for Windjana Gorge and Tunnel Creek. Risk signs continued to be in demand as part of CALM's risk management program.

Interpretive activities were conducted to maximise understanding and support for sound management of our heritage. Regular activity programs are provided at 29 sites attracting over 300,000 participants. Major examples are at Yanchep National Park, the Hills Forest, Perth Observatory and Penguin Island in the metropolitan area, at Geikie Gorge, Mirima and Purnululu National Parks in the Kimberley, at the Valley of the Giants Summer Activities Program in the south-west, and at Monkey Mia in the Midwest.

CALM's nationally accredited Designing Interpretive Activities Workshop was conducted in collaboration with the University of Notre Dame, Australia.

A new book (*Developing Ecotours and Other Interpretive Activities Programs*) was published to support the quality of experience and information given to visitors.

PROGRAM INITIATIVES AND ACHIEVEMENTS

Training

During the year, Departmental staff conducted two week-long training courses on recreation planning and management in natural areas for recent field officer recruits and other CALM staff at the Ministry for Sport and Recreation's Point Walter Conference Centre. One of these courses was also attended by a number of undergraduate students enrolled in the University of Notre Dame's Environmental Science program. Staff also presented lectures on various aspects of recreation resource planning and management and landscape design to students at Curtin, Edith Cowan and Murdoch Universities.

Visitor Risk Management

The identification, assessment and mitigation of visitor risks on CALM-managed lands and waters around the State continued to receive a high priority. Various site improvements were carried out to further improve visitor safety at a number of recreation sites. The Department's nationally accredited training program on visitor risk management was conducted for staff at three regional centres, and CALM also presented the training program to staff from the Rottne Island Authority.

Tread Lightly! Australia and Track Care WA

CALM organised a one-day workshop with representatives from the WA 4WD Association and member clubs at the Hills Forest Activity Centre. The primary aim was to discuss four-wheel-driving opportunities and the Association's ongoing involvement in track restoration and other environmental rehabilitation projects. The Department also mounted a display at the WA 4WD Show in South Perth in association with Tread Lightly! Australia, and Departmental staff in a number of centres continued to promote the Tread Lightly message and to work with the WA Association of 4WD Clubs and Track Care WA on various track rehabilitation projects around the south-west of the State.

Nature-Based Recreation and Tourism Research

In 1998, a research steering group was established by the Department to foster cooperative research on nature-based recreation and tourism issues. This informal partnership between Western Australia's tertiary institutions and CALM seeks to make use of the universities' expertise and knowledge in the social and environmental sciences by providing students and faculty with opportunities to work with CALM operations and specialist staff on research projects relating to the planning and management of

recreation and tourism opportunities in natural areas.

The Group currently comprises representatives from three of the State's tertiary institutions as well as CALM staff, and is chaired by Associate Professor Ross Dowling of Edith Cowan University. To date, over 60 different projects have been identified; details are listed on the Department's website *NatureBase*. A number of them are being pursued at undergraduate and postgraduate levels.

Visitor Information and Statistics

A review of the Department's Visitor Information and Statistics (VISTAT) program was completed during the year. As part of this review, a new set of guidelines for collecting visitor information was distributed to staff. The main aim of the VISTAT Program is to provide accurate information on visitor needs and expectations and on levels and patterns of use throughout CALM-managed lands and waters. This information is essential in making informed decisions on nature-based recreation and tourism opportunities.

To help in monitoring visitor use, the Department also purchased additional traffic classifiers and pedestrian counters. A review of the Department's visitor survey methodology was also completed, and a new customer satisfaction questionnaire was developed for future use. These surveys are critical in gauging visitor needs and expectations and assessing the public's satisfaction with recreation and tourism services and facilities.

Visitor Use Monitoring: The visitor use monitoring program continued, with 158 sites monitored by traffic counters, observation surveys and ticket sales in national parks, State forest areas and reserves throughout the State.

There were 8.9 million visits to CALM-managed lands and waters throughout the State during the year. This is an increase from the previous year's

8.7 million visits. The data demonstrates a continuing interest by the public to visit CALM-managed areas.

Total visits to CALM-managed Lands and Waters

Year	No. Data collection sites	Total No. visits (million)
1995-1996	129	6.0
1996-1997	137	6.4
1997-1998	144	8.1
1998-1999	149	8.7
1999-2000	158	8.9

Regional Parks

The progressive transfer of management responsibilities of regional parks to CALM was finalised in July 1999 with the transfer of the Darling Range Regional Park from the Ministry for Planning.

The eight regional parks are Yellagonga, Herdsman Lake, Canning River, Woodman Point, Beeliar, Jandakot, Rockingham Lakes and Darling Range, making up more than 40,000 ha of urban bush and parkland. Each of these parks is unique in conservation and recreation values. The work of planning and managing them is undertaken by private sector or CALM District staff under contract to the Regional Parks Unit; CALM also proudly acknowledges the dedicated volunteers who perform many tasks within the parks.

Partnering of CALM and other agencies continues to develop with sound results in areas such as fire control, where CALM, the Fire Emergency Services Authority and the Local Government Brigades share management responsibilities.

Each park has its own Community Advisory Committee. This consists of people from local communities who can speak for various stakeholders, including conservationists, scientists, friends' groups, and recreational users.

Up to \$5 million has been committed for capital works from the Metropolitan Region Improvement Fund for programs are prepared in consultation with the advisory committees.

Aboriginal Tourism, Education and Training

The Aboriginal Tourism, Education and Training Unit provides people with the opportunity to experience Aboriginal heritage in the natural environment as well as providing training and educational services to encourage the development of cultural heritage and tourism projects on CALM-managed lands. The unit aims to develop cultural heritage programs that have the potential to provide employment opportunities for Aboriginal people.

A very successful cultural heritage education program for schools is conducted at the Hills Forest, Walyunga National Park and other locations around Perth. Local Aboriginal people have been trained to take over the Hills Forest Aboriginal Cultural Activities program. Additionally in-school presentations continue to be popular, and two new trainees started with the Unit to help with these and other services.

Cultural tourism programs continue in Yanchep National Park, where visitors may learn about the cultural significance of land to Aboriginal people and the traditional and contemporary ways of caring for the environment.

A very successful new partnership was forged with Captain Cook Cruises to conduct Aboriginal Heritage tours at Point Walter. A similar arrangement was struck with the Maritime Museum to offer an Aboriginal Heritage Walk in Fremantle.

Volunteers

In 1999–2000 CALM’s Community Involvement volunteer program continued to grow, with the support and involvement of the Western Australian community. Over 121,000 hours were contributed.

Some of the new projects registered this year were Aboriginal Cultural project development, Wilson Lagoon Rehabilitation, and a Survey of Threatened Flora of Wongan Hills. Ongoing projects include the Hills Forest, Western Shield, the Shoalwater Island volunteers and many others.

These projects enable volunteers to gain work experience in CALM’s management practices, provide a valuable forum for teaching conservation ethics, and allow the community to be involved with making decisions on and improving the environment in which they live.

CALM-registered volunteers have contributed to many different projects. They have participated on advisory committees, been part of a Friends group caring for bushland or parks, been involved with Australian Trust for Conservation Volunteers, or helped with clean-up days. Their contribution is a wonderful indication of the desire Western Australians have to enjoy a healthy environment.

Many volunteer hours are also contributed by 4WD clubs, overseas visitors, scouts, and corporate and church groups to support and enhance management programs.

New volunteers for 1999–2000:	1,408
Total of volunteers in the database:	3,600
Volunteers contributing to a project:	1,404
Hours contributed 1999–2000:	121,000

Performance Measures			<i>Output 4</i>
	1999–2000 Target	1999–2000 Actual	Explanation of significant variation
Quantity			
Visits to sites managed	9,000,000	8,895,347	
Quality			
Visitor satisfaction with their visit overall	91%	94%	
Timeliness			
Visitor services/activities delivered within advertised timeframes	100%	100%	
Cost			
Cost per visit	\$3.87	\$4.01	

ASTRONOMICAL SERVICES

OUTPUT 5

Highlights

- ✓ New telescope enclosure for Star Viewing Night visitors (*p. 37*)
- ✓ One new asteroid discovered (*p. 37*)
- ✓ Five significant scientific publications obtained from microlensing monitoring project (*p. 37*)
- ✓ Three supernovae discovered (*p. 37*)
- ✓ Record attendance at Star Viewing Nights (*p. 38*)

Outcome

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 cooperating with national and international institutions in the acquisition, analysis, interpretation and dissemination of information.

Building projects have figured prominently in Perth Observatory achievements over the past year. In February 2000 an impressive new telescope enclosure was completed and is now being put to good use in the public Star Viewing Programme. It cost approximately \$75,000 and was funded from part of the proceeds from the admission charges recouped over the last two viewing seasons. At present this enclosure houses a 16-inch Meade LX200 telescope, purchased with capital works funds in our 1996–97 Centenary year. Contractors did the basic building work while Observatory workshop staff undertook many essential tasks, such as the dome assembly, upgrading, erection and automation, as well as reinforcing the building and pier construction. All were completed to a high standard.

The 10-inch Mike Candy Telescope was moved to a more functional telescope enclosure that became available on retirement of a little-used telescope. Observatory workshop staff extensively modified the enclosure's dome in order to fully automate its operation. The dome slit now automatically tracks with the pointing of the telescope, which is mainly used for minor planet (asteroid) and comet tracking. During test observations, minor planet 1999 OS3 was discovered. The last such discovery at the Observatory occurred over a decade ago.

This telescope will also be used part-time as an internet-accessible telescope for the project ASTRONET collaboration with Kent State and Cincinnati Universities. An ST8 CCD (electronic) camera with associated filter wheel was donated by collaborators from the University of Cincinnati's Department of Physics in recognition of Perth Observatory's contribution to our joint projects; these involve support of Hubble Space Telescope observations as well as project ASTRONET.

Observations with the 24-inch Lowell Telescope for the gravitational lens brightness monitoring programme continued over the winter months.

Some very interesting astrophysical results have been found. In all, five

refereed publications detailed the recent results. The highlights were: the first detection of a rotating binary star system using microlensing, and determination of its orbital parameters; the first statistical limits on the frequency of planets around distant stars in the Milky Way; strong evidence found against the 'Massive Compact Halo Object' (MACHO) theory for the majority of 'dark matter' in the universe; and determination of limb-darkening parameters (measures of the stellar atmosphere chemistry and temperature) for main sequence stars at distances many orders of magnitude larger than any other technique can achieve.

Furthermore, the imaging capability of the Lowell Telescope has been enhanced with the loan of an AP7 CCD camera from Ohio State University.

During the last financial year three supernovae (SN1999cz, SN1999ex and SN1999ga) were also discovered with the 24-inch Lowell Telescope in an ongoing search program. These discoveries were also confirmed and had accurate astrometric positions determined by the Mike Candy Telescope. Brightness monitoring of these and several others supernovae was also undertaken.

Photometric (brightness) monitoring of comets has been continued. Comet

Hale-Bopp has now been monitored out to a distance of 10.7AU. This is much further away than planet Jupiter, and is the most distant comet ever observed in this manner by astronomers.

The general public continue to patronise the Observatory's educational and information programs in large numbers. Starting in 1998-99, more Star Viewing Nights were scheduled over the summer months. In the last financial year attendance for the Star Viewing Nights set a new record with 4,449 visitors. A new monthly record assisted this achievement in February with attendance of 887 visitors. The number of visitors on day tours and Sunday tours totalled 2,549 and 657, respectively. Visitors' satisfaction remained high as in previous years, with more than 99 per cent satisfied with their visit.

Public awareness of the Observatory as a provider of astronomical services also remains high. In 1999-2000 the number of people who visited, phoned our information service or the Observatory directly, attended talks, an Astronomy Field Night or our Open Day, totalled more than 24,200. Observatory staff informed the public of astronomical events in 72 radio and 10 television interviews and in 60 newspaper articles.

Volunteer assistance has continued and diversified over the past year. An archiving and preservation project was formally started in November when seven volunteers were trained in archiving theory and techniques. They have a lot of work ahead of them, as the Observatory has over 100 years worth of documents, charts, maps, images, etc. The initial effort will be focussed on two projects: urgent preservation

work and cataloguing of photographs. In 1999 another 12 volunteers were trained to join the other 17 volunteers in the Star Viewing Night Program. Volunteer hours totalled the equivalent of 1.4 full-time staff members.

In early 2000 a special event occurred when Perth Observatory's longest-serving volunteer and Honorary Historian, Muriel Utting, was awarded her PhD by Murdoch University. Her thesis involved archival research of the work of third Government Astronomer for WA, H S Spigl, and the work of the Observatory during his tenure (1940-62). This thesis was also converted into a book that was formally launched by the Executive Director in June.

All of the above work could not have been accomplished without the hard work and dedication of all Observatory staff, both permanent and voluntary.

Performance Measures			Output 5
	1999-2000 Target	1999-2000 Actual	Explanation of significant variation
Quantity			
Tour visitors	9,000	7,655	Mainly due to a decrease in the number of day and weekend visitors.
Enquiries	17,400	16,588	
Refereed scientific papers	5	5	
Quality			
Positive responses to 'quality' measures in visitors' surveys	61%	99%	Mainly due to lack of benchmark information.
Submitted research papers published in international refereed journals	100%	100%	
Timeliness			
Satisfaction of information requests as they occur	95%	96%	
Timely publication of research papers in international refereed journals	100%	100%	
Effective study of astronomical targets of opportunity as they occur	50%	53%	
Cost			
Cost per tour visitor	\$13.01	\$16.33	Mainly due to an increase in the number of more costly night sessions conducted and a reduction in tour visitors overall.
Cost per enquiry	\$30.55	\$35.23	Mainly reflects the lower number of enquiries received and the nature of the costs involved.
Cost of research activities per refereed research paper	\$65,472	\$69,103	
Cost of research activities per 1,000 head of WA population	\$180.57	\$190.78	

FACTS AND FIGURES

GENERAL INFORMATION

WHAT STANDARD OF SERVICE CAN OUR CUSTOMERS EXPECT?

While fulfilling our conservation and land management responsibilities, CALM 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:

- ✓ CALM 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.

The Department is in the portfolio of the Minister for the Environment. It is headed by an Executive Director, who is also a member of the Lands and Forest Commission, a member of the National Parks and Nature Conservation Authority, and Chairman of the Forest Production Council. In keeping with the varied interests of CALM there is also a Corporate Executive, which consists of eight 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

CALM 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 CALM 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, 18 district and six local offices. Within the regions there are national park rangers at 32 other locations, and a district wildlife officer at one other.

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 million visits (1999–2000 estimated figures) to CALM-managed lands and waters, 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. The three forest regions in the south-west of the State have a large commitment to manage wood resources, and to regenerate and protect the forests for a wide range of other values. The Goldfields region (and to some extent the Midwest) has a similar commitment to sandalwood resources, as have the South Coast and Wheatbelt regions to economic tree crops that can be integrated into farming practice.

Regional managers have a degree of autonomy. Each is 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 CALM-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

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

CALMScience provides up-to-date, scientifically sound information to uphold effective conservation and land management in Western Australia. Three science groups address CALM'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 CALMScience. It has three astronomy-based core functions: research, information services and educational services.

Corporate Relations 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 CALM's media activities, provides the community with an information service, and conducts market research.

CUSTOMER Focus 1999–2000

CALM's Customer Service Charter provides a statement of the services provided by CALM and the standards of service CALM's wide range of customers can expect from us. It explains how to find out more about CALM and its services, and how to give feedback on our performance.

During 1999–2000, CALM continued to take steps to improve its customer service. These included the following:

- ✓ creating new, and upgrading existing, recreation facilities in national parks, conservation parks, regional parks and State forests, and by constructing these facilities where possible to allow their use by people with disabilities;
- ✓ creating more opportunities to work cooperatively with the community on a range of conservation and land management issues;
- ✓ continuing to provide training to increase staff skills in customer relations, in understanding what customers want, and in using customer feedback to provide responsive services; and
- ✓ enhancing and simplifying information services provided by CALM by expanding and improving CALM's Internet site *NatureBase*.

CALMfire 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.

CALMpeople 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.

CALM Timber Technology conducts research and develops commercial applications which increase the value-adding and utilisation of the State's timber resources.

Environmental Protection Branch prepares guidelines and procedures for protection from dieback, weeds and feral animals, evaluates mining and development proposals, and advises on rehabilitation of CALM-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 Native Forests and Plantation Business Units. It maintains corporate resource information and GIS databases relating to forest areas in the south-west and prepares strategic resource plans.

Business Operations Branch—Forest Products Division provides administrative services for the Forest Products Division, including management of tenders and auctions, contract preparation and control of systems for recording and management of commercial transactions involving log timber. It provides a timber inspection service for CALM and the timber industry.

Information Management Branch plans, coordinates and implements CALM's information systems support, and is responsible for corporate document and records management. The Branch maintains CALM'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.

Plantations Operations Division—Forest Products Division develops silvicultural guidelines and practices for coniferous and broadleaved plantations and advises on their implementation. It manages CALM nurseries and seed supplies.

Arid Forest Branch (Native Forest Operations—Forest Products Division) manages the sandalwood industry including research into plantation development for Western Australian and Indian sandalwood.

Native Forest Operations—Forest Products Division manages the silvicultural practices, regeneration, and harvesting of native forest, and the sale of log timber. It advises on timber quality, wood technology, and marketing.

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.

CALM DISABILITY SERVICES

The main focus of CALM's Disability Service Plan is to ensure that people with disabilities are able to use and enjoy the State's natural areas and the associated facilities, services and programs provided for the benefit of the community.

This commitment to universal access resulted in CALM being recognised in the 1999 Action on Access Awards. CALM received the award for 'Action on Access in State Government', and the overall award, the 'Dr Louisa Alessandri Award for Excellence in Action on Access'.

CALM was a major sponsor of the 'Designing for All Ages' conference which was held in Perth in July 1999. The conference focused on designing for people with disabilities and for an Australian population, more than half of whom will be aged over 50 years by 2020. CALM staff presented a workshop on universal design in the natural environment during the conference. A CALM Director was one of the main speakers.

The CALM Internet site, *NatureBase*, includes information on access to CALM recreation facilities throughout the State. *NatureBase* now provides downloads of a variety of software products that can improve access to some of the information for people who have difficulty reading.

Many improvements were made to visitor facilities during the year. They included construction of a 150-metre wheelchair-accessible boardwalk and two lookout platforms at Eagle Bluff in the Shark Bay World Heritage area; construction of a 350-metre wheelchair-accessible walktrail, incorporating two lookout platforms, around the summit of Point D'Entrecasteaux; and construction of new toilets and shade shelters at Mirima National Park that are accessible for all people. At Beedelup National Park construction has begun on a new car park, picnic shelter and wheelchair-accessible path and boardwalk.

Implementation of the plan's objectives will continue.

External Funding

Grant/funding programs provide a major source of financial support for CALM. Most Commonwealth funding is supplied through programs under the umbrella of the Natural Heritage Trust. The Trust provides grants for environmental, natural resources and sustainable agricultural programs. It is administered jointly by Environment Australia and Agriculture, Fisheries and Forestry Australia. Most programs fall under a 'one-stop-shop' approach which includes most of the terrestrial programs (including Bushcare, National Reserve Systems, Wetlands, Farm Forestry) and the Coast and Clean Seas initiative (including Coastcare and Marine Species Protection). CALM is 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. The life of the Trust has now been extended by one year to conclude in 2000–2001, and it is as yet unclear how and if it will be replaced. Important support is also received from other Commonwealth sources, including Cooperative Research Centres, the Land and Water Resources Research and Development Corporation, and the Rural Industries Research and Development Corporation (RIRDC).

In 1999–2000 Commonwealth funding totalled \$7.55 million, a considerable decline from 1998–99.

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

It should be noted that the above figure includes several programs and/or projects for which CALM is a joint proponent, particularly the community-focused program Coastcare and the RIRDC.

The downturn in Commonwealth support in 1999–2000 can be attributed to several factors. Some programs under the Natural Heritage Trust had less money available for new projects, and the Endangered Species Program received about \$1 million less than in 1998–99. Several larger projects are in their final stages, and

this is reflected by final payments in 1999–2000 of lesser amounts. Commonwealth funding for the Regional Forest Agreement concluded in 1998–99. Other programs were allocated less money and a change in funding priority, which meant greater competition and less support for State agencies.

State Government support continued with recurrent funding being provided through the Salinity Action Plan (\$4.65 million), Main Roads Western Australia (\$2 million) and the Training and Employment Department (\$160,000). CALM also received support through the Gascoyne/Murchison Strategy for targeted land acquisition (\$1.2 million).

The Green Corps Grant Program administered by the Australian Trust for Conservation Volunteers (ATCV) continued to provide support for high priority conservation projects. Works included rehabilitation at Cape Le Grand National Park, tortoise nesting tunnels at Twin Swamps, installation of pit traps at Meentheena, and track maintenance at Mount Bruce. ATCV crews also assisted CALM with rehabilitation works in the Esperance and Walpole districts.

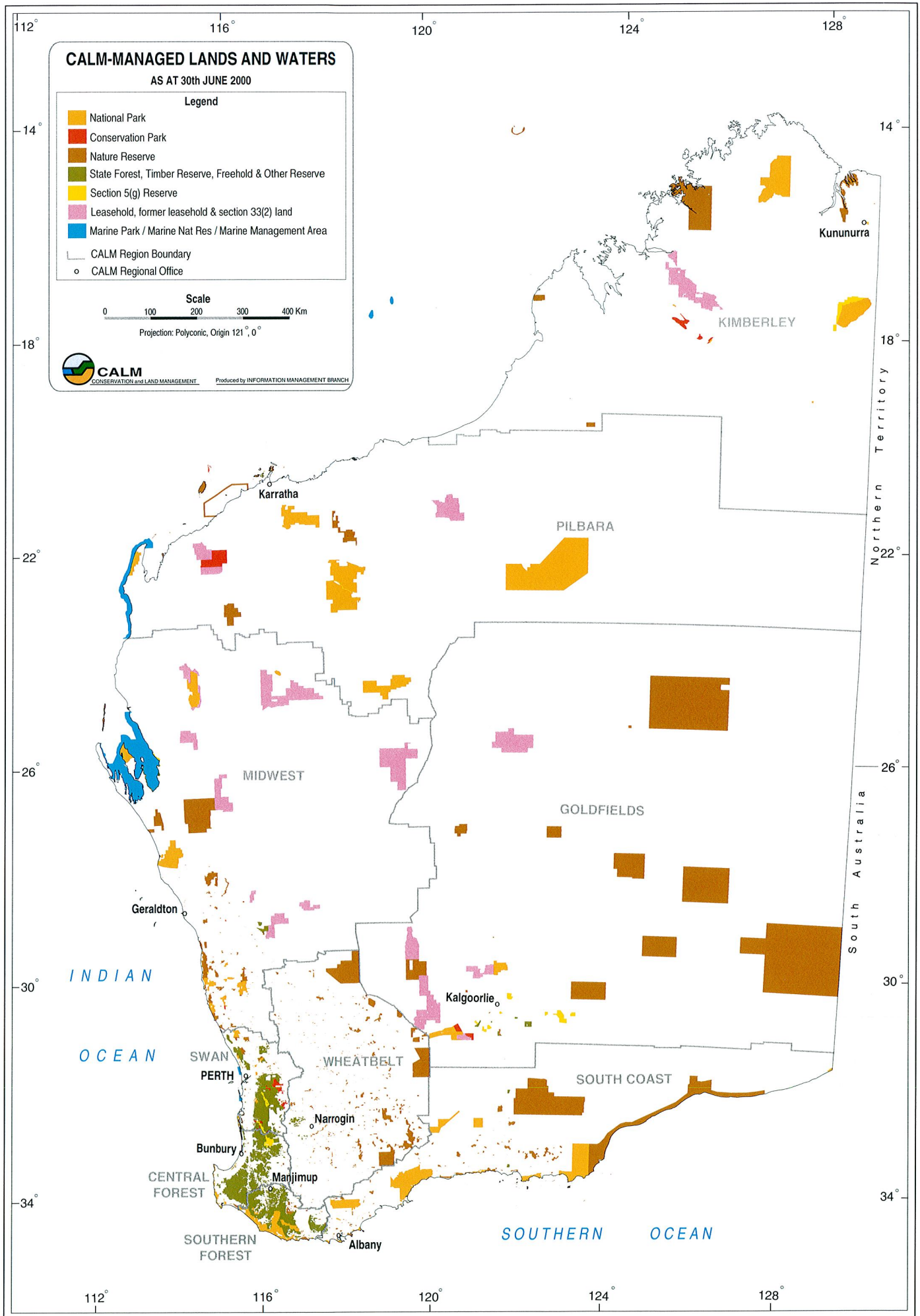
The BankWest *LANDSCOPE* Visa card raised approximately \$14,000 for endangered species and ecological communities conservation. Projects funded during the year included 'Seed collection and long term storage of some critically endangered and endangered taxa from south-west WA'

and 'Control of Phytophthora in the Busselton Ironstone Community–Tutenup Road'.

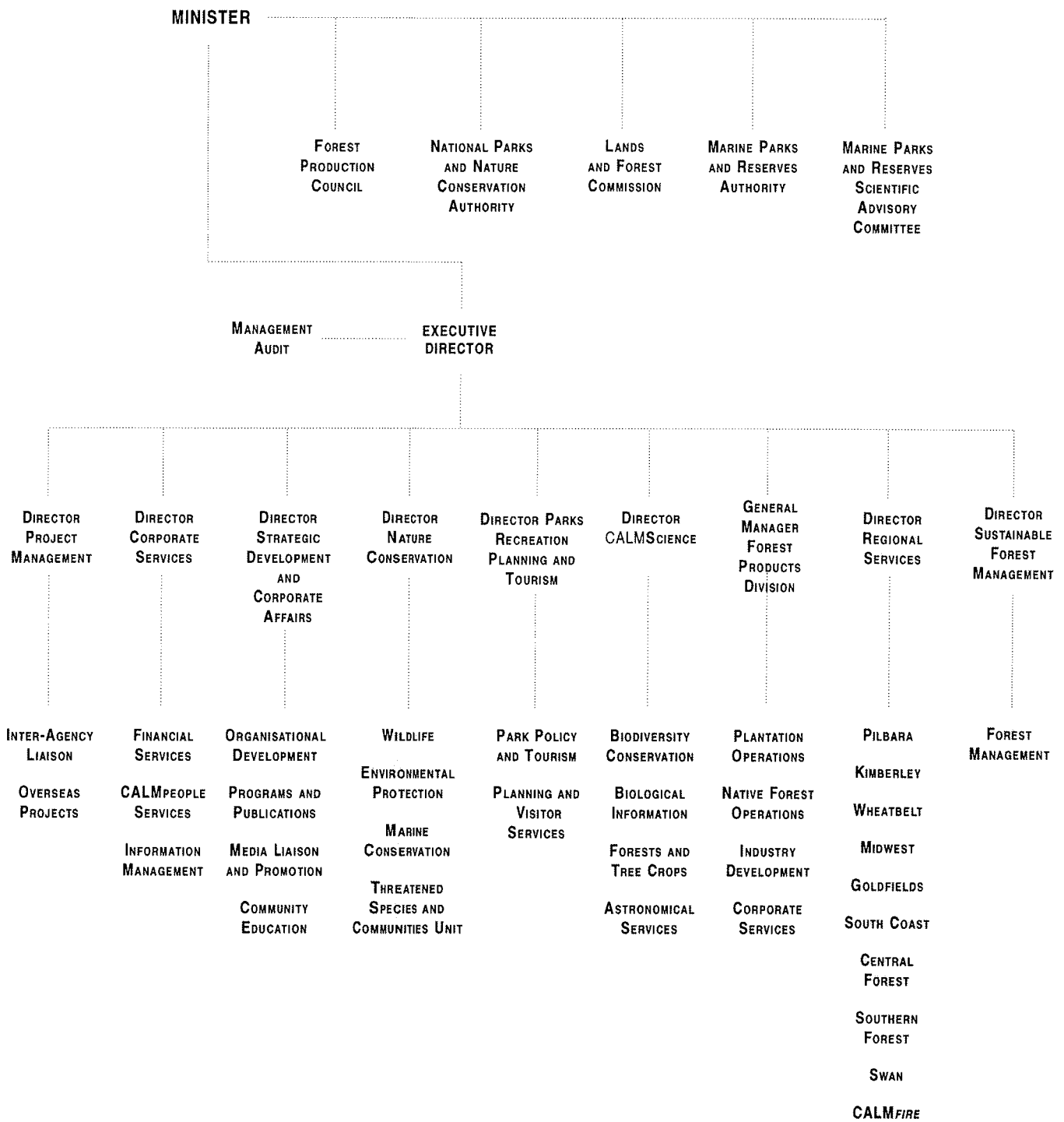
CALM continued to receive valued support through corporate sponsorship for conservation, education and infrastructure projects. Ongoing sponsors include BP (feasibility and management of tree plantations to create carbon sinks as an offset to the company's greenhouse gases), Kanowna Belle Gold Mines (Kalgoorlie Arboretum upgrade), Edison Mission Energy Company (Leda Nature Reserve conservation), SITA-BFI Waste Systems (Kalgoorlie Arboretum rubbish disposal) and Hamersley Iron Pty Ltd (Pilbara Region works). The Western Shield campaign received major support from Cable Sands (WA) Pty Ltd and Westralian Sands Pty Ltd. EPIC Energy became a new sponsor, providing \$10,000 for CALM's Bushranger Program.

Another important contribution to CALM is through numerous small donations, either in cash or kind, from all sectors of the community. Examples include assistance with carting materials to offshore islands, picnic tables, the use of specialised tools, donation collection boxes, old mining conveyor belting for dune stabilisation, and relocation of marine seals.

The Friends of the Bibbulmun Track continued to support CALM strongly in meeting its management obligations for the Bibbulmun Track. Their sponsors include AlphaWest, BP, Mountain Design and the Lotteries Commission.



ORGANISATIONAL STRUCTURE



CORPORATE EXECUTIVE

EXECUTIVE DIRECTOR

W Cox BSc, PhD

DIRECTOR, REGIONAL SERVICES

A W Walker BSc For (Hons)

DIRECTOR, NATURE CONSERVATION

G J Wyre* B Nat Res (Hons)

DIRECTOR, PARKS, RECREATION PLANNING & TOURISM

J R Sharp B Ed, Dip PE, M Ed

GENERAL MANAGER, FOREST PRODUCTS DIVISION

D J Keene* Dip For, BSc

DIRECTOR, SUSTAINABLE FOREST MANAGEMENT

K J McNamara* B Nat Res (Hons)

DIRECTOR, CALM**Science**

N D Burrows BSc For, PhD

DIRECTOR, PROJECT MANAGEMENT

F H McKinnell Dip For, BSc For, PhD

DIRECTOR, CORPORATE SERVICES

J C Byrne MBA, PhD, FCPA

DIRECTOR, STRATEGIC DEVELOPMENT
AND CORPORATE AFFAIRS

R A Kawalilak BA, FPRIA

OTHER SENIOR STAFF

REGIONAL MANAGER, CENTRAL FOREST

R Chandler BSc

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, SOUTHERN FOREST

P Keppel Cert For Mngmt

REGIONAL MANAGER, SWAN

B E Harvey BSc For

REGIONAL MANAGER, WHEATBELT

K J Wallace Dip Ed, BSc (Hons)

MANAGER, CORPORATE SERVICES—Forest Products Division

G Bettison* B Com, Dip Mech Eng, Dip Ele Eng, FCPA

MANAGER, BIODIVERSITY CONSERVATION GROUP

K D Morris BSc, MSc

MANAGER, BIOLOGICAL INFORMATION GROUP

N G Marchant BSc (Hons), PhD

MANAGER, CALM**fire**

R Sneeuwjagt BSc, MSc

MANAGER, CALM TIMBER TECHNOLOGY

I D Rotheram BSc For, MSc Nat Res

MANAGER, ENVIRONMENTAL PROTECTION BRANCH

F E Batini Dip For, BSc, MSc

MANAGER, FINANCIAL SERVICES BRANCH

M J Neilson BA, MAcc, CPA

MANAGER, FORESTS AND TREE CROPS GROUP

J F McGrath BSc (Hons), PhD

MANAGER, FOREST MANAGEMENT BRANCH

M Rayner BSc For (Hons), PhD

MANAGER, CALM**people** SERVICES BRANCH

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

MANAGER, INDUSTRY DEVELOPMENT & MARKETING—Forest
Products Division

P Biggs* BSc For, 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, NATIVE FOREST OPERATIONS—Forest Products Division

M Buckton* BSc For (Hons)

MANAGER, PARK POLICY AND TOURISM BRANCH

C B Ingram B App Sc

MANAGER, PLANNING & VISITOR SERVICES BRANCH

A J Williamson Dip For, BSc, M For, MSc

MANAGER, PLANTATIONS OPERATIONS—Forest Products Division

G M Butcher* BSc For

MANAGER, PROGRAMS & PUBLICATIONS

C Bailey

MANAGER, WILDLIFE BRANCH

K Atkins* BSc (Hons), PhD

PRINCIPAL MEDIA LIAISON OFFICER

N Higgs

SCIENCE ADVISER

I J Abbott BSc (Hons), PhD, DSc

GOVERNMENT ASTRONOMER

J Biggs BSc (Hons), PhD

DIRECTOR, WA THREATENED SPECIES & COMMUNITIES UNIT

A A Burbidge BSc, PhD

PROJECT CONSULTANT

P G Lilleyman B Bus, G Dip Acc, M Bus, FCPA

* Acting

CALM-MANAGED LANDS AND WATERS

Total Estate

As at 30 June 2000 the total area under CALM's care was 22,497,026 ha, representing an increase of 890,552 ha during 1999–2000.

The terrestrial area (not including marine reserves) is approximately 8.45% 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 archaeological, 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 64 national parks at 30 June 2000 was 4,938,916 ha, an increase of 64,634 ha for the year. The increase was due to the creation of the Goldfields Woodlands National Park (64,612 ha) and the addition of Lake Josephine to Yalgorup National Park (22 ha).

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 2000 was 298,386 ha, representing an increase for the year of 181,062 ha. Notable was the creation of two new conservation parks, one adjacent to the Goldfields Woodlands National Park (about 33,112 ha) and another in the Pilbara region over the area of the former Cane River Pastoral Lease (147,843 ha).

Nature Reserves

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

The area of nature reserves at 30 June 2000 was 10,775,263 ha, representing a net increase of 2,583 ha in 1999–2000. Notable was the creation of two nature reserves resulting from purchases of land 11 km east of Nungarin (400 ha)

and at Tutunup (24 ha). Other new nature reserves include areas 35 km south-east of Hyden (539 ha) and eight kilometres north-east of Piesseville (440 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 2000 was 1,727,358 ha, a decrease for the year of 150 ha.

Timber Reserves

Timber reserves declared under the CALM Act 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, e.g. State forest or nature reserve.

**CALM-Managed Lands and Waters (ha) by Region
as at 30 June 2000**

Tenure Classification	Central Forest	Goldfields	Kimberley	Midwest	Pilbara	South Coast	Southern Forest	Swan	Wheatbelt	Total
National Park	27,480	151,009	696,876	504,845	2,396,627	891,810	223,898	45,079	1,292	4,938,916
Conservation Park	581	33,517	54,670	3,750	149,309	-	-	56,559	-	298,386
Nature Reserve	9,779	6,267,610	809,497	732,199	250,520	1,585,323	32,849	50,174	1,037,312	10,775,263
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	656,456	781	-	-	-	4,055	547,187	490,813	28,066	1,727,358
Timber Reserve	33,765	28,576	-	26,338	-	5,231	19,023	28,501	-	141,434
Sect (5g) Reserve	30,282	81,617	79,622	2,316	8,130	-	634	27,358	332	230,291
Miscellaneous Reserve	358	<1	61	517	1,779	3,813	485	5,941	15	12,970
Freehold (Exec Dir)	24,472	<1	<1	<1	<1	63	4,922	3,662	<1	33,121
Leasehold (Exec Dir)	-	897,805	427,729	743,730	336,626	-	-	-	-	2,405,890
Former Leasehold Under CALM Management	-	-	-	598,774	70,030	-	-	-	-	668,804
CALM Act Section 33(2)	-	28,514	-	90,139	-	-	-	-	-	118,653
Totals	783,173	7,489,430*	2,091,706*	3,583,343	3,438,585	2,490,295	828,998	724,478	1,067,018*	22,497,026

Note: 1.0 ha has been added in for <1 for totals shown* (ie. totals do not add to sum of columns).

Source: Information Management Branch

The area of timber reserves at 30 June 2000 was 141,434 ha, a decrease of 116 ha.

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 2000 was approximately 1,013,940 ha. The area of marine nature reserves at 30 June 2000 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.

CALM Act Section 5(g) Reserves

Within the meaning of the CALM Act, land categorised as 5(g) reserve is land which was reserved under the *Land Act 1933* and which is vested in the NPNC or the LFC. These reserves are not national parks, conservation parks, nature reserves or marine reserves. Immediately before the commencement of the CALM Act some were vested in, or under the control and management of, the National Parks Authority but not as a national park, e.g. Matilda Bay Reserve. They are mainly for conservation and/or recreation.

The area of section 5(g) reserves at 30 June 2000 was 230,291 ha, a decrease for the year of 83 ha.

Miscellaneous Reserves

There are some remaining reserves managed by CALM which do not fall within any of the above 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 2000 was 12,970 ha, representing an increase of 19 ha for the year.

Other Land

The area of freehold land held by the Executive Director at 30 June 2000 was 33,121 ha, a net increase of 2,993 ha for the year. The major portion of this land is committed to commercial softwood forestry, although a notable addition for the year was 3,045 ha, which will form part of the proposed Wellington National Park.

The area of pastoral lease held by the Executive Director at 30 June 2000 was 2,405,890 ha, representing a decrease due to reservation as a conservation park of the former Cane River Pastoral Lease. In addition, a further 668,804 ha of land formerly held under pastoral lease have been purchased for addition to the conservation estate. This is held under an interim management arrangement until it is formally reserved.

National Parks Vested in the National Parks and Nature Conservation Authority

NAME	AREA (ha)	NAME	AREA (ha)	NAME	AREA (ha)
Alexander Morrison	8,500	Gooseberry Hill	33	Scott	3,273
Avon Valley	4,366	Greenmount	58	Serpentine	4,360
Badgingarra	13,121	Hassell	1,265	Shannon	52,598
Beedelup	1,786	<i>Hidden Valley</i>	2,068	Sir James Mitchell	497
Boorabbin	26,000	John Forrest	2,676	Stirling Range	115,920
Brockman	49	Kalamunda	375	Stokes	9,726
Cape Arid	279,382	Kalbarri	183,004	Tathra	4,322
Cape Le Grand	31,801	Karijini	627,442	Torndirrup	3,936
Cape Range	50,581	Kennedy Range	141,660	Tuart Forest	2,049
Collier Range	235,162	Leeuwin-Naturaliste	19,037	<i>Tunnel Creek</i>	91
D'Entrecasteaux	116,686	<i>Lesmurdie Falls</i>	56	Walpole-Nornalup	15,861
Drovers Cave	2,681	Lesueur	26,966	<i>Walyunga</i>	1,812
Drysdale River	448,264	Millstream-Chichester	199,736	Warren	2,982
<i>Eucla</i>	3,560	Moore River	17,540	Watheroo	44,474
Fitzgerald River	329,882	Mount Augustus	9,168	<i>Waychinicup</i>	3,982
Francois Peron	52,587	Mount Frankland	30,830	<i>West Cape Howe</i>	3,517
Frank Hann	67,550	Nambung	18,362	William Bay	1,734
Geikie Gorge	3,136	Neerabup	1,060	Windjana Gorge	2,134
Gloucester	875	Peak Charles	39,959	Wolfe Creek Crater	1,460
<i>Goldfields Woodlands</i>	64,612	Porongurup	2,621	Yalgorup	13,023
Goongarrie	60,397	Purnululu	239,723	Yanchep	2,842
		Rudall River	1,283,706	TOTAL	4,938,916

* 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 2000 totalled 118,653 ha. Of this, 406 ha comprises unvested Crown reserve. The remainder is land proposed for addition to the conservation estate and is managed accordingly under this interim arrangement.

Conservation Land Acquisitions

The Department acquired over 699,000 hectares of land of high conservation value during the year for future addition to the conservation estate. Priorities for purchase are for those areas containing ecosystems which are not adequately reserved in the existing conservation reserve network, and also to add to existing reserves land 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 \$9.5 million was provided from State Treasury for the acquisition of over 3,000 hectares for part of the new Wellington National Park between Collie and Dardanup. The total expenditure from all funding sources for the financial year was over \$11.7 million.

With funds allocated under the Gascoyne-Murchison Strategy, the following pastoral leases were bought during the year: Waldburg, Lochada and parts of Barnong, Williambury, Jimba Jimba, Mt Phillip and Dalgety Downs. The leases and part leases cover a combined total area of more than 625,000 hectares. It is intended that the areas acquired from the Williambury and Jimba Jimba leases will be added to the Kennedy Range National Park. They

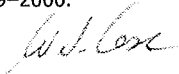
PUBLIC SECTOR STANDARDS AND CODE OF CONDUCT

The Department has adopted guidelines and processes supporting public sector standards in human resource management. During 1999–2000 the Performance Management policy was reviewed and new policy and procedures put in place to ensure full compliance with the Standard. These policies and procedures are in the CALMpeople Manual, which, like the Code of Conduct, is accessible on-line, on CD-ROM and in print.

Individual managers are responsible for ensuring compliance with Departmental policies and the Code of Conduct, with the Manager CALMpeople Services Branch monitoring and advising. In addition, staff in the Workforce Services and Planning section monitor all transactions for recruitment, selection and appointment, secondment, transfer, temporary deployment, redeployment and performance management to ensure current Departmental policy is adhered to. Staff in the Employee Relations section are responsible for monitoring all termination and disciplinary cases, and grievance resolution is monitored by the Policy and Diversity Officer.

The Public Sector Standards Commission survey of employee views on EEO and Ethics conducted March 2000 showed that CALM employees generally rate agency performance in relation to Standards higher than the average for the sector.

The CALM Code of Conduct is made available to all new staff via a comprehensive Induction package accessible on the intranet. The Code, formulated in 1997, will be reviewed during 2000–2001. There were no applications lodged for review of process in respect of any Standard during 1999–2000.



Dr Wally Cox
EXECUTIVE DIRECTOR
30 August 2000

are presently managed under section 33(2) of the *Conservation and Land Management Act 1984*.

Acquisitions outside the Gascoyne-Murchison Strategy area included the following: part of Nanutarra Pastoral Lease in the Pilbara (70,030 ha); five parcels of remnant vegetation in the wheatbelt totalling over 1,700 ha; 72 ha adjacent to Lake Muir Nature Reserve in the Shire of Manjimup; a 275-ha parcel of remnant vegetation in the Shire of Coorow; five hectares in the Shire of Gingin representing a vulnerable ecological community, herb-rich saline shrubland; four hectares in the Busselton Shire for the protection of declared rare flora; an area of 24 ha in the Shire of Busselton representing the southern ironstone threatened ecological community; and 116 ha adjacent to Yarnup Nature Reserve.

CALM 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 over \$1.02 million. This support will continue to help with making significant progress towards the establishment of a comprehensive, adequate and representative reserve system in Western Australia.

The Department also gratefully acknowledges donations of freehold land from G and L Fernie for addition to Walpole Nornalup National Park and from the Shire of Esperance for inclusion into the Woody Lake Nature Reserve.

CORPORATE SERVICES

Financial Services Branch

Staff of the Department's Financial Services Branch manage the Department's accounts payable and accounts receivable systems, maintain the asset register, produce management and financial reports, manage the vehicle fleets, dispose of surplus land and coordinate purchasing systems.

In addition to these on-going functions, Branch staff undertook projects in 1999–2000 that included testing and updating of systems to address Y2K issues, updating financial systems and training staff to cater for the introduction of the Goods and Services Tax from 1 July 2000, and producing financial reports associated with the restructure of the Department.

CALMpeople Services Branch

Benchmarking data showed that CALMpeople Services Branch was significantly more cost-effective in service delivery than nine other medium-size WA Public Sector agencies. All ten agencies measured human resources performance across 20 key indicators.

The Public Sector Standards Commission agency survey on EEO and Ethics showed that CALM employees generally rate the probity and quality of HR systems and processes higher than the average for the public sector.

Services and costing reviews were completed in preparation for bureau service provision to new entities arising from the restructure of CALM, and the new Forest Products Division was set up in the HRIS database.

A comprehensive new performance management system (IDAPES) was designed and introduced.

Forty-one salaried staff achieved career advancement through promotion via advertised vacancies. Fifteen salaried staff were reclassified into higher level positions, and three achieved advancement through criteria progression. There were no applications made for breach of process review in relation to any Public Sector standard.

CALMpeople Reference Group

The CALMpeople Reference Group participated in a number of initiatives involving the management of change in CALM. These included Team Leaders Managing Change workshops, training and development programs for middle level management, and the new performance management system (IDAPES).

The group received a High Commendation for People Management in the Premier's Awards for Excellence in Public Sector Management. It also was the subject of 'best practice' case studies published by national consulting firm HRM Consulting and New Zealand consulting firm Benchmark Communications.

Linkages were strengthened with the Executive Director, individual Directors, and key groups such as the Peer Support Group and regional management teams.

Employee Relations

CALM has continued with workplace reform during the year.

New two-year workplace agreements were approved and made available for the range of Visitor Centre employees, and a new Part 2A workplace agreement for Project Eden was negotiated and was awaiting approval by the Commissioner for Workplace Agreements as at 30 June.

New two-year enterprise agreements were concluded for employees eligible to be covered by the Civil Service Association (October 1999) the

Australian Liquor, Hospitality and Miscellaneous Workers' Union (December 1999), the Australian Metal Workers' Union (May 2000) and the Australian Workers' Union (June 2000).

Negotiations for a new enterprise agreement for CALM's pilots and new workplace agreements for National Park rangers and maintenance employees and construction and maintenance employees began but had not been concluded as at 30 June.

Under the auspices of the Australian Industrial Relations Commission, negotiations continued to condense the federal Australian Workers' Union (Western Australian Public Sector) Award 1992 into the 20 allowable matters, but had not been concluded as at 30 June.

New workplace and enterprise agreements to cover salaried officers were prepared for the proposed new Conservation and Forest Products Commissions.

Risk Management

Managing risk is a logical, systematic process that can be used when making decisions to improve the efficiency and effectiveness of projects and systems. It should not be regarded as an end in itself, but rather a means to an end.

Risk management principles are being applied throughout CALM. The process begins at the corporate planning level, where executive management must position the organisation to meet service delivery functions. At the operational level, managers with functional or project responsibilities must determine the most appropriate way to contribute to corporate objectives.

Occupational Safety & Health

A total of 115 work groups across CALM achieved their safety performance targets during the reporting period. These groups

received awards marking their achievement under the IFAP/GIO Safeway Award Scheme. CALM, for the sixth consecutive year, was the most successful participating organisation.

CALM recognises the benefit of a safe working environment and acknowledges the interaction of safety, health and fitness in minimising injury to workers and reducing costs. The effectiveness of the safety and health and the injury management programs operating within CALM is again reflected in the continuing downward trend in LTI frequency rate and total working days lost as a result of workplace injury (see indicators below).

	1999-2000	1998-99
Lost Time Injury Frequency Rate	9	11
All Injury Frequency Rate	48	47
Number of Lost Time Incidents	27	33
Number of Days Lost	311	363
Average Days Lost per (LTI) Annual Workers'	12	11
Compensation Premium	\$624,938	\$911,305

Organisation Learning and Development

Eleven field officer recruits graduated in 2000 after completing 14 weeks of competency-based training delivered over a two-year period. Training programs included four-wheel-drive operation, field engineering, recreation planning and design, chainsaw operator's course, disease management, fire management, forest silviculture, law enforcement, 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 appointments within CALM.

Seventeen CALM people were successful for five internal scholarship programs, 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 recipients this year were Bradley Hasson of Mundaring Christina Gilbert of Collie;
- **Dr George Malajczuk Post Graduate Scholarship**—designed to provide continuous learning opportunities in science disciplines. The recipients this year were Mike Meinema of Geraldton and Peng Soong of Kensington;
- **Seamus Mulholland Scholarship**— designed to provide continuous learning opportunities in a range of management and leadership disciplines. The recipient this year was Kellie Agar of Bunbury;
- **Executive Directors Undergraduate Scholarship**—made available to all permanent CALM people to assist them financially in relevant undergraduate study programs. There are 12 recipients of this scholarship, located throughout the State;
- **June Craig Scholarship for CALM Women**—designed to encourage and support all women in CALM, to enhance and develop their careers and increase their contribution to CALM's mission. The recipients in 1999–2000 were June Ellis, Carol Dymond, Dr Jeanette Gomboso, Donna Green and Elizabeth Moore.

Fourteen CALM people successfully completed the internationally recognised Certificate IV Effective Manager course. This course offers formal qualifications in management. Eight of these graduates have articulated their studies into the Diploma of Management course. A further 18 CALM people enrolled in the Certificate IV Effective Manager course starting on 28 April 2000.

Currently there are 38 wages employees enrolled in the Certificate IV in Conservation and Land Management Course.

Information Management Branch

Information Services Section spent a significant effort during the first half of 1999–2000 in minimising Departmental exposure to the Year 2000 date change. All computer systems continued to operate smoothly into the new year, apart from two minor problems with two-digit dates which were quickly resolved. Other key activities included the continual improvement of data communication infrastructure to support remote access from home and other sites, and implementation of a number of web-based information systems to improve information delivery.

Corporate Information Section began extending the Keyword Classification Thesaurus to Regional Offices, starting with Midwest Region, aiming to standardise records management. A records disaster prevention and recovery plan, together with guidelines for identifying and preserving vital records, was developed following the Moora floods. Preparation began for upgrading the corporate records management system, aimed at meeting business needs as well as anticipated legislative changes.

The Geographic Information Services Section provided GIS and mapping support for corporate requirements related to the Regional Forest Agreement, forest monitoring, and nature conservation. Under a plan to enable GIS to be deployed in CALM regions and districts, extended and updated spatial data was distributed to these offices, and training and workshops were conducted in a number of centres.

The regional coverage of operational maps was extended, and assistance was provided in refining new reserve boundaries in the south-west of the State. Maps were provided for five management plans, and for fire protection requirements. A further eight Land Management Series maps were published during the year,

together with vegetation maps, posters and display panels, and three new District Atlases were produced for internal use. The section continued the development of a plantation data acquisition system, and with the integration and management of all plantation data. A program was commenced for the conversion of all the Department's geographic data to the new geographic datum, GDA94, in accordance with government policy.

A Remote Sensing Applications Unit was formed within the section, to maximise the benefit to the Department of all types of remote sensing from aerial photography to satellite-based, for both terrestrial and marine environment monitoring.

INTELLECTUAL PROPERTY MANAGEMENT

No CALM activities during the current year resulted in the commercialisation of a particular aspect of intellectual property (IP). However, specifications relating to IP were included in relevant contracts for services.

All current CALM workplace agreements and industrial agreements include a clause to the effect that all works, items, materials and information produced or developed in the course of employment with CALM are property of the Crown in right of the State of Western Australia. This includes tangible material as well as industrial or intellectual property rights such as copyright.

ELECTORAL ACT 1907

In accordance with the requirements of Section 175ZE of the Western Australian Electoral Act 1907, CALM incurred the following expenditures in the financial year ended 30 June 2000.

Advertising agencies: \$3, 586 (Effective Advertising & Design Pty Ltd).
Market research organisations: \$15,000 (Patterson Market Research).

Media advertising organisations: \$287,230 (Marketforce Productions) and \$70,447.84 (Media Decisions WA).

There was no expenditure in Direct Mail or polling by the Department. Total expenditure was \$376,264.

CALMfire MANAGEMENT

Wildfires

The 1999–2000 fire season in the south-west was hot and dry for most of the summer. The Soil Dryness Index, which reflects the dryness of soils and vegetation, reached average levels for most centres in the south-west in summer.

On 12 December 1999 lightning-caused fires burnt out 1,300 ha in Flint and Geddes Forest Blocks 65 km south-east of Perth. A major suppression effort restricted the fire to east of the Albany Highway. At the same time lightning caused fires at Harris Dam near Collie, Ferndale and Lewana Plantations between Balingup and Nannup, Karoun Hill Nature Reserve north of Merredin, and Tutanning Nature Reserve near Pingelly. These fires were followed by a serious fire (400 ha) in Serpentine National Park on 16 December 1999 that was controlled in steep country by CALM fire crews using hand-tool attack.

The next major fires occurred on 29 December, when lightning struck at Glen Mervyn Dam near Collie, Serpentine near Jarrahdale, and Mount Dale south-east of Mundaring. On 31 December CALM forces joined firefighters from the Fire and Emergency Services Authority and local bushfire brigades to control a fire in the suburb of Glen Forest in the Darling Scarp east of Perth, a fire which resulted in the loss of several sheds. On the same day a lightning-caused wildfire burnt out 45,000 ha of the Northern Beekeepers Reserve and unallocated Crown lands near Leeman.

Another lightning strike caused a 2,000 ha fire in State forest at Quindinnillup Block 30 km north-west of Denmark. During this difficult period a Statewide CALM fire suppression effort was mounted and all fire staff leave was cancelled for the New Year period. These efforts were compounded by lightning fires on 4 January in State forest east of Jarrahdale, and at Tathra and Watheroo National Parks north of Moora.

On 6 January, further lightning storms resulted in multiple strikes in plantations north of Perth, six strikes in State forest near Dwellingup and a further strike at Herron Point Nature Reserve near the Peel-Harvey Estuary. This was immediately followed on 7 January 2000 by further lightning fires that burnt out 4500 hectares of the Chiddarcooping Nature Reserve and private property north-east of Merredin. Between 10–11 January, a further series of lightning storms resulted in fires on Mount Manypeaks and four strikes in the Fitzgerald River National Park. These fires required a significant suppression effort to contain in rugged terrain. Fires also occurred in the Watheroo National Park north of Moora and in the Wanagarren Nature Reserve near Lancelin.

In summary, CALM forces attended 589 wildfires throughout the State. The major causes were Deliberately Lit (47 per cent) and Lightning (17 per cent). Escapes from CALM prescribed burns represented only two per cent of all wildfires. Most of the fires (472) occurred in the three Forest Regions, and 85 per cent of these fires were contained to less than 10 hectares due to rapid detection, despatch and suppression actions taken by CALM fire crews with support from local volunteer bushfire brigades. In 99 per cent of cases, CALM forces were despatched and in attendance at forest fires before these exceeded one hectare in the high priority areas, and two

effective use of aerial water-bombers in the Perth outer metropolitan area and the south-west forest contributed to the success of the suppression operations.

In recognition of the difficult fire season, the Minister for the Environment paid special tribute to CALM firefighters and their families at ceremonies conducted at Cervantes, Perth, Bunbury and Manjimup.

Planned Burns

Throughout the State CALM completed 194,968 ha of planned burning, of which 61,039 ha (31.3 per cent) was prescribed to meet nature conservation objectives and the protection of visitors in the State's parks and reserves. A total of 40,147 ha (20.6 per cent) of burning was completed to regenerate forests and protect fire sensitive regrowth after timber harvesting.

Overall, 174,455 ha of forests and associated vegetation types in the south-west of WA were prescribed-burnt for a variety of purposes. These included forest regeneration, conservation and protection of biodiversity, community protection, and protection of parks, nature reserves, native forests, plantations and timber resources. Approximately 69 per cent of the forest burns were completed in the September to December period, and 23 per cent in autumn.

A total of 4,746 ha of pine plantations near Wanneroo and Yanchep north of Perth were prescribed-burnt in winter or early spring. These fuel reduction burns provided essential protection to highly valued plantations and nearby farms and residential areas from damage by the large number of wildfires that were deliberately lit.

Outside the forest regions, 20,552 ha of planned burning was undertaken in the Midwest, Kimberley, Pilbara, South Coast and Wheatbelt Regions, principally as open edge and wind-driven buffers to provide strategic protection to the conservation reserves and community assets.

Smoke Management

CALM's fire managers rigorously applied smoke management systems for all planned burns in the south-west forest 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 CALM with detailed information on weather and atmospheric conditions. This close collaboration resulted in no instances during the year when the smoke from CALM's planned burns caused haze particulate levels to exceed the stringent standards set by the State's Department of Environmental Protection and the National Environmental Protection Council.

Despite the fact that the haze standards were not exceeded, there remained strong opposition among some members of the public even to minor smoke events. This intolerance continues to have an adverse effect on the ability of the Department to achieve the planned burn programs that are necessary to maintain adequate levels of fire protection for residents, firefighters, community assets, and natural values. As a result, there is a large backlog of uncompleted planned burns, and large tracts of forests are carrying heavy litter trash and bark accumulations that will fuel intense, destructive summer wildfires.

The Department is attempting to address this serious matter through a range of strategies, including improved public education and involvement; contributing to research on weather forecasting and smoke trajectory modelling; and increasing burning resources needed to take advantage of the few suitable burning days available each season.

Aerial Suppression

The two water-bombing aircraft based in Perth have again provided an effective, rapid suppression capability for the urban and rural interface areas within 50 km radius of Perth Airport. Codenamed Operation Firebird, this initiative has assisted ground-based firefighters to save private assets and natural values worth approximately \$5 million during the 1999–2000 fire season.

Two additional water-bombing aircraft were placed at Bunbury from January to April 2000. This operation, codenamed Operation Southern Skies, was trialled to determine its cost-effectiveness in providing a rapid-attack capability for controlling wildfires that occurred up to 200 km from Bunbury. CALM established water supplies at a number of airstrips throughout the south-west that could be used as forward bases. From these, the aircraft could be fuelled and loaded to attend to those fires that were more than 50 km from Bunbury. An evaluation of the effectiveness of the Operation Southern Skies has confirmed that this aerial suppression operation has resulted in significant saves of houses, sheds, fuel depots, powerlines, pasture, plantations, forests, parks and reserves. The evaluation study identified that the net financial benefit of this operation was approximately \$5.8 million.

Training

CALMfire and District staff conducted a large number of fire training courses over the year covering a number of topics including the Incident Control System, Fire Management for new CALM recruits, Logistics Management, Operations Management, Incident Planning, Fire Control Line Construction with Machines, and CALM Fire Management. Basic and Advanced fire fighting courses for CALM crews and contract personnel were run by Districts and Regional staff. Many of the existing fire courses were reviewed and updated. Course development has been completed on Prescribed Burning and Sector Commander training in cooperation with the Fire and Emergency Service Authority. Promotion of common training systems and material between fire agencies within Western Australia was actively pursued, and training material was exchanged with other States.

Plant and Equipment

CALMfire completed the construction of 10 new heavy-duty fire pumpers as part of its fire truck/pumper replacement program. A total of 61 new fire trucks have now been constructed in the past six years.

In addition, 10 light pumper units for fast attack on initiating fires have been added to the firefighting fleet, which now totals 130.

CALM's aerial detection fleet was boosted by the purchase of new single-engined American Champion Scouts. CALM now has five of these high-performance Champion Scouts as well as three Piper Super Cubs.

CALMfire PERFORMANCE INDICATORS FOREST REGIONS 1999–2000

Key Effectiveness Indicators

Region	5 year rolling average (ha)	Actual 1999–2000 (ha)	Difference	
			(ha)	%
Swan	37,899	60,573	22,674	60
Central Forest	47,567	33,570	-13,997	-29
Southern Forest	68,348	40,165	-28,183	-41
Total	153,814	134,308	-19,506	-13

1. Prescribed Burning

These statistics measure the extent to which the planned burning program achieved in 1999–2000 exceeds the 5 year rolling average for conservation and protection burning. Note that 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. Achievements are compared against the 5 year rolling average so as to “smooth-out” inherent differences in the severity of fire seasons.

Swan Region's planned burning achievements significantly exceeded the 5 year rolling average due to favourable northerly winds and forest fuel moisture conditions. The Southern Forest and Central Forest Region's burning achievements were below the 5 year rolling average due to 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 are acceptably low.

Region	Priority 1 (%)			Priority 2 (%)		
	1997–98	1998–99	1999–2000	1997–98	1998–99	1999–2000
Swan	100	98	100	100	100	100
Central Forest	100	100	100	100	95	100
Southern Forest	100	100	100	100	100	100
CALM Average	100	99	100	100	98	100

2. Fire Suppression

The percentage of all forest wildfires that are attacked with effective suppression forces before these fires exceed either one hectare in Priority 1 area, or two hectares in 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 CALM's Forest Fire Behaviour Tables (1998). Firefighters work safely and effectively under these conditions in standard forest fuels.

LEGISLATION & COMPLIANCE

1999–2000

Statement of Compliance with written law 1999–2000

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 1999–2000. The relevant Acts and amendments to regulators are noted in this section of the annual report.



Dr Wally Cox
Executive Director
30 August 2000

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 and marine parks, State forests and timber reserves, nature reserves and marine nature reserves, other reserves and lease areas and any associated fauna, flora and forest produce. It is also responsible for conserving flora and fauna throughout the State.

The *Conservation and Land Management Act 1984 (CALM Act)* established CALM and provides for five controlling bodies: the Lands and Forest Commission, the National Parks and Nature Conservation Authority, the Marine Parks and Reserves Authority, the Marine Parks and Reserves Scientific Advisory Committee and the Forest Production Council. All are responsible to the Hon Minister for the Environment. Their functions are described in separate annual reports.

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* states 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). Agreement Acts (e.g. the *Alumina Refinery Agreement Act 1961*) are administered by the Minister for Resources Development. The *CALM Act* cannot impose restrictions on mining or on development projects subject to an Agreement Act. The requirements for mining and development projects with respect to land 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 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 CALM, 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 with specific 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*.

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

The establishment of hardwood plantations by way of timber sharefarming agreements with CALM under section 34B of the *CALM Act* have been ratified by the following Agreement Acts: *Albany Hardwood Plantation Agreement Act 1993*; *Bunbury Treefarm Project Agreement Act 1995*; and the *Collie Hardwood Plantation Agreement Act 1995*.

OTHER RELEVANT ACTS

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

Other State Acts which have relevance to CALM'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 Corporation's (Powers) Act 1979*; *Electricity Corporation Act 1994*; *Environmental Protection Act 1986*; *Equal Opportunity Act 1984*; *Explosive and Dangerous Goods Act 1961*; *Financial Administration and Audit Act 1985*; *Fish Resources Management Act 1994*; *Freedom of Information Act 1992*; *Government Employees Housing Authority Act 1964*; *Health Act 1911*; *Heritage of Western Australia Act 1990*; *Industrial Relations Act 1979*; *Labour Relations Amendment Act 1997*; *Land Acquisition and Public Works Act 1902*; *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*; *Mutual Recognition (Western Australia) Act 1995*; *Occupational Safety and Health Act 1984*; *Occupiers Liability Act 1985*; *Public Sector Management Act 1994*; *Soil and Land Conservation Act 1945*; *State Employment and Skills Development Authority Act 1990*; *State Supply Commission Act 1991*; *Swan River Trust Act 1988*; *Timber Industry Regulations Act 1926*; *Titles Validation Act 1995*; *Town Planning and Development Act 1928*; *Water Agencies Restructure (Transitional and Consequential Provisions) Act 1995*; *Water and Rivers Commission Act 1995*; *Water Corporation Act 1995*; *Water Services Coordination Act 1995*; *Workers' Compensation and*

Rehabilitation Act 1981; *Workplace Agreements Act 1993*.

Commonwealth Acts relevant to the Department's activities: *Arts, Territories and Environment Act 1975*; *Endangered Species Protection Act 1992*; *Environment Protection (Impact of Proposals) Act 1974*; *National Parks and Wildlife Conservation Act 1975*; *Native Title Act 1993*; *Superannuation Guarantee Act 1990*; *Training Guarantee Administration Act 1990*; *Whale Protection Act 1980*; *Wildlife Protection (Regulation of Exports and Imports) Act 1982*; *Workplace Relations Act 1996*; *World Heritage Properties Conservation Act 1983*.

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*.

CHANGES IN LEGISLATION

Significant Changes Proposed

The *Conservation and Land Management Amendment Bill 1999* and the *Forest Products Bill 1999* were introduced in the Legislative Assembly on 25 November 1999. These Bills provide for significant changes in respect of the Government's forest management policy and related matters. At 30 June 2000 the Bills were still before the Legislative Council for its consideration.

Minor Admendments to the CALM Act

Minor amendments to the *CALM Act* correcting omissions from the *Acts Amendment (Land Administration) Act 1997* with respect to marine reserves and the Marine Parks and Reserves Authority were made by the *Statutes (Repeals and Minor Amendments) Act 2000*.

Removal of Unauthorised Property on CALM Land

The *Conservation and Land Management Amendment Regulations 1999* provided powers to allow a conservation and land management officer to require a person to remove unauthorised property from land managed by the Department. The property cited may include a vehicle, tent, platform or locking device. Property which is not removed on request may be seized and removed by the Department's officers and forfeited if not claimed.

Revised Entrance, Camping and Firewood Fees

The *Forest Management Amendment Regulations 2000* increased fees for the removal of firewood and increased fees to enter the Tree Top Walk near Walpole by incorporating a Goods and Services Tax (GST) component. Fees for camping on State forest and timber reserves were increased to include the GST component, to incorporate price movements since 1992 and to improve the cost recovery rate of these operations as required by the State Treasury.

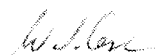
The *Conservation and Land Management Amendment Regulations 2000* similarly increased charges for camping on conservation parks and *CALM Act* section 5(g) reserves such as Lane Poole Reserve.

Camping fees will now be the same for national parks, conservation parks, *CALM Act* section 5(g) reserves and State forest/timber reserves, commensurate with the facilities provided.

PERFORMANCE INDICATORS

OUTPUTS 1-5

I certify that these performance indicators are based on proper records and fairly represent the performance of the Department of Conservation and Land Management for the year ended 30 June 2000.



Dr Wally Cox
EXECUTIVE DIRECTOR
15 August 2000

OUTPUT 1

NATURE CONSERVATION

Outcome

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

Output Description

The production and implementation of management plans and programs for flora and fauna conservation, for threatened species and ecological communities and for commercially exploited species according to the principles of ecological sustainability, for the acquisition, conservation and protection of representative ecosystems and for conducting emergency actions to save wildlife, minimising adverse effects of fire, weeds, feral animals and disease and developing public awareness, understanding and support for nature conservation services and policies.

Note: CALM 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.
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 CALM scientists has demonstrated that fox predation was a major cause of small fauna decline in the south west of Western Australia. Subsequent baiting for foxes in selected areas resulted in the recovery of several species of threatened fauna at those sites. In 1994 a new baiting program was implemented 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 and now almost 3.5 million hectares of the State is baited.

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 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 continue to be 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 in each CALM region where Western Shield is operating.

Note:

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

The graph opposite shows the recovery following fox baiting, of medium-sized mammals that are prone to fox predation, from the 2,452 hectare Batalling Forest Block in CALM's Mornington District, east of Collie. Prior to fox baiting, low levels of medium-sized mammals were known from this State Forest. Woylies were reintroduced to the area in 1982-83. Following the commencement of fox baiting in 1991 the medium-sized fauna diversity of the area has increased. This response to fox baiting is typical of the response over the range of fox baiting activity. 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.

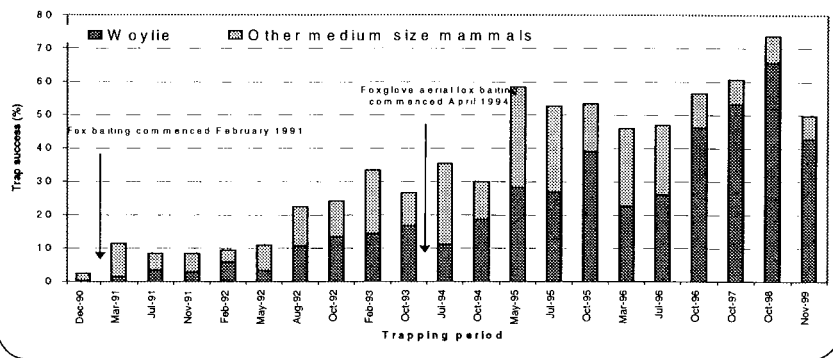
Notes

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.

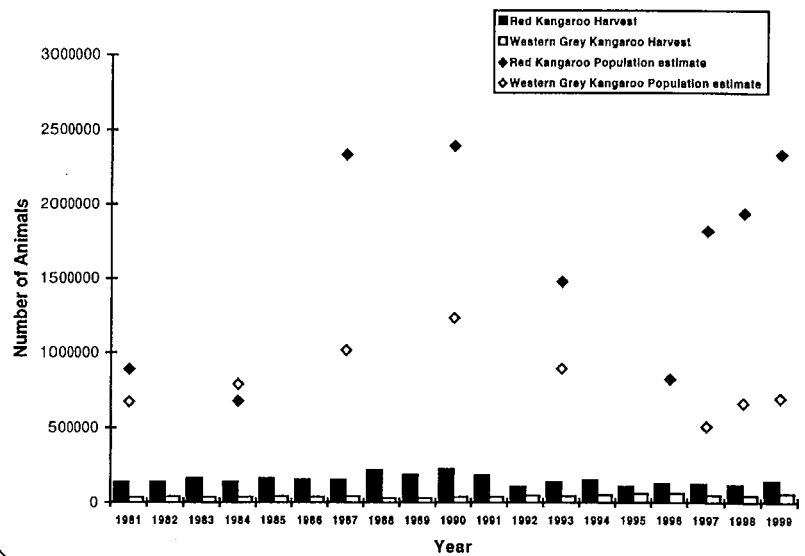
The management programs for red and western grey kangaroo harvesting were first published in 1973. These programs outline the basis of sustainable harvesting using population estimates and harvest quotas.

From 1981 to 1993, triennial aerial surveys were undertaken for red and

Trap Success Rates for Medium Size Mammals in the Batalling Forest Block Core Area



Population Estimates and Harvest Levels for Managed Kangaroo Populations In Western Australia



western grey kangaroos over the pastoral region of Western Australia. Since 1995 the surveys have been done annually, each covering approximately one third of the pastoral region (one million km²). 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% 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 above illustrates the management of harvest levels that allow for the maintenance of kangaroo populations in areas where commercial harvesting occurs.

Notes: (i) 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. Additionally, in recent years some harvest levels reported were quota levels, rather than the actual harvest. These values have been corrected in the current reporting. (ii) 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. 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

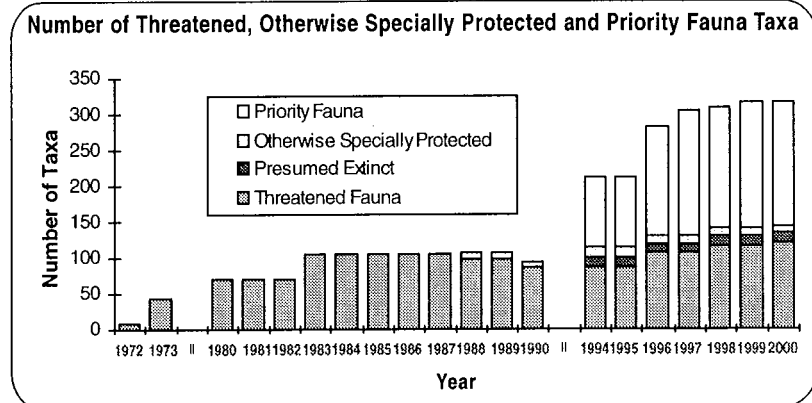
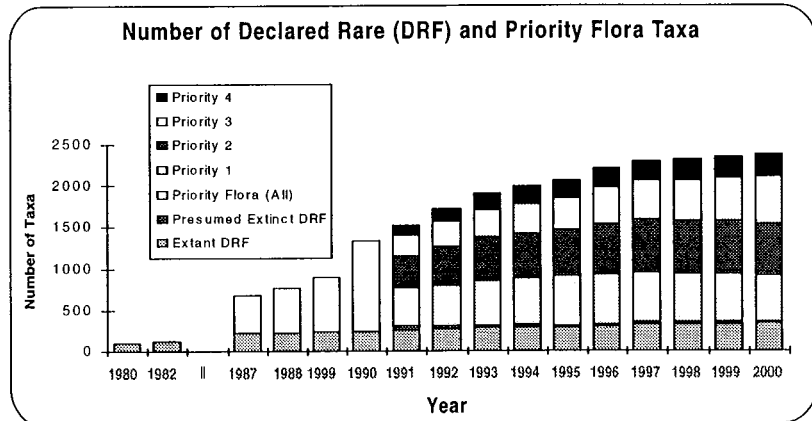
The identification and management of wildlife taxa that are threatened or requiring special conservation attention.

The conservation of threatened taxa in Western Australia is based firstly on the identification and listing of these taxa in appropriate categories as determined by the level of threat and the level of available knowledge.

a) The number of the State's wildlife taxa 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 CALM. Recommendations made by the Threatened Species Scientific Committee, but not yet declared by the Minister, are not included.

Measure

As shown in the graphs above, at 30 June 2000 a total of 2,687 taxa (2,370 flora and 317 fauna) were declared to be specially protected, or included on the Department's priority flora and fauna lists. This represents an increase of 1.1% in the number of taxa listed as requiring special conservation status compared to 1998–99.

A total of 62 flora and 1 fauna taxa were added, and 33 flora taxa were deleted from the lists during the year. Additions were due to further scientific study of the State's flora and fauna revealing additional taxa that appear to warrant special conservation attention, while deletions were due

either to taxonomic studies revealing taxa that were inappropriately listed, or surveys revealing that taxa were more common than previously thought, and therefore no longer warranting special conservation attention.

Notes: 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 Environment 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.

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.

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.

The conservation of threatened taxa in Western Australia is based secondly on 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.

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 therefore will occur over long time periods.

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

Note

The following examples of the recovery of threatened taxa are typical of the type of response achievable with properly planned habitat management and fauna translocations. Further examples have been presented in previous annual reports.

Measures

- i) *Banksia cuneata* was first collected from the Quairading area in 1937 and several populations were found in the same area in the 1970's. A few more populations were found in the mid 1980's extending the

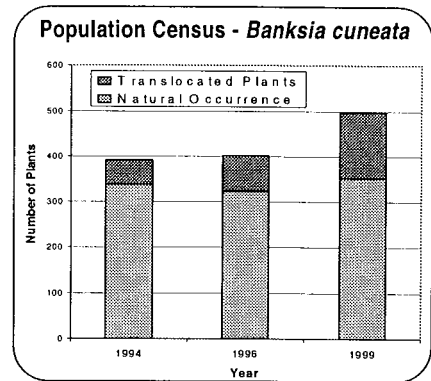
species known range by over 100 kilometres. The species is now known to occur in small populations from Quairading southwards to the Brookton-Pingelly area.

Twelve populations are confined to remnant vegetation now severely fragmented following clearing of the surrounding land for agriculture. These populations occur on narrow road verges and in small reserves. Factors such as the small population size, a decline in the supporting vegetation, rising ground water, and the restriction of natural regeneration mechanisms such as fire, contribute to the endangered nature and the long term survival of this species in the wild.

Following the completion of a Recovery Plan in 1992, funding was allocated to implement recovery actions for the known populations totaling 550 plants. Most of these plants were considered to be over mature and population health was in decline. The Recovery Plan focussed on several actions aimed to secure the main populations, stimulate their natural increase, and establish a new population in an area likely to have contained *B. cuneata* prior to land clearing. Initial actions included rabbit control works (fencing, baiting and warren destruction), regular population censuses, collection of seed for long term storage, propagation and establishment experiments and a pollination biology study.

The removal of rabbits from the larger populations has contributed to the natural increase of seedlings that will assist in long term population survival.

The propagation and establishment study during 1994–2000 was successful in establishing on cleared farmland over 123 *B. cuneata* plants. These plants



along with associated supporting vegetation are flowering and setting seed. A pollination biology study is planned at this site to determine long term viability of this population.

A further 23 plants have been established on high ground at a site where rising groundwater has affected the existing plants.

A wildfire in 1996 killed all the 80 mature plants in one population near Quairading. The fire provided an opportunity to investigate the regeneration mechanisms of the species and will provide managers with some guidelines on future regeneration studies. The decline and subsequent regeneration of the species at this site obscures the overall recovery data for the species, and hence have been omitted from the graph above.

The graph shows the overall population trend for the species since the implementation of the Recovery Plan. It illustrates that direct management actions to protect and enhance populations can contribute to the maintenance of an endangered species in the wild.

- ii) Medium-sized mammals in the south west 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, in conjunction with fox control, may be implemented to re-establish the species in secure conservation reserves.

The graphs opposite show the results of one translocation program (of the Woylie *Bettongia penicillata ogilbyi*) into the 5,629 hectare St. John's Forest Block, and the natural colonisation by woylies of the 7,841 hectare Tone Forest Block, and the recovery of other native species following fox control. The translocation has been successful in establishing a replicating, viable population of this species in this area of State Forest, as shown by the increase in the numbers from the original translocated stock.

As a result of its recovery through fox control, the establishment of new populations through translocations, and habitat management, the Woylie was removed from the list of threatened fauna in 1996. It is, however, still regarded as being conservation dependent, that is dependent on continuing conservation actions such as those reported here.

Key Efficiency Indicators

1. Wildlife and habitat management.

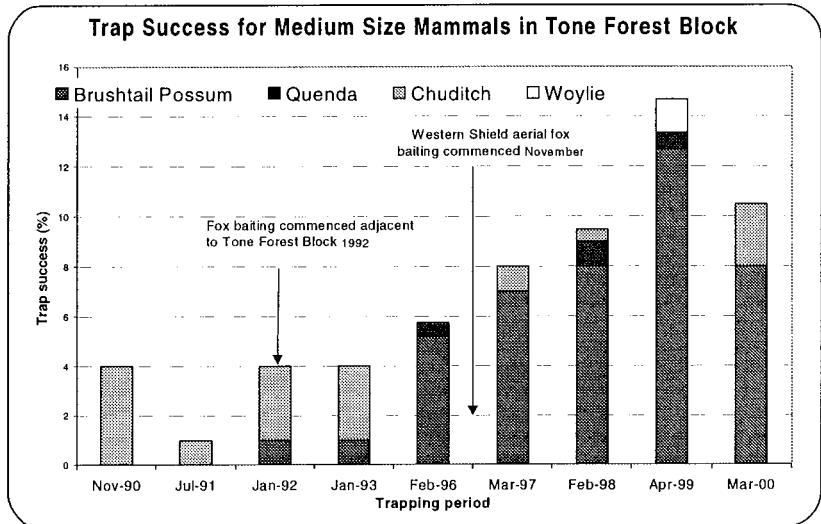
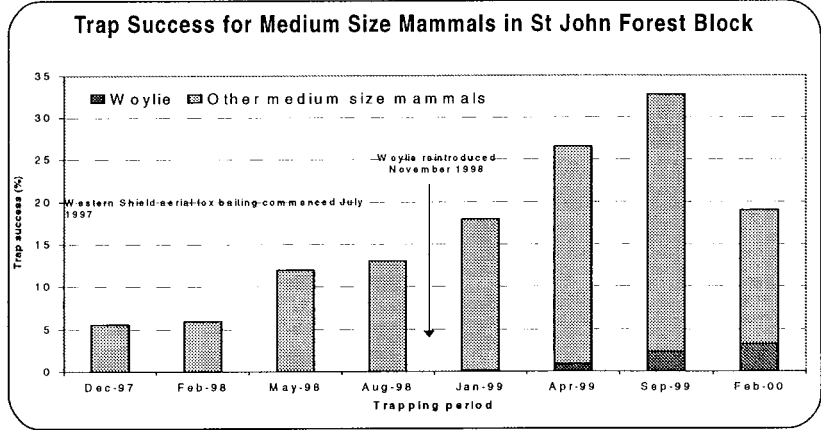
The cost per hectare managed.

Note

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

Measure

1997-1998	\$2.12 per hectare
1998-1999	\$1.85 per hectare
1999-2000	\$2.05 per hectare



The 1999-2000 cost represents an increase of \$0.09 on the "Target" cost of \$1.96 in the 1999-2000 Budget Statements.

2. Wildlife utilisation.

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

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 in 1997-98; 2,666 in 1998-99; 2,599 in 1999-2000). Note, licence numbers for this efficiency measure now include marine interaction licences (127 in 1997-98, 184 in 1998-99) which were previously omitted from the measure.

Measure

1997-1998	\$410 per licence
1998-1999	\$425 per licence
1999-2000	\$362 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 at 30 June 1998; 2,657 at 30 June 1999; 2,687 at 30 June 2000).

Measure

1997-1998	\$2,671 per taxon
1998-1999	\$2,606 per taxon
1999-2000	\$2,650 per taxon

OUTPUT 2

NATIVE FOREST MANAGEMENT

Outcome

Long term maintenance of the forest ecosystem and provision of sustainable wood production.

Output Description

The sustainable regeneration, protection, management and harvesting of native forests while maintaining or enhancing nature conservation, water, recreation, landscape and other values in the long term, management of the sandalwood industry on Crown land and developing public awareness, understanding and community support.

Key Effectiveness Indicators

1. The harvest of native forest hardwood will be maintained at a sustainable level.

a) Quantity of native forest hardwood log timber harvested.

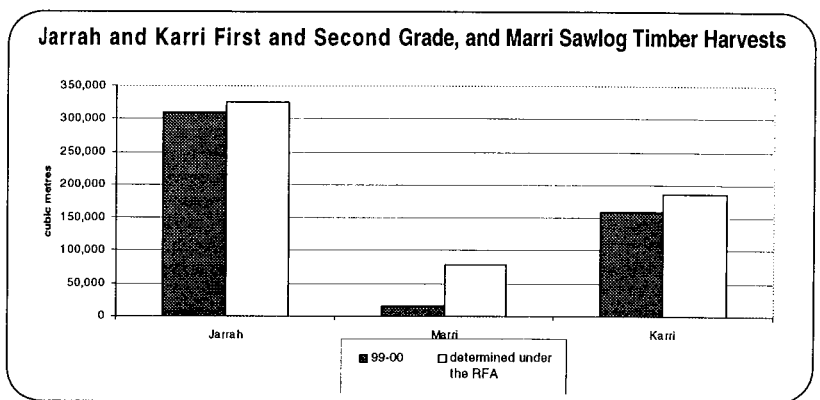
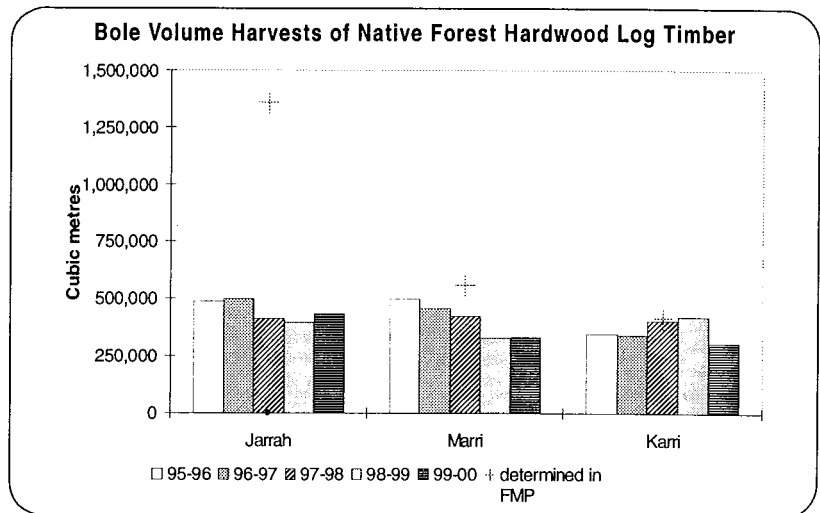
Notes

The sustainable level is the average quantity of timber available for harvest each year which can be continued in the long term.

Forest areas available for timber harvesting are measured using specially designed inventory plots to determine the quantity of timber available and the rate at which it is growing.

Based on independent analysis of this information, an estimated sustainable level of harvest is determined for the term of the current Forest Management Plan 1994-2003 (FMP).

In 1999 the Regional Forest Agreement (RFA) set new sawlog sustained yield levels for the period 1999-2003 inclusive of an average 324,000 m³ per annum jarrah first and second grade sawlogs, 186,000 m³ karri first and second grade sawlogs and 78,000 m³ per annum of marri sawlogs.



Harvest means the commercial extraction and sale of log timber for processing and value-adding.

Measure

(i) This year's total bole volume harvests of native forest hardwood log timber compared with the current FMP were jarrah 435,598 m³, marri 334,278 m³ and karri 307,855 m³. To allow comparison of the 1999-2000 harvest level with previous years the five-year trend in the top graph above shows the total quantities determined for the current FMP without adjustment for the reduced sawlog quantities set out in the RFA. The variations between jarrah yield and harvest volumes mainly reflect market constraints.

(ii) The jarrah and karri first and second grade, and marri sawlog timber harvests for this year were jarrah 309,066 m³, karri 159,663 m³

and marri 15,015 m³. The lower graph above compares these harvests with the sustained yield levels identified under the RFA.

b) Area of native forest hardwood regenerated.

Notes

Forest is harvested using a variety of silvicultural prescriptions, some of which involve thinning to increase growth, and others which involve removal of trees and renewing those areas of forest by regeneration.

Regeneration takes place over a period of time and regeneration actually completed in any one year may include parts of areas harvested over a number of preceding years.

In order to remain sustainable over the long term, the area regenerated should be equal to or greater than the area harvested.

Measure

The area of native forest hardwood regenerated compared with the area harvested for regeneration.

The area of native forest hardwood harvested for regeneration this year was 11,170 ha, while a total of 10,430 ha was regenerated from this or previous year's cutting. Cumulative trends since 1994 are shown in the top graph below. The variations in hectares regenerated reflect environmental and operational constraints.

2. The harvest of "greenwood" sandalwood will be maintained at a sustainable level.

a) Quantity of "greenwood" sandalwood harvested.

Notes

An estimated sustainable level of harvest for sandalwood greenwood is determined for the term of the current Sandalwood Management Plan (SMP). (Note: In addition to the sustainable greenwood harvest levels, deadwood is also harvested. Harvests for deadwood were 923 tonnes in 1998-99 and 691 tonnes in 1999-2000.)

Measure

Sandalwood greenwood quantities harvested were 699 tonnes in 1999-2000 and 807 tonnes in 1998-99, within the determined sustainable yield of 1,980 tonnes per annum.

b) Area managed-sandalwood

Notes

The areas subject to sandalwood harvest are treated with a silvicultural prescription which allows for regeneration. Each year these areas harvested form part of the total area managed in accordance with the current SMP.

Measure

The area managed at 30 June 2000 was 190,144 square kilometres.

3. The quantities harvested each year will be regulated by contractual agreements.

Notes

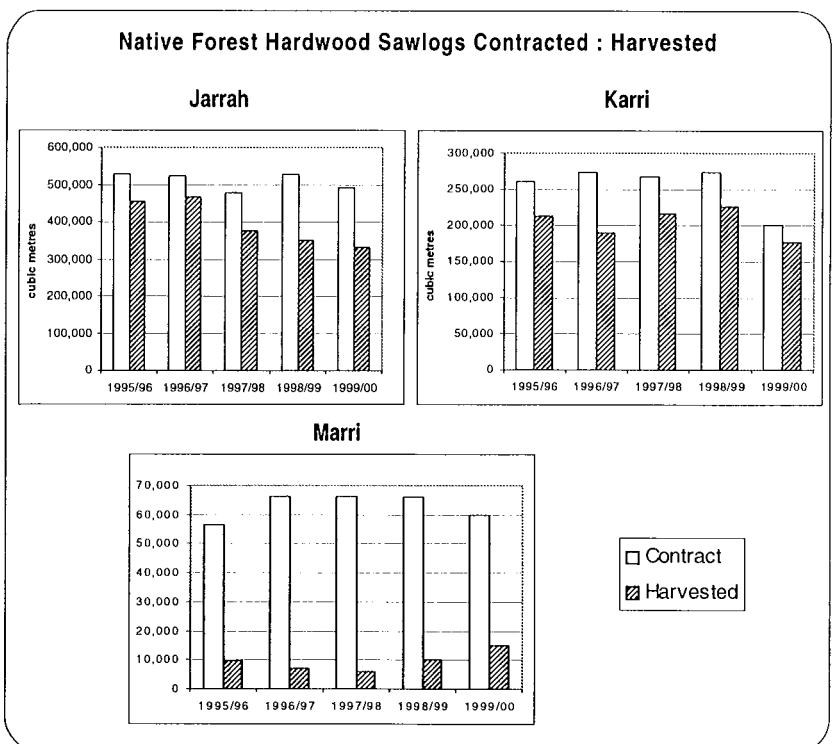
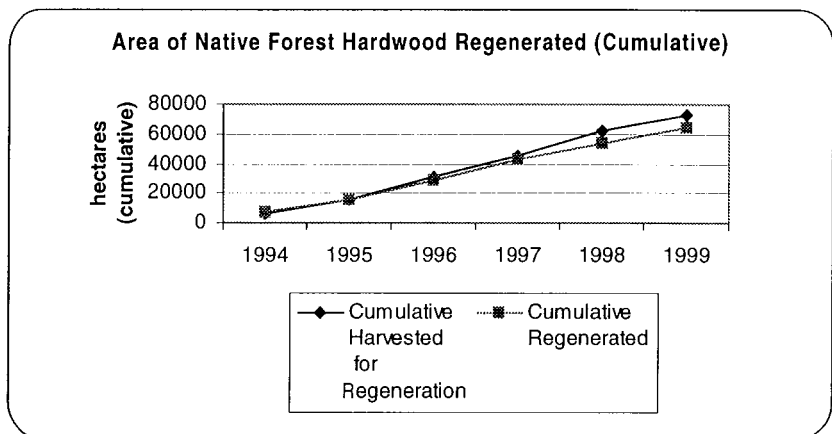
a) In the case of native forest hardwoods, regulate means to control the average quantity of log timber sold such that the available sustainable resource is not exceeded over a period of time.

The quantity of timber harvested is controlled by sale contracts. In order to maintain the sustainable resource, sales contracts must be equal to or less than the estimated sustainable levels of harvest for the term of the current FMP.

b) In the case of sandalwood, the level of harvest is regulated by expected market demand subject to the requirement that the total market sales do not cause greenwood harvest levels in any year to exceed the sustainable yield determined for that year in the current SMP.

Measures

a) The harvests of native forest hardwood sawlogs compared with the quantities specified in sale contracts. Quantities for this year were jarrah 329,868 m³, marri 15,015 m³, and karri 176,921 m³. Five-year comparisons for each species are shown in the lower graph below.



b) Sandalwood sales of 1,814 tonnes in 1999–2000 reflect the year's harvest of 1,390 tonnes (greenwood 699, deadwood 691) and the carry forward of sandalwood from 1998–99 when total sales were 1,166 tonnes against a harvest of 1,730 tonnes (greenwood 807, deadwood 923). The greenwood harvests in both years were within the determined sustainable yield of 1980 tonnes per annum.

Key Efficiency Indicators

1. Ratio of harvesting cost to revenue - native forest hardwood.

Note

Harvesting costs incurred in managing the harvesting, delivery and sales of native hardwood log timber compared with the related revenue generated.

Measure

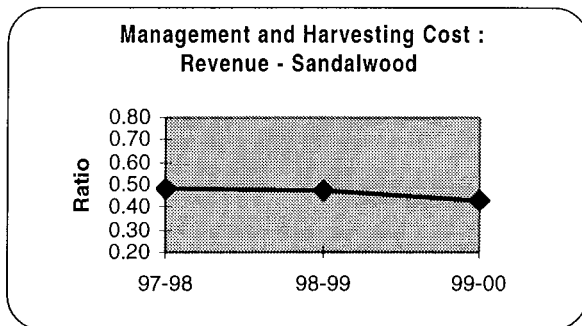
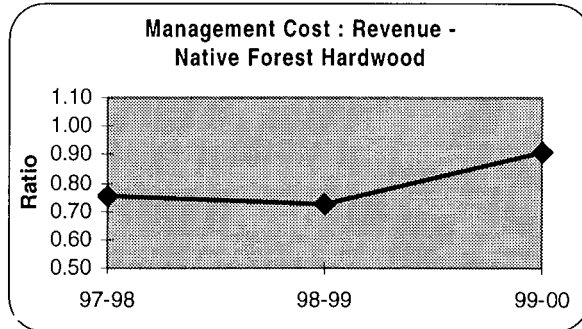
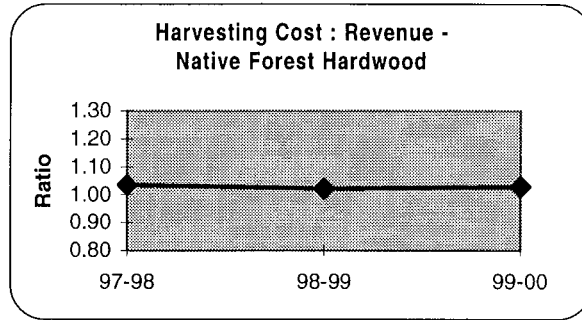
With expenditure of \$43,427,000 for harvesting and sales (in-forest costs, roading, administration, harvesting and delivery) and revenue of \$42,080,000, the ratio for 1999–2000 was 1.03:1, an increase of 0.01 on the 1998–99 ratio of 1.02:1. The trend of the ratio is shown in the top graph above.

Note: In previous years this ratio was calculated on a combined native hardwood/sandalwood basis. For comparison with previous years the 1999–2000 ratio on the old basis was 0.90:1 (0.94:1 in 1998–1999).

2. Ratio of management cost to revenue - native forest hardwood.

Note

Revenue comprises royalties which are the value per unit of native hardwood log timber which recoups the management cost i.e. the cost of managing, growing and protecting the forest.



Measure

With expenditure of \$31,785,000 and revenue from royalties of \$34,941,000, the 1999–2000 ratio was 0.91, an increase of 0.18 on the 1998–99 ratio of 0.73:1; mainly reflecting reduced revenue due to market constraints. The trend of the ratio is shown in the centre graph above.

3. Ratio of management and harvesting cost to revenue - sandalwood.

Note

The total combined cost of managing and harvesting sandalwood expressed as a ratio of the related revenue generated.

Measure

With combined managing and harvesting costs totaling \$5,039,000 in 1999–2000 (\$3,118,000 in 1998–1999) and related revenue generated of \$11,642,000 (\$6,636,000 in 1998–1999), the ratio is 0.43:1 (0.47:1 in 1998–1999).

4. Profit on total revenue.

Notes

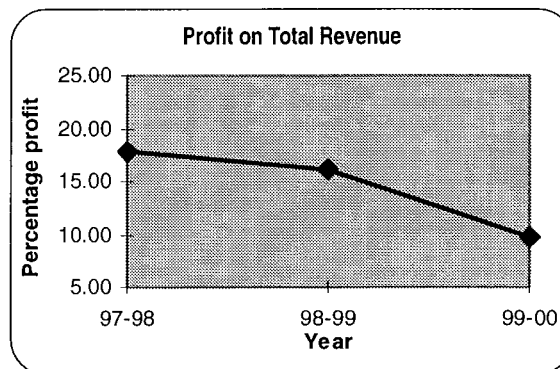
The profit before abnormal items on an accrual basis compared with total revenue. This indicator represents;

- (i) total revenue—including from sandalwood but mainly comprising the sales of native forest hardwood log timber which includes royalties and other log timber charges related to harvesting, delivery and log sales, and any allocated revenues from government; and

- (ii) total expenditure—including for sandalwood but mainly comprising the costs of managing, growing and protecting the native hardwood forest, the cost of harvesting, delivering and sales of hardwood log timber, and corporate overheads.

Measure

Profit for the year before abnormal items was \$8,635,000 or 9.7% on revenue of \$88,886,000. This represents a decrease of \$5,699,000 on 1998–99, mainly due to reduced operating revenue reflecting market constraints and industry restructuring. The trend is shown in the graph above.



5. Cost of harvesting.

a) Native forest hardwood

Note

The accrual basis gross cost per tonne of harvesting all species of native forest hardwood logs. The major elements of this cost relate to payments to contractors for harvesting and delivery, and road construction and maintenance.

Measure

The cost per tonne harvested was \$30.05, an increase of \$2.81 per tonne on the "Target" cost of \$27.24 in the 1999–2000 Budget Statements, mainly due to lower log production.

b) Sandalwood.

The accrual basis gross cost per tonne of harvesting sandalwood greenwood and deadwood. The major elements of this cost relate to payments to contractors for harvesting and delivery.

Measure

The cost per tonne harvested was \$3,217.71, an increase of \$664.95 per tonne on the "Target" cost of \$2,552.76 in the 1999–2000 Budget Statements, mainly reflecting lower than expected harvest.

6. Cost per hectare managed - native forest hardwood.

Note

The accrual basis gross cost per hectare of managing the native forest which totalled 1.870 million hectares at 30 June 2000. The major elements of this cost relate to regeneration and tending of the forest.

Measure

The cost per hectare managed was \$17.00, an increase of \$2.06 on the "Target" cost of \$14.94 in the 1999–2000 Budget Statements.

7. Cost per square kilometre managed - sandalwood.

Note

The accrual basis gross cost per square kilometre of managing the sandalwood areas in accordance with the current SMP. The area managed totalled 190,144 square kilometres at June 30 2000.

Measure

The cost per square kilometre managed was \$2.98, an increase of \$0.16 on the "Target" cost of \$2.82 in the 1999–2000 Budget Statements.

OUTPUT 3

PLANTATION MANAGEMENT

Outcome

Long term maintenance of the forest ecosystem and provision of sustainable wood production.

Output Description

The establishment, regeneration, protection, management and harvesting of plantations while maintaining or enhancing nature conservation, water, recreation, landscape and other values in the long term, and developing public awareness, understanding and community support for plantations.

Key Effectiveness Indicator

- The area of plantations established will meet the defined outcome.*

Note

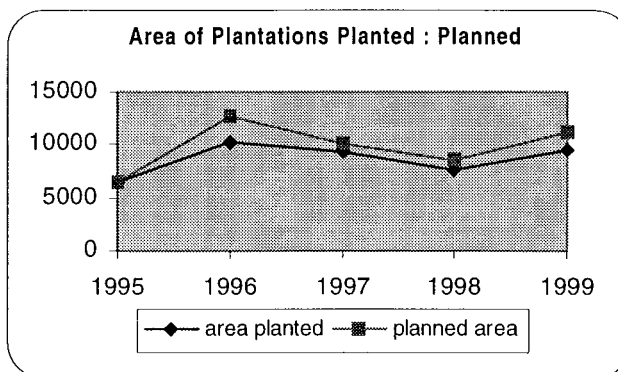
Plantations are established on both Crown and private land directly for the Government and acting as agents for private companies.

The establishment of plantations helps the provision of sustainable wood production.

Measure

Area of plantations planted compared with planned planting.

Total area planted for the last complete planting year to 31 December 1999 was 9,402 ha compared with a target of 11,200 ha, mainly reflecting a shortfall in suitable land becoming available for sharefarm planting. Five-year trends are shown in the graph above.



Key Efficiency Indicators

- Ratio of harvesting and sales cost to revenue.*

Note

These are costs incurred in managing the harvesting, delivery and sales of plantation timber and should be fully recouped from the revenue generated, equating to a ratio of not less than 1.0.

Measure

Ratio of expenditure for harvesting and sales (plantation costs, roading, administration, harvesting and delivery) to revenue.

Expenditure for this year was \$18,020,000 compared with revenue of \$17,976,000, a ratio of 1:1. The trend is shown in the top graph opposite.

- Ratio of management cost to revenue from stumpages.*

Note

Stumpages are the value per unit of plantation timber by which the plantation owner recoups the cost of managing, growing and protecting the plantation while achieving a profitable rate of return over time.

Measure

The ratio of expenditure on managing, growing and protecting the plantations to revenue from stumpages.

Expenditure for this year was \$38,895,000 compared with revenue of \$35,200,000, a ratio of 1.1:1. The trend is shown in the centre graph opposite.

- Profit on total revenue.*

Note

The profit before abnormal items on an accrual basis compared with total revenue. This indicator represents:

- total revenue—comprising the sales of log timber which includes stumpages and other log timber charges related to harvesting, delivery and log sales, recoupable works, sale of nursery produce and any allocated revenue from government; and
- total expenditure—comprising the costs of establishing, managing, growing and protecting plantations, and the costs of harvesting, delivering and sales of plantation timber.

Measure

Profit for the year before abnormal items was \$3,899,000 or 6.4% on revenue of \$60,814,000. This represents an increase of \$772,000 on 1998–99, reflecting mainly a reduction in operating expenses and an increase in allocated revenue from government. The trend is shown in the bottom graph opposite.

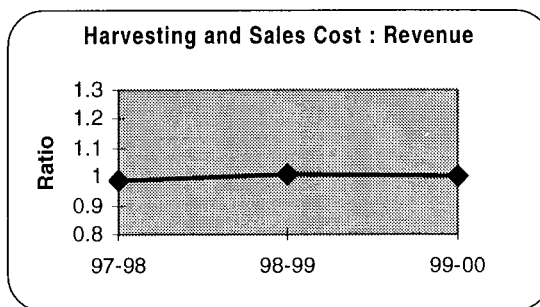
4. Cost of harvesting.

Note

Accrual basis gross cost per tonne harvested for all species of plantation timber. The major elements of the costs comprise payments to contractors for harvesting and delivery, and roading.

Measure

The cost per tonne harvested was \$27.18, a decrease of \$0.32 on the "Target" cost of \$27.50 in the 1999–2000 Budget Statements.



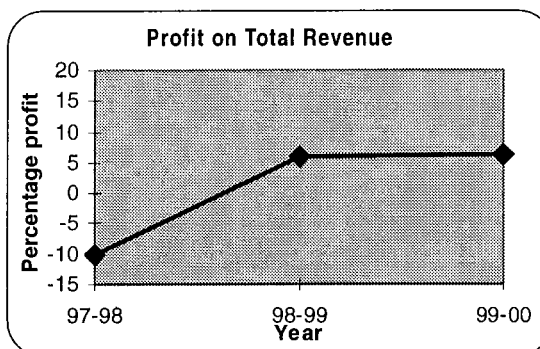
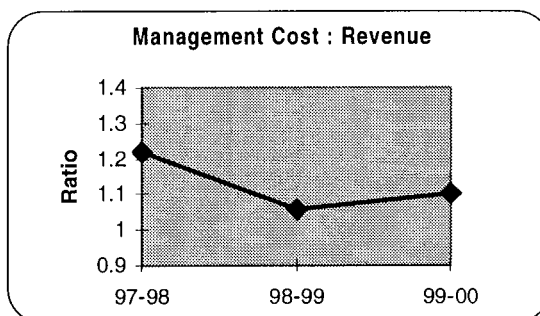
5. Cost per hectare managed.

Note

The accrual basis gross cost per hectare of managing plantations. The major elements of this cost relate to the establishment and maintenance of plantations.

Measure

The cost per hectare managed was \$323.49, an increase of \$16.09 on the "Target" cost of \$307.40 in the 1999–2000 Budget Statements.



OUTPUT 4 *TOURISM AND RECREATION SERVICES*

Outcome

Community enjoyment of wildlife and the natural environment without compromising conservation and other management objectives.

Output Description

Dealing with public recreation in the natural environment on lands and waters managed by the Department, including preparing and implementing management plans and the provision, management and maintenance of appropriate access, recreation opportunities and visitor facilities; protecting visitors and facilities from wildfire; training of staff and Conservation and Land Management volunteers, involvement of Aboriginal people in park management and the provision of visitor facilities and services, designing and initiating educational information and activities concerning nature-based tourism and recreation, and developing greater community awareness and support for nature-based tourism and recreation services and policies.

Key Effectiveness Indicators

- The extent to which visitors are satisfied with their visit overall to CALM-managed recreation areas.***

Notes

The Department's program of surveying visitors to recreation areas, which provides feedback on visitor needs, expectations and their level of satisfaction with recreation areas, facilities and services, was reviewed this year and a new, stratified survey program initiated. The new program enhances the rigour of measuring the overall level of visitor satisfaction to CALM managed recreation areas as well as providing for the determination of an overall 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. The new program will enable a more accurate comparison to be made of the level of satisfaction derived by visitors to CALM-managed areas.

Respondents to the 1999–2000 survey program showed the following characteristics:

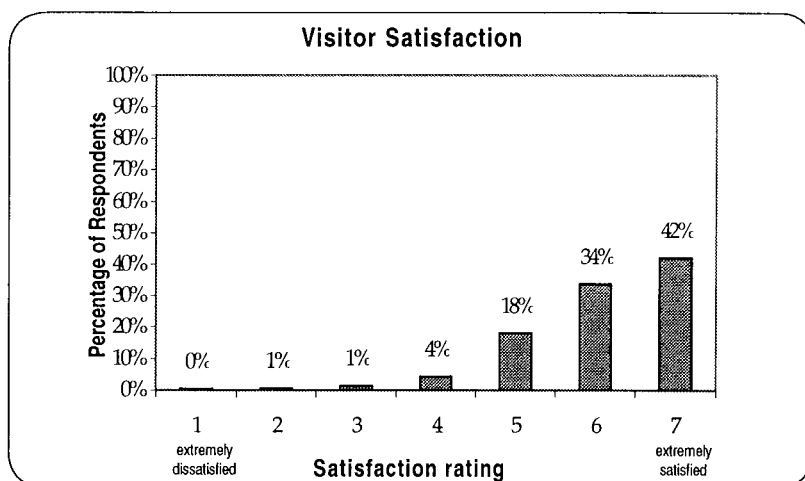
- 59% of respondents were from Western Australia, 19% from interstate and the remaining 22% from overseas.
- the majority of respondents surveyed were visiting with friends and/or family as opposed to travelling on a tour, with an organised group or on their own.
- the largest proportion of respondents were in the 25-39 year age bracket (being 41% of visitors), followed by the 40-59 year age bracket, which comprised 31% of respondents.
- over half of the respondents were first time visitors to the recreation areas surveyed, although this percentage did vary considerably between survey sites, with some areas having a high proportion of visitors who frequented more regularly.

Note: A total of 1,700 surveys were distributed between January and June 2000 to visitors to 17 parks/recreation sites across the State with 450 completed surveys returned. At a 95% confidence level the survey responses reported below have a standard error within the range ± 0.04 .

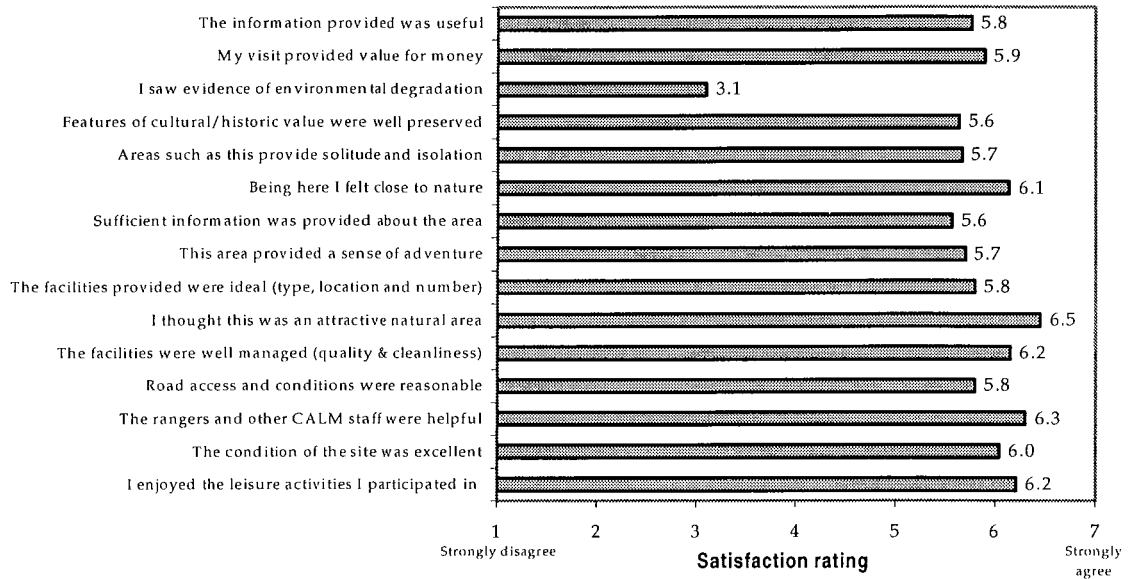
Measures

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. Based on external advice, this benchmark VSI has initially been set at 6.1 on a rating scale from 1 (extremely dissatisfied) to 7 (extremely satisfied).

The actual 1999–2000 VSI averaged from visitor responses to the new survey program in various parks, reserves and forest areas around the State was 6.08, which compares favourably with the benchmark VSI of 6.1. As shown in the **Visitor Satisfaction** graph, 94% of respondents scored between 5-7 on the rating scale. Although the new survey program's results can not be directly compared with previous years, this overall high level of visitor satisfaction with CALM-managed recreation areas is similar to the 88% 'extremely or very satisfied' reported for 1998–99.

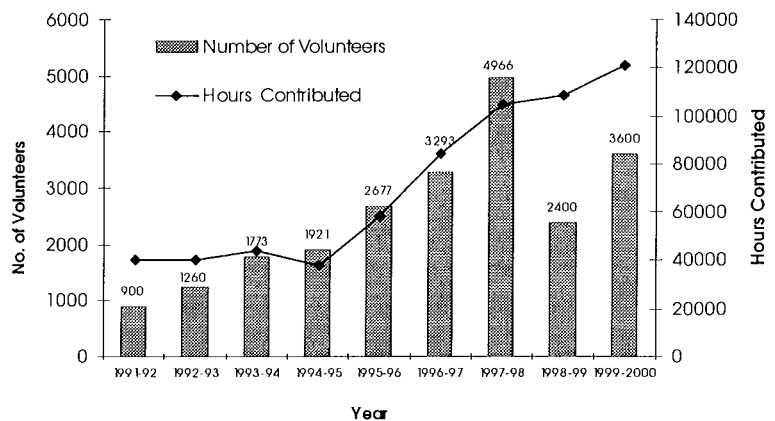


Visitor Satisfaction Average Ratings



The survey also asked visitors to rate the condition and management of the site and facilities they visited, the activities in which they participated and their overall experience at the site. All these factors contribute to the visitors' overall level of satisfaction. The **Visitor Satisfaction Average Ratings** graph indicates that the naturalness of the area, the helpfulness of CALM staff and rangers, the management of facilities and enjoyment derived from leisure activities received the highest satisfaction ratings from visitors' responses.

Volunteer Involvement



2. The extent to which the public has shown interest/support for CALM-managed recreation areas, facilities and services.

Note

The level of volunteer involvement indicates continued public support for CALM'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 tourism and recreation and nature conservation projects this year totalled 121,032, an increase of over 11% on last year's figure of 108,634 hours. The number of registered volunteers currently stands at 3,600, an increase of 50% on last year's figure of 2,400. This reflects the community's strong interest in supporting environmental projects.

3. The number of visits to CALM-managed areas

Note

The number of visits to CALM-managed areas is based on data from the Department's Visitor Information and Statistics (VISTAT) Program.

Measures

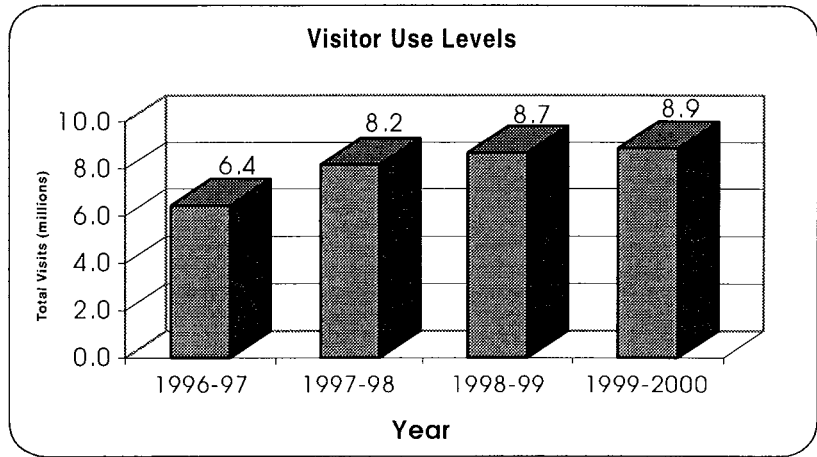
Data from VISTAT indicates that the number of visits to CALM managed lands and waters for 1999-2000 totalled 8,895,347. As illustrated in the diagram on **Visitor Use Levels**, this figure, which comprises both recorded numbers of visits from traffic counter devices, surveys and other data sources as well as estimated numbers of visits based on field observation, represents an increase of approximately 3% over the previous financial year's figure of 8,668,000 visits.

The modest growth in visitation levels is due to several factors. These include the community's ongoing interest in

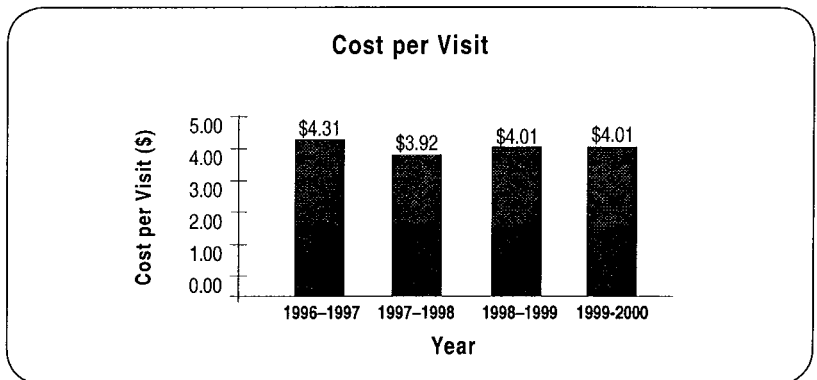
and desire to access and experience Western Australia's natural attractions as well as continued improvements in the application and coverage of visitor counting techniques. Some areas of the State did however record a drop in visitor numbers. These included a number of national parks in the Kimberley and Pilbara Regions, where cyclonic activity and extensive flooding cut off public access for long periods. However, public visitation to most other parks, reserves and forest areas throughout the State continued to grow.

To compare long term trends in visitor use levels and patterns, Cape Le Grand, Nambung and Purnululu parks have been selected because they represent low, medium and high levels of visitation.

As indicated in the table **Trends in Visitor Numbers to Three National Parks**, two of these parks (Nambung and Cape Le Grand) have experienced continued growth in visitor numbers over the previous 12 months while the third (Purnululu) has remained unchanged. Over the past 3 years, the total number of visits in Nambung and Purnululu National Parks has risen by approximately 24% and 21% respectively, while the increase for Cape Le Grand has been a more modest 14%.



National Parks	1997-1998	1998-1999	1999-2000
Cape Le Grand	65,000	72,000	74,000
Nambung	157,000	191,000	194,000
Purnululu	14,000	17,000	17,000



Key Efficiency Indicators

1. Cost per visit.

Note

The accrual basis gross total cost (excluding revenues) of Toursim and Recreation Services, expressed as a cost per recorded visit to CALM-managed lands and waters.

Measure

The 1999-2000 gross cost per visit was \$4.01. As shown in the **Cost per Visit**

graph this is the same as the 1998-1999 cost, and represents an increase of \$0.14 on the "Target" cost of \$3.87 in the 1999-2000 Budget Statements.

2. Ratio of total cost of services to operating revenues.

Note

The accrual basis total cost of providing Tourism and Recreation Services expressed as a ratio of operating revenue from those services.

Measure

With total expenditure of \$35,628,000 and operating revenue of \$12,452,000, the 1999-2000 ratio was 2.86:1, a modest increase of 0.11 on the ratio of 2.75:1 in 1998-1999.

OUTPUT 5

ASTRONOMICAL SERVICES

Outcome

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

- The level of customer satisfaction with the services provided by the Observatory.***

Note

During 1999–2000, 7,655 people visited the Observatory, 1,683 people used the recorded information line, and 9,828 people telephoned seeking information.

A total of 532 customer survey questionnaires were distributed; 513 to Observatory star viewing night, day and Sunday visitors between October 1999 and June 2000, and 19 to customers of Observatory services such as lectures and natural lighting consultancies.

Note:

At a 95% confidence level the survey responses reported below have a standard error within the range ± 0.025 .

Measure

The table **Overall Satisfaction with Perth Observatory** shows the combined analysis of 411 (80.1%) responses to the visitors' survey question "How satisfied were you with the services provided by Perth Observatory?" and the 11 (57.9%) responses to the services customers survey question "Did the service provided by the Perth Observatory

Overall Satisfaction with Perth Observatory

Response	1995–96 %	1996–97 %	1997–98 %	1998–99 %	1999-2000 %
Very satisfied	75.2	69.6	68.7	71.3	75.1
Satisfied	23.1	26.8	29.9	26.4	23.9
Neither satisfied or dissatisfied	1.7	3.0	1.2	2.3	0.8
Dissatisfied	0.0	0.4	0.2	0.0	0.0
Very dissatisfied	0.0	0.2	0.0	0.0	0.2

Increased Knowledge and Awareness of Astronomy

Response	1995–96 %	1996–97 %	1997–98 %	1998–99 %	1999-2000 %
Strongly agree	50.4	48.7	45.4	52.6	54.9
Agree	47.9	46.1	50.9	45.5	43.9
Neither agree or disagree	1.7	4.2	3.5	1.9	1.2
Disagree	0	1.0	0.2	0	0
Strongly disagree	0	0	0	0	0

meet your needs?" The responses to both survey questions indicate levels of satisfaction consistent across all types of visits and services.

Note:

Prior to 1999–2000 the table reports responses from surveys of star viewing night customers only.

- 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 408 (79.5%) 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.

- 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 1999–2000, the Observatory had 32 (29 in 1998–99) articles published. Of these, 5 (3 in 1998–99) were scientific papers in internationally recognised journals. The other articles were papers related to scientific data on astronomical objects, articles in educational journals or 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 tours for school and community groups, tourists and the general public. This indicator provides the average accrual gross cost per tour visitor based on 1999–2000 tour participation totalling 7,655 (1998–99 7,817), i.e. night visitors - 4,449, day tours - 2,549 and Sunday afternoon tours - 657.

Measure

The cost per tour visitor in 1999–2000 was \$16.33 (1998–1999, \$13.63) an increase of \$3.32 on the “Target” cost of \$13.01 in the 1999–2000 Budget Statements. This increase is mainly due to an increase in the number of more costly night sessions conducted and a reduction in tour visitors overall.

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 16,588 enquiries in 1999–2000, the cost per enquiry was \$35.23 (18,738 enquiries at \$30.92 in 1999–98). This is an increase of \$4.68 on the “Target” cost of \$30.55 in the 1999–2000 Budget Statements. This increase mainly reflects the lower number of enquiries received and the nature of the costs involved.

3. Cost of research activities per refereed research paper.**Note**

The accrual gross cost of the Observatory's research activities expressed as an average per refereed scientific research paper.

Measure

In 1999–2000 the average cost per paper of the research activities supporting the five refereed research papers was \$69,103 (three papers at \$111,389 in 1998–99) an increase of \$3,631 on the “Target” cost of \$65,472 in the 1999–2000 Budget Statements.

4. Cost of research activities per 1,000 head of WA population.**Note**

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 \$190.78 in 1999–2000 (\$188 in 1998–99) an increase of \$10.21 on the “Target” cost of \$180.57 in the 1999–2000 Budget Statements.



Auditor General

To the Parliament of Western Australia

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
PERFORMANCE INDICATORS FOR THE YEAR ENDED JUNE 30, 2000**

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, 2000 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, 2000.

A handwritten signature in black ink, appearing to read 'D D R Pearson'.

D D R PEARSON
AUDITOR GENERAL
September 15, 2000

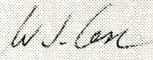
FINANCIAL STATEMENTS

1999–2000


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 2000 and the financial position as at 30 June 2000.

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.

Australian Accounting Standard AAS35 "Accounting for Self-Generating and Regenerating Assets" has not been applied by the Treasurer's Instructions for the financial year to 30 June 2000; however, the Accountable Officer has elected to apply that Australian Accounting Standard to the accompanying financial statements.



Dr Wally Cox
ACCOUNTABLE OFFICER
15 August 2000



Dr John Byrne
PRINCIPAL ACCOUNTING OFFICER
15 August 2000

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
OPERATING STATEMENT
FOR THE YEAR ENDED 30 JUNE 2000**

	Note	1999–2000 (\$'000)	1998–1999 (\$'000)
COST OF SERVICES			
Operating expenses			
Employee costs	4	72,447	62,548
Supplies and services	5	60,574	52,946
Harvesting		56,291	56,022
Depreciation	6	10,278	10,186
Borrowing costs		8,228	8,791
Bad and doubtful debt expenses		549	42
Administration expenses	7	7,008	6,685
Accommodation expenses		2,776	3,046
Grants & subsidies	8	103	209
Total cost of services		<u>218,254</u>	<u>200,475</u>
Operating revenues			
User charges and fees	9	144,751	141,818
Commonwealth grants and contributions		9,012	7,796
Net profit on disposal of non-current assets	10	689	1,281
Other operating revenues	11	10,888	10,425
Total operating revenues		<u>165,340</u>	<u>161,320</u>
Net cost of services before abnormal items		(52,914)	(39,155)
Abnormal items	12	(126,422)	(45,962)
NET COST OF SERVICES		<u>(179,336)</u>	<u>(85,117)</u>
REVENUES FROM GOVERNMENT			
Appropriations	13	72,823	49,950
Liabilities assumed by the Treasurer		(21)	(517)
Non retainable revenue paid to Treasury		(91)	(66)
Resources received free of charge		677	504
Total revenues from Government		<u>73,388</u>	<u>49,871</u>
Change in net assets before restructuring		(105,948)	(35,246)
Net revenues/(expenses) from restructuring	14	(155)	38,686
Change in net assets after restructuring		<u>(106,103)</u>	<u>3,440</u>
Opening balance accumulated surplus/(deficit)		474,433	458,694
Adjustments to Accumulated Surplus			
Takeup of minor buildings			10,680
Takeup of forestry assets			100
Takeup of Recreation & Tourism assets			(2,084)
Takeup of Timber on Forest Landings			3,603
CLOSING BALANCE ACCUMULATED SURPLUS/(DEFICIT)		<u>368,330</u>	<u>474,433</u>

The Operating Statement should be read in conjunction with the accompanying notes.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2000

	Note	1999-2000 (\$'000)	1998-1999 (\$'000)
CURRENT ASSETS			
Cash and amounts in suspense	15	19,527	15,922
Inventories	16	12,182	13,050
Receivables	17	22,269	19,265
Prepayments	18	<u>1,010</u>	<u>358</u>
Total Current Assets		<u>54,988</u>	<u>48,595</u>
NON-CURRENT ASSETS			
Property, plant, equipment and vehicles	19	1,939,498	1,979,659
Infrastructure		31,660	73,631
Timber		259,166	338,534
Other assets		<u>50,566</u>	<u>56,066</u>
Total Non-Current Assets		<u>2,280,890</u>	<u>2,447,890</u>
TOTAL ASSETS		<u>2,335,878</u>	<u>2,496,485</u>
CURRENT LIABILITIES			
Accounts payable	20	8,262	7,718
Borrowings	21	4,200	4,963
Provisions	22	8,840	9,651
Other liabilities	23	<u>11,210</u>	<u>7,886</u>
Total Current Liabilities		<u>32,512</u>	<u>30,218</u>
NON-CURRENT LIABILITIES			
Borrowings	21	83,558	83,358
Provisions	22	<u>5,821</u>	<u>1,926</u>
Total Non-Current Liabilities		<u>89,379</u>	<u>85,284</u>
TOTAL LIABILITIES		<u>121,891</u>	<u>115,502</u>
EQUITY			
Asset revaluation reserve	24	1,845,657	1,906,550
Accumulated surplus/(deficit)		<u>368,330</u>	<u>474,433</u>
Total Equity		<u>2,213,987</u>	<u>2,380,983</u>
TOTAL LIABILITIES AND EQUITY		<u>2,335,878</u>	<u>2,496,485</u>

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 2000**

	Note	1999-2000 (\$'000)	1998-1999 (\$'000)
CASH FLOWS FROM GOVERNMENT			
Recurrent appropriations		51,883	38,795
Capital appropriations		20,940	11,155
Receipts credited to Consolidated Fund		(91)	(66)
Net cash provided by Government		<u>72,732</u>	<u>49,884</u>
UTILISED AS FOLLOWS:			
CASH FLOWS FROM OPERATING ACTIVITIES			
Payments			
Employee costs		(69,534)	(64,332)
Supplies and services		(59,635)	(56,368)
Harvesting Costs		(55,954)	(56,492)
Interest paid		(8,284)	(8,921)
Other payments		(8,697)	(8,804)
Receipts			
Sale of goods and services		137,649	136,134
User charges and fees		13,418	12,718
Interest received		694	782
Other receipts		12,550	10,341
Net cash provided by/(used in) operating activities	25	<u>(37,793)</u>	<u>(34,942)</u>
CASH FLOWS FROM INVESTING ACTIVITIES			
Proceeds from sale of non-current physical assets		2,307	7,539
Payments for non-current physical assets		(33,078)	(18,305)
Net cash provided by/(used in) investing activities		<u>(30,771)</u>	<u>(10,766)</u>
CASH FLOWS FROM FINANCING ACTIVITIES			
Proceeds from borrowings		4,400	4,963
Repayment of borrowings		(4,963)	(4,963)
Net cash provided by/(used in) financing activities		<u>(563)</u>	<u>0</u>
Net increase/(decrease) in cash held		3,605	4,176
Cash at the beginning of the financial year		15,922	11,746
CASH AT THE END OF THE FINANCIAL YEAR	15	<u>19,527</u>	<u>15,922</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 2000**

	OUTPUT 1 NATURE CONSERVATION (\$'000)		OUTPUT 2 NATIVE FOREST MANAGEMENT (\$'000)		OUTPUT 3 PLANTATION MANAGEMENT (\$'000)		OUTPUT 4 TOURISM AND RECREATION SERVICES (\$'000)		OUTPUT 5 ASTRONOMICAL SERVICES (\$'000)		TOTAL (\$'000)
	1999-2000	1998-1999	1999-2000	1998-2000	1999-2000	1998-1999	1999-2000	1998-1999	1999-2000	1998-1999	
COST OF SERVICES											
Operating expenses											
Employee costs	24,143	20,282	19,152	17,274	12,225	9,755	16,349	14,693	578	544	72,447
Supplies and services	14,745	13,961	14,517	9,742	20,058	17,033	11,071	12,003	183	207	60,574
Harvesting	0	0	39,847	40,909	16,444	15,113	0	0	0	0	56,291
Depreciation	1,550	1,744	2,519	2,702	1,519	1,276	4,472	4,266	218	198	10,278
Borrowing costs	331	356	1,806	1,928	5,178	5,531	913	976	0	0	8,228
Bad and doubtful debt expenses	17	0	327	40	164	1	41	1	0	0	549
Administration expenses	2,617	2,483	1,489	1,553	1,073	935	1,779	1,669	50	45	7,008
Accommodation expenses	899	975	594	655	254	260	1,003	1,130	26	26	2,776
Grants & subsidies	103	209	0	0	0	0	0	0	0	0	103
Total cost of services	44,405	40,010	80,251	74,803	56,915	49,904	35,628	34,738	1,055	1,020	218,254
Operating revenues											
User charges and fees	1,409	2,074	84,186	84,711	50,005	45,676	9,042	9,240	109	117	144,751
Commonwealth grants and contributions	7,906	6,274	341	105	509	546	256	871	0	0	9,012
Net profit on disposal of non-current assets	39	1,000	349	255	182	(30)	122	59	(3)	(3)	689
Other operating revenues	1,589	1,467	3,787	4,030	2,480	2,477	3,032	2,451	0	0	10,888
Total operating revenues	10,943	10,815	88,663	89,101	53,176	48,669	12,452	12,621	106	114	165,340
Net cost of services before abnormal items	(33,462)	(29,195)	8,412	14,298	(3,739)	(1,235)	(23,176)	(22,117)	(949)	(906)	(52,914)
Abnormal items	0	0	(116,096)	(49,487)	(10,326)	3,525	0	0	0	0	(126,422)
NET COST OF SERVICES	(33,462)	(29,195)	(107,684)	(35,189)	(14,065)	2,290	(23,176)	(22,117)	(949)	(906)	(179,336)
REVENUES FROM GOVERNMENT											
Appropriations	39,597	28,259	41	41	7,544	4,369	24,986	16,687	655	594	72,823
Liabilities assumed by the Treasurer	(8)	(165)	(4)	(143)	(4)	(81)	(5)	(124)	0	(4)	(21)
Non retainable revenue paid to Treasury	(91)	(66)	0	0	0	0	0	0	0	0	(91)
Resources received free of charge	237	176	186	138	98	74	152	113	4	3	677
Total revenues from Government	39,735	28,204	223	36	7,638	4,362	25,133	16,676	659	593	73,388
Change in net assets before restructuring	6,273	(991)	(107,461)	(35,153)	(6,427)	6,652	1,957	(5,441)	(290)	(313)	(105,948)
Net revenues/(expenses) from restructuring	(77)	43,000	0	0	0	(4,343)	(78)	29	0	0	(155)
Change in net assets after restructuring	6,196	42,009	(107,461)	(35,153)	(6,427)	2,309	1,879	(5,412)	(290)	(313)	(106,103)

The Operating Statement should be read in conjunction with the accompanying notes.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
SUMMARY OF CONSOLIDATED FUND APPROPRIATIONS AND REVENUE ESTIMATES (NOTE 30)
FOR THE YEAR ENDED 30 JUNE 2000

	1999-2000			1998-1999		
	Estimate \$'000	Actual \$'000	Variance \$'000	Estimate \$'000	Actual \$'000	Variance \$'000
RECURRENT						
Amount required to fund outputs for the year	158,300	156,096	-2,204	155,014	152,858	-2,156
Less retained revenue - Section 23A of the Financial Administration and Audit Act	113,531	104,372	-9,159	120,913	114,414	-6,499
Financial Administration and Audit Act 1985 Section 25 transfer from Camps and Reserves Board	0	0	0	0	191	191
Item 63 Amount provided to fund outputs for the year	44,769	51,724	6,955	34,101	38,635	4,534
Amount authorised by other Statutes - Salaries and Allowances Act 1975	159	159	0	156	160	4
Total Recurrent Services	44,928	51,883	6,955	34,257	38,795	4,538
CAPITAL						
Amount required for Capital Services for the year	16,460	32,961	16,501	17,263	15,636	-1,627
Less Retained Revenue - Section 23A of the Financial Administration and Audit Act	5,020	12,021	7,001	6,108	4,481	1,627
Item 152 Amount provided for Capital Services for the year	11,440	20,940	9,500	11,155	11,155	0
Total Capital Services	11,440	20,940	9,500	11,155	11,155	0
GRAND TOTAL	56,368	72,823	16,455	45,412	49,950	4,538
DETAILS OF EXPENDITURE						
RECURRENT						
Outputs						
Output 1 : Nature Conservation	40,574	41,195	621	37,536	38,885	1,349
Output 2 : Native Forest Management	72,279	73,194	915	71,008	70,717	-291
Output 3 : Plantation Management	53,243	56,564	3,321	53,770	53,604	-166
Output 4 : Tourism and Recreation Services	29,908	30,353	445	25,760	28,830	3,070
Output 5 : Astronomical Services	780	793	13	807	863	56
Recurrent Expenditure	196,784	202,099	5,315	188,881	192,899	4,018
Less Retained Revenue:	158,009	164,311	6,302	159,105	166,117	7,012
Changes in Operating Account Balances	0	3,927	3,927	0	1,839	1,839
	38,775	41,715	2,940	29,776	28,621	-1,155
Other Funding Sources	4,062	5,114	1,052	2,770	5,145	2,375
Capital Repayments	2,000	4,963	2,963	1,620	4,963	3,343
Add: Cash Operating Revenue Taken to Consolidated Fund	91	91	0	91	66	-25
Consolidated Fund Recurrent Appropriations	44,928	51,883	6,955	34,257	38,795	4,538
CAPITAL						
Capital Expenditure	22,027	44,570	22,543	20,665	25,073	4,408
Less Retained Revenue:	10,587	18,651	8,064	9,510	11,528	2,018
Borrowings	0	4,400	4,400	0	4,963	4,963
Changes in Operating Account Balances	0	579	579	0	2,573	2,573
Consolidated Fund Capital Appropriations	11,440	20,940	9,500	11,155	11,155	0
GRAND TOTAL OF APPROPRIATIONS	56,368	72,823	16,455	45,412	49,950	4,538
DETAILS OF REVENUE ESTIMATES						
Territorial	20	0	-20	20	0	-20
Departmental	71	91	20	71	66	-5
TOTAL REVENUE ESTIMATES	91	91	0	91	66	-25

The Summary of Consolidated Fund Appropriations and Revenue Estimates should be read in conjunction with the accompanying notes.
This Summary provides the basis for the Explanatory Statement information requirements of T1 945.

NOTES TO THE FINANCIAL STATEMENTS**1. DEPARTMENTAL MISSION AND FUNDING**

The agency's mission is to conserve and manage Western Australia's native plants and animals and the lands, waters and resources entrusted to the Department for the benefit of present and future generations.

In 1999–2000 the Department was predominantly funded by Parliamentary appropriations and retained revenues from timber sales and other activities. The Department provided the outputs as disclosed at Note 3. Prevailing market forces and Government policy determine fees charged. The financial statements encompass all funds through which the Department controls resources to carry on its functions.

In the process of reporting on the Department as a single entity, all intra-entity transactions and balances have been eliminated.

Draft legislation is currently before the Western Australian Parliament to restructure the Department which may alter the Department's mission and funding arrangements.

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 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 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 Australia Accounting Standard AAS29.

The statements have been prepared on an accrual basis using historic cost accounting, with the exception of certain non-current assets included at valuation such as forestry assets. Additions to non-current physical assets since valuation are stated at cost.

Forestry assets have been valued in accordance with AAS35 "Self-Generating and Regenerating Assets" (SGARAs), issued in August 1998.

Administered assets, liabilities, expenses and revenues are not integral to the Department in carrying out its functions and are disclosed in schedules to the financial statements (Note 34), forming part of the general purpose financial report of the Department.

a) Appropriations

Appropriations in the nature of revenue, whether recurrent or capital, are recognized 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.

b) Net Appropriation Determination

Pursuant to section 23A of the Financial Administration and Audit Act, the net appropriation determination by the Treasurer provides for retention of the following moneys received by the Department:

- Proceeds from contract of sale of forest produce—Sections 88(1)(b) and 92(2) Conservation and Land Management Act
- Proceeds from sale of real property
- Proceeds from the disposal of equipment and non-real property
- Certain minor fees and charges

The moneys received and retained were applied to the Department's Outputs as specified in the Budget Statements.

c) 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.

d) Operating Accounts

Amounts appropriated are deposited into the Department's bank account and any revenues which are the subject of net appropriation determinations are also deposited into the account. Revenues not subject to net appropriation determinations are credited to the

Consolidation Fund. All payments of the Department are made from the operating account.

e) Depreciation of non-current assets

All non-current assets having a limited useful life are systematically depreciated over their useful lives in a manner which reflects the consumption of their future economic benefits.

Depreciation is provided for on the straight-line basis, using rates which are reviewed annually. Useful lives for each class of depreciable asset are:

Buildings	20 to 40 years
Furniture	10 years
Office Equipment	6 to 7 years
Computer Equipment	4 years
Aircraft	5 to 6 years
Boats	5 years
Plant and Machinery	4 to 10 years
Heavy Fleet Vehicles	5 years
Recreation / Tourism Assets	10 to 20 years

Heritage assets are anticipated to have very long and indeterminate useful lives. Their service potential has not, in any material sense, been consumed during the reporting period. As such, no amount for depreciation has been recognised in respect of them.

f) Valuation of Assets

Timber and Forestry Infrastructure

In accordance with Australian Accounting Standard 35 (AAS35) a Net Present Value method has generally been used by officers to estimate the commercial value of the net cashflows expected to be generated by commercial forestry operations.

The written down value of forestry infrastructure is deducted from the Net Present Value of timber to allow separate disclosure of SGARA and non-SGARA asset values as required by AAS35. Forestry infrastructure was valued by officers using a depreciated replacement cost basis on 30 June 1999, and where necessary, this value has been adjusted to 30 June 2000 to reflect changes in the Net Present Value of the timber operations which it supports.

Reductions (increases) in forest values between 30 June 1999 and 30 June 2000 have been taken to account as expenses (revenues) in the Operating Statement as required by AAS35.

The Net Present Value of commercial native forest operations has been derived from native forest management costs in State Forest and taking into account Government policies on log volume reductions and silvicultural requirements in native forests.

The Department's rights in *Pinus pinaster* sharefarming contracts entered into as part of the Government's Salinity Action Plan have been valued on an historic cost

basis to reflect their current market value.

Non-commercial values inherent in forests are not accounted for in timber valuations pursuant to AAS35.

Land

Freehold land held in the name of the Executive Director, Crown land in the conservation estate and vested State Forest are valued in the Government Property Register by the Valuer General on either a market value or current use basis. The Valuer General revalued this Crown land during 1999–2000 and the revised values have been included in the Statement of Financial Position.

Crown land is reserved for or held by the Department for the conservation and land management purposes prescribed by the Conservation and Land Management Act 1984. Section 17(7) of the Act provides that should the land no longer be reserved or held for these purposes the land shall become Crown land within the meaning of the Land Administration Act 1997 and thus would no longer be vested in the Department. Therefore land of this nature cannot be liquidated by the Department to meet liabilities or fund activities.

The commercial values of timber, forestry roads and bridges and recreation and tourism facilities standing on the land are reported separately from the Valuer General's land valuation.

g) Recognition of Revenue

The Department's general policy is to recognise revenue when an invoice is issued.

In line with this policy, native forest and softwood timber sales are recorded in the General Ledger when timber is delivered to sawmills. A revenue accrual is made for services supplied to certain sharefarming investors who are invoiced on a three monthly basis, and for seedlings delivered but not invoiced at the end of the financial year.

Other revenues such as proceeds from the sale of motor vehicles, land sales and miscellaneous revenue are recognised at the time of receipt.

h) 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

A liability for long service leave is recognised, and is measured as the present value of the expected future payments to be made in respect of services provided by employees up to the reporting date. Consideration is given, when assessing expected future payments, to

expected future wage and salary levels including relevant on-costs, experience of employee departures and periods of service. Expected future payments are discounted using interest rates to obtain the estimated future cash outflows.

This method of measurement of the liability is consistent with the requirements of Australian Accounting Standard AAS30 'Accounting for Employee Entitlements'.

Superannuation

Staff may contribute to the Superannuation and Family Benefits Act 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.

The Department is responsible for employer contributions to the Gold State and West State Superannuation Schemes. Employer contributions have been paid to the Gold State Superannuation Scheme since the inception of the Scheme in 1987.

The financial statements include the Department's contributions adjusted for the change in the unfunded liability assumed by the Treasurer for pre 1987 service for current employees in the Gold State Superannuation Scheme.

The total unfunded liability assumed by the Treasurer for current employees in the Gold State Superannuation Scheme for pre 1987 service is \$16.00M. (1998-99 \$16.02M)

The total unfunded liability assumed by the Treasurer in respect of Superannuation and Family Benefits Act pensions that will be payable to current employees when they retire is \$2.29M. (1998-99 \$2.39M).

The superannuation expense does not include payment of pensions to former employees who have retired as this does not constitute part of the cost of services provided by the Department in the current year.

i) 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 installments 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 1999-2000.

j) Accounts Receivable

Accounts receivable 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 which are known to be uncollectable are written off. A provision for doubtful debts is raised where reasonable doubts as to collection exists.

k) Accrued Salaries

The accrued salaries suspense account 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 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.

l) Accounts Payable

Accounts Payable (including logging costs) are normally settled on 30 day terms reflecting general contract requirements. Shorter terms may be applied where discounts are made available. Obligations to creditors, including accruals not yet billed, are recognised as amounts to be paid in the future for goods and services received, whether or not an invoice has been received prior to balance date.

m) Inventories

Inventories have been valued at the lower of cost and net realisable value, apart from timber on forest landings which is valued at net market value in accordance with AAS35, and publications which are valued at the wholesale price. Nursery and timber technology stock is valued at cost including overheads. Processed sandalwood stock is valued at cost including overheads directly attributable to the sandalwood management activity.

n) Accrued Logging Costs

Accrued Logging Costs represents the amount owing to harvesting and delivery contractors for timber delivered to sawmills but not yet recorded in the Department's Accounts Payable system.

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 quarterly invoices in arrears.

p) Borrowings

Bank loans and other loans are recorded at an amount equal to the net proceeds received. Interest expense is recognised on an accrual basis.

q) Resources Received Free of Charge or For Nominal Value

Resources received free of charge or for nominal value which can be reliably measured are recognised as revenues and as assets or expenses as appropriate at fair value.

r) Comparative Figures

Comparative figures have been adjusted to conform with changes in the presentation of the financial statements.

3. OUTPUTS OF THE DEPARTMENT

The Budget for 1999–2000 was framed in terms of outputs, consequently financial reporting for the year is also analysed in terms of outputs.

The Government outcomes and Departmental outputs during the reporting period were:

Outcome: Conservation of indigenous plants, animals and ecological processes in natural habitats.

Output 1: Nature Conservation

Outcome: Long term maintenance of the forest ecosystem and provision of sustainable wood production.

Output 2: Native Forest Management

Output 3: Plantation Management

Outcome: Community enjoyment of wildlife and the natural environment without compromising conservation and other management objectives.

Output 4: Tourism and Recreation Services

Outcome: Astronomical information and services for the benefit of the Community.

Output 5: Astronomical Services

An Output Schedule of Expenses and Revenue is shown separately.

	1999–2000 (\$'000)	1998–1999 (\$'000)
4. EMPLOYEE COSTS		
Wages and salaries	64,158	59,811
Superannuation	5,205	4,475
Annual Leave	450	(1,821)
Long Service	2,634	83
	<u>72,447</u>	<u>62,548</u>
5. SUPPLIES AND SERVICES		
Services & Contracts	28,757	23,518
Materials	17,836	16,835
Operating Leases	12,549	9,841
Repairs and maintenance	1,432	2,746
Other	0	6
	<u>60,574</u>	<u>52,946</u>
6. DEPRECIATION		
Buildings, Plant & Equipment	5,388	4,958
Vehicles	1,539	2,138
Recreation & Tourism Facilities	3,351	3,090
	<u>10,278</u>	<u>10,186</u>
7. ADMINISTRATION EXPENSES		
Telephones, Postage, Communications	2,274	2,103
Travel Expenses	2,389	2,128
Resources Received Free of Charge	677	504
Workers Compensation Insurance	645	926
Other Admin Expenses	1,023	1,024
	<u>7,008</u>	<u>6,685</u>
8. GRANTS & SUBSIDIES		
Recurrent		
Kalgoorlie Boulder Urban Landcare Group	46	46
Green Skills Inc	38	0
World Wide Fund for Nature	12	0
Greening Western Australia	0	40
John Forrest SHS Bush Rangers	0	5
Conservation Council of W.A.	0	18
Urban Bushland Council	0	15
Fitzgerald River National Park Association	0	5
Various Grants under \$5,000	7	80
	<u>103</u>	<u>209</u>
9. USER CHARGES AND FEES		
Royalties and Timber Sales		
- Hardwood Royalties	28,850	33,861
- Softwood stumpages	14,151	14,305
- Sandalwood sales	11,635	6,629
- Recovery of Hardwood		
Harvesting Costs	41,544	41,672
- Recovery of Softwood		
Harvesting Costs	17,610	15,283
Parks and Visitor Services income	6,236	5,735
Recoupable Works		
- Agency Sharefarming Income	17,050	15,422
- Recoups and Private Grants	7,675	8,911
	<u>144,751</u>	<u>141,818</u>

	1999-2000 (\$'000)	1998-1999 (\$'000)		1999-2000 (\$'000)	1998-1999 (\$'000)
Buildings at cost	4,416	4,468	a) Buildings		
Accumulated Depreciation	(576)	(395)	In 1999-2000, the Valuer General's Office provided a valuation for 50% of the minor buildings that had been taken up at the Officer's valuation in 1998-1999. The balance of the minor buildings that have not yet been individually valued by the Valuer General's Office are still taken up at Officer's valuation.		
	<u>3,840</u>	<u>4,073</u>			
Plant & Equipment at valuation, 1995-96 b)	5,890	6,245	b) Plant & Equipment		
Accumulated Depreciation	(4,604)	(4,406)	Plant and equipment has been brought to account at cost. Where cost amounts were not known at the time of implementing accrual accounting in 1995-1996, they were brought to account at valuations estimated by officers and verified on a sample basis by the Valuer General.		
	<u>1,286</u>	<u>1,839</u>			
Plant and Equipment at cost	20,312	18,233	c) Recreation and Tourism Facilities		
Accumulated Depreciation	(9,110)	(7,370)	These facilities were taken up on 30 June 1998 at estimated depreciated replacement cost, verified on a sample basis by the Valuer General. Additions since that time have been brought to account on a cost basis.		
	<u>11,202</u>	<u>10,863</u>			
Vehicles at cost	12,970	12,104			
Accumulated Depreciation	(7,789)	(7,016)			
	<u>5,181</u>	<u>5,088</u>			
Total Property, Plant, Equipment and Vehicles	<u>1,939,498</u>	<u>1,979,659</u>			
Infrastructure at valuation, 30 June 2000			20. ACCOUNTS PAYABLE		
Native Forest Infrastructure	26,517	68,488	Trade payables	8,262	7,718
Plantations Infrastructure	5,143	5,143		<u>8,262</u>	<u>7,718</u>
	<u>31,660</u>	<u>73,631</u>			
Total Infrastructure	<u>31,660</u>	<u>73,631</u>	21. BORROWINGS [FROM WESTERN AUSTRALIAN TREASURY CORPORATION]		
Timber at valuation, 30 June 2000			Current borrowings	4,200	4,963
Native Forest Standing Timber	0	91,461	Non-current borrowings	83,558	83,358
Standing Sandalwood	67,296	49,959	Total Borrowings	<u>87,758</u>	<u>88,321</u>
Plantations Standing Timber	178,861	189,463			
Dryandra Mallet	91	100	22. PROVISIONS		
	<u>246,248</u>	<u>330,983</u>	Employee Entitlements		
Timber at cost			The aggregate employee entitlement liability recognised and included in the financial statements is as follows:		
Maritime Pine	12,918	7,551	Provision for employee entitlements:		
Total Timber	<u>259,166</u>	<u>338,534</u>	Current		
Recreation and Tourism Facilities at valuation, 1997-98 c)	55,307	55,342	Current annual leave	4,462	4,012
Accumulated Depreciation	(9,467)	(6,226)	Current long service leave	4,378	5,639
	<u>45,840</u>	<u>49,116</u>		<u>8,840</u>	<u>9,651</u>
Recreation and Tourism Facilities at cost	3,024	965	Non-current		
Accumulated Depreciation	(136)	(24)	Long service leave	5,821	1,926
	<u>2,888</u>	<u>941</u>		<u>5,821</u>	<u>1,926</u>
Total Recreational and Tourism Facilities	48,728	50,057	Total Provisions	<u>14,661</u>	<u>11,577</u>
Work In Progress	1,838	6,009	The provision for employee leave liability has been increased, following receipt of a consultant's report. This reflects a change in actuarial calculating rather than a worsening of leave clearance.		
Total Other Assets	<u>50,566</u>	<u>56,066</u>	23. OTHER LIABILITIES		
Grand Total of Non-Current Assets	<u>2,280,890</u>	<u>2,447,890</u>	Current		
			Accrued expenditure	2,456	1,010
			Accrued Wages & Salaries	1,374	1,196
			Accrued Superannuation	842	1,140
			Accrued Logging Costs	2,298	1,794
			Accrued Loan Interest	1,736	1,791
			Unearned Revenue	2,504	955
				<u>11,210</u>	<u>7,886</u>

	1999-2000 (\$'000)	1998-1999 (\$'000)
24. 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.		
Accumulated Surplus / (Deficit)		
Balance at the beginning of the year	474,433	458,694
Change in net assets resulting from operations, abnormal items and restructuring	(106,103)	3,440
Take-up of minor buildings	0	10,680
Take-up of Forestry assets	0	100
Take-up of Recreation & Tourism assets	0	(2,084)
Take-up of Timber on Forest Landings	0	3,603
Balance at the end of the year	<u>368,330</u>	<u>474,433</u>
Reserves		
Asset Revaluation Reserve		
Balance at beginning of year	1,906,550	2,248,217
Revaluation during the year		
- Land	(62,232)	(341,667)
- Buildings	1,339	0
Balance at end of year	<u>1,845,657</u>	<u>1,906,550</u>

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 \$M1,845.6 is comprised of Land (\$M 1,844.3) and Buildings (\$M1.3).

25. NOTES TO THE STATEMENT OF CASH FLOWS

(a) Reconciliation of cash

For the purpose of the Statement of Cash Flows, cash includes cash at bank and cash equivalents as shown in note 15.

(b) Reconciliation of net cost of services to net cashflows provided by / (used in) operating activities

Net cost of services	(52,914)	(39,155)
Non-cash items:		
Depreciation expense	10,278	10,186
Superannuation liability assumed by the Treasurer	(21)	(517)
Resources received free of charge	677	504
(Profit) / loss on sale of assets	(689)	(1,281)
(Increase) / decrease in current assets:		
Accounts receivables	(3,004)	1,039
Inventories	868	(7,075)
Prepayments	(635)	(35)
Other	(13)	(235)

	1999-2000 (\$'000)	1998-1999 (\$'000)
Increase / (decrease) in employee provisions	3,084	(1,738)
Increase / (decrease) in other current liabilities	4,576	3,365
Net Cash Used in Operating Activities	<u>(37,793)</u>	<u>(34,942)</u>
26. 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:		
DOLA, New roading data	<u>7</u>	<u>0</u>
27. COMMITMENTS FOR EXPENDITURE		
Non-cancellable operating lease commitments		
Not later than 1 year	3,933	2,993
Later than 1 year and not later than 5 years	15,238	12,753
Later than 5 years	<u>3,761</u>	<u>225</u>
	<u>22,932</u>	<u>15,971</u>
28. CONTINGENT LIABILITIES		
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.		
29. EVENTS OCCURRING AFTER REPORTING DATE		
In the second half of 2000, the Western Australian Parliament is likely to consider a Forest Products Bill that would result in the creation of a Forests Products Commission to manage the harvesting and selling of the State's publicly-owned timber resources. These functions would transfer from the Department of Conservation and Land Management. A Bill to amend the Conservation and Land Management Act (1984) is also before Parliament. During 2000-2001 the staffing, responsibilities and financial statements of the Department will alter to reflect the legislative changes approved by the Parliament.		
30. 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 a cash basis.		
As mentioned in Note 2 (c), the Department operates under a Net Appropriation Determination whereby moneys received under the agreement are retained as a source of funds for its operations.		
Under the Net Appropriation Determination, CALM's expenditure outputs are reliant on revenue collected. Consequently any variation to revenue collected is reflected in the expenditure outputs of the Department.		
The following explanations are provided in accordance with Treasurer's Instruction 945.		

	1999-2000 Estimate (\$'000)	1999-2000 Actual (\$'000)	Variance (\$'000)
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SIGNIFICANT VARIATIONS TO ANNUAL ESTIMATES

Significant variations are considered to be those greater than 10% or above \$2.5M.

Details of Revenue**Recurrent Revenue**

Less retained revenue -

Section 23A Financial Administration and Audit Act	113,531	104,372	-9,159
--	---------	---------	--------

The reduction in Section 23A retained revenues shown against recurrent services is due to a transfer of revenue to fund capital services, principally maritime pine planting. Section 23A revenues shown against capital services are \$7.001M above the estimate. Total Section 23A retained revenues for recurrent and capital combined are \$2.158M below the estimate. The reduction is due to lower volumes of native forest harvesting.

Item 63 amount provided to fund outputs for the year.	44,769	51,724	6,955
---	--------	--------	-------

Additional funding to the Department was approved in relation to: compensation for reduced native forest logging revenues attributable to the Regional Forest Agreement (RFA), \$4.6M; restructuring of CALM, \$0.9M; wildfires, \$0.4M; RFA tourism employment initiative, \$0.3M and carbon sequestration project, \$0.236M and other miscellaneous items, \$0.519M.

Less Retained Revenue	158,009	164,311	6,302
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Increased revenues were received from: specific purpose trust account for Commonwealth and other programs \$3.9M, sandalwood sales \$1.9M and recreation income \$1M.

Capital Revenue

Less Retained Revenue - Section 23A of the Financial Administration and Audit Act	5,020	12,021	7,001
---	-------	--------	-------

Refer to comments above under recurrent revenue.

Item 152 Amount provided for Capital Services for the year	11,440	20,940	9,500
--	--------	--------	-------

	1999-2000 Estimate (\$'000)	1999-2000 Actual (\$'000)	Variance (\$'000)
--	-----------------------------------	---------------------------------	----------------------

An increased capital appropriation of \$9.5M was allocated for the purchase of Wellington Dam land for the purpose of incorporation in the national park estate.

Less Retained Revenue	10,587	18,651	8,064
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Retained revenue received under Section 23A Financial Administration and Audit Act for capital services was budgeted at \$5.02M. The actual reported amount for 1999-2000 was \$12.021M, being an increase of \$7M which was transferred from recurrent services. The additional funding requirements for capital services reflects the change in reporting of maritime pine planting expenditure from recurrent to capital services. Actual expenditure on maritime pine planting during 1999-2000 was \$6.304M. Other items of retained revenues were above budget including; mining compensation, \$0.690M; Commonwealth grants, \$0.373M and Main Roads Department grant, \$0.255M.

Borrowings	0	4,400	4,400
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Borrowing's for 1999-2000 related to; Regional Forest Agreement projects, \$1.13M, maritime pine, \$1.095M and refinancing of an earlier loan repayment paid in July 1999, \$2.175M.

Details of Expenditure**Recurrent Expenditure**

Output 3 : Plantation Management	53,243	56,564	3,321
----------------------------------	--------	--------	-------

Several factors have contributed to increased expenditure above budget including; increased logging activity, \$0.787M; sharefarm planting in the South Coast, \$0.646M; recoupable projects, \$0.529M; wildfire suppression, \$0.437M; and increased research expenditure, \$0.285M.

Capital Expenditure

Capital Expenditure	22,027	44,570	22,543
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Additional capital expenditure above budget occurred on the following items: purchase of the Wellington Dam land for a national park, \$9.5M; inclusion of maritime pine planting, \$6.303M; Manjimup Nursery construction, \$4.602M and a jarrah forest enhancement project, \$0.745M.

	1999-2000	1998-1999	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

SIGNIFICANT VARIATIONS TO 1998-99 OUT-TURNS

Significant variations are considered to be those greater than 10% or above \$2.5M.

Details of Revenue

Recurrent Revenue

Less retained revenue - Section 23A Financial Administration and Audit Act	104,372	114,414	-10,042
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The reduction in Section 23A retained revenues shown against recurrent services is due to a transfer of revenue to fund capital services, principally maritime pine planting in 1999-2000. Total Section 23A retained revenues in 1999-2000 for recurrent and capital combined are \$2.502M below the 1998-99 actual. The reduction is due to lower volumes of native forest harvesting.

Item 63 amount provided to fund outputs for the year	51,724	38,635	13,089
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Major items to increase in the 1999-2000 budget were; funding for land sales revenue paid direct to Treasury by the Department of Land Administration on behalf of CALM, \$3.157M; debt repayment, \$2M; and regional parks operations, \$0.55M. Additional supplementary funding to the Department was approved in relation to: compensation for reduced native forest logging revenues attributable to the Regional Forest Agreement (RFA), \$4.6M; restructuring of CALM, \$0.9M; wildfires, \$0.4M; RFA tourism employment initiative, \$0.3M and carbon sequestration project, \$0.236M and other miscellaneous items, \$0.519M.

Capital Revenue

Less Retained Revenue - Section 23A of the Financial Administration and Audit Act	12,021	4,481	7,540
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	1999-2000	1998-1999	
	Actual	Actual	Variance
	(\$'000)	(\$'000)	(\$'000)

Refer to comments above under recurrent revenue.

Item 152 Amount provided for Capital Services for the year	20,940	11,155	9,785
---	--------	--------	-------

An increased capital appropriation of \$9.5M was allocated for the purchase of Wellington Dam land for the purpose of incorporation in the national park estate.

Less Retained Revenue	18,651	11,528	7,123
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Retained revenue received under Section 23A Financial Administration and Audit Act for capital services during 1998-99 was \$4.481M. The actual amount received during 1999-2000 was \$12.021M, being an increase of \$7.540M which was transferred from recurrent services. The additional funding requirements for capital services reflects the change in reporting of maritime pine planting expenditure from recurrent to capital services.

Details of Expenditure

Recurrent Expenditure

Output 3 : Plantation Management	56,564	53,604	2,960
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Increased expenditure under the plantations output relates to increased planting of bluegums for overseas investors in the Wellington and South Coast districts.

Capital Expenditure

Capital Expenditure	44,570	25,073	19,497
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Additional capital expenditure during 1999-2000 occurred on the following items: purchase of the Wellington Dam land for a national park, \$9.5M; inclusion of maritime pine planting, \$6.303M; Manjimup Nursery construction, \$2.587M and a jarrah forest enhancement project, \$0.745M.

31. FINANCIAL INSTRUMENTS

Interest Rate Risk Exposure

The Department's exposure to interest rate risk, repricing maturities and the effective interest rates on financial instruments as at 30 June 2000 was:

Assets	Weighted average effective interest rate %	Floating interest rate \$'000	Fixed interest rate maturities			Non interest bearing \$'000	Total 30-June-2000 \$'000
			1 year or less \$'000	1 to 5 years \$'000	Over 5 years \$'000		
Cash resources	5.85%	18,221					18,221
Accrued salaries in Suspense (Held by Treasury)						1,306	1,306
Accounts receivable						22,269	22,269
Total financial assets		18,221	-	-	-	23,575	41,796
Liabilities	Weighted average effective interest rate %	Floating interest rate \$'000	Fixed interest rate maturities			Non interest bearing \$'000	Total 30-June-2000 \$'000
			1 year or less \$'000	1 to 5 years \$'000	Over 5 years \$'000		
Accounts payable						8,262	8,262
Accrued expenditure						2,456	2,456
Accrued salaries & wages						1,374	1,374
Accrued superannuation						842	842
Accrued logging costs						2,298	2,298
Loan liabilities	9.73%		4,200	16,800	66,758		87,758
Employee entitlements						14,661	14,661
Total financial liabilities			4,200	16,800	66,758	29,893	117,651
Net financial liabilities		18,221	(4,200)	(16,800)	(66,758)	(6,318)	(75,855)

Credit Risk Exposure

Accounts receivable largely consists of timber debtors, for which deposits and securities are required to be lodged in favour of the Department under timber Contracts of Sale. Section 117 of the Conservation and Land Management Act 1984 provides that forest produce is the property of the Crown until royalty is paid and in default of payment may be seized and disposed of.

Net Fair Value of Financial Instruments

The Department's borrowings of \$M87.758 have been assessed by the WA Treasury Corporation to have a net fair value of \$M96.642 as at 30 June 2000. The net fair value of a financial liability is the amount at which the liability could be settled in a current transaction after allowing for the premium required if debt is settled prior to the due date.

For comparative purposes, details of the Department's financial assets and liabilities as at 30 June 1999 were:

Assets	Weighted average effective interest rate %	Floating interest rate \$'000	Fixed interest rate maturities			Non interest bearing \$'000	Total 30-June-99 \$'000
			1 year or less \$'000	1 to 5 years \$'000	Over 5 years \$'000		
Cash resources	5.03%	14,873					14,873
Accrued salaries in Suspense (Held by Treasury)						1,049	1,049
Accounts receivable						19,265	19,265
Total financial assets		14,873	-	-	-	20,314	35,187
Liabilities	Weighted average effective interest rate %	Floating interest rate \$'000	Fixed interest rate maturities			Non interest bearing \$'000	Total 30-June-99 \$'000
			1 year or less \$'000	1 to 5 years \$'000	Over 5 years \$'000		
Accounts payable						7,718	7,718
Accrued expenditure						1,010	1,010
Accrued salaries & wages						1,196	1,196
Accrued superannuation						1,140	1,140
Accrued logging costs						1,794	1,794
Loan liabilities	10.28%		4,963	14,400	68,958		88,321
Employee entitlements						11,577	11,577
Total financial liabilities			4,963	14,400	68,958	24,435	112,756
Net financial liabilities		14,873	(4,963)	(14,400)	(68,958)	(4,121)	(77,569)

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:

\$	1999-2000	1998-1999
80,000 – 90,000	2	0
90,000 – 100,000	0	3
100,000 – 110,000	5	3
110,000 – 120,000	4	1
120,000 – 130,000	0	1
170,000 – 180,000	0	1

	1999-2000	1998-1999
\$	\$	\$

The total remuneration of senior officers is:

1,162,987	1,010,393
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Retirement Benefits

In respect of Senior Officers the following amounts were paid for the financial year:

Contributions to Gold State and West State Superannuation Schemes	101,646	86,492
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At 30 June 2000, one Senior Officer of the Department was a member of the Superannuation and Family Benefits Act Scheme.

1999-2000	1998-1999
(\$'000)	(\$'000)

33. SUPPLEMENTARY INFORMATION

Write-Offs

Losses of Public Money and Public or other Property

Irrecoverable amounts	128	42
Other	14	18
General (includes thefts reported to Police, lost property and stock taking deficiencies)	1	1
	<u>143</u>	<u>61</u>

Public and other property, revenue and other debts due to the state written off in accordance with Section 45 of the financial Administration Act 1985.

Approved by the Executive Director	31	25
Approved by the Minister / Governor	112	36
	<u>143</u>	<u>61</u>

34. ADMINISTERED ASSETS AND LIABILITIES

Cash deposits lodged with the Department by contractors pending satisfactory performance of the contract.

<u>1,707</u>	<u>1,411</u>
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35. INTERESTS IN JOINT VENTURES

The Department is a supporting partner in national Co-operative Research Centres (CRCs). The Department makes in-kind contributions by making Department staff available to carry out research projects. Estimated 1999–2000 Departmental in-kind contributions including overhead multipliers were \$M0.312 for projects under the Greenhouse Accounting CRC, \$M0.504 for the Tropical Savannas CRC, and \$M0.310 for the Vertebrate Pest Control CRC.



Auditor General

To the Parliament of Western Australia

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT FINANCIAL STATEMENTS FOR THE YEAR ENDED JUNE 30, 2000

Scope

I have audited the accounts and financial statements of the Department of Conservation and Land Management for the year ended June 30, 2000 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, other mandatory professional reporting requirements and the Treasurer's Instructions so as to present a view which is consistent with my understanding of the Department's financial position, the results of its operations 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 Operating Statement, Statement of Financial Position and Statement of Cash Flows 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, other mandatory professional reporting requirements and the Treasurer's Instructions, the financial position of the Department at June 30, 2000 and the results of its operations and its cash flows for the year then ended.

D D R PEARSON
AUDITOR GENERAL
September 15, 2000

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1999–2000

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APPENDIX 1 TRENDS IN THE AREA OF NATIVE FOREST HARVESTED

	Jarrah Forest	Jarrah/Wandoo Forest	Karri Forest	
	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

**APPENDIX 2
AREAS OF EVEN-AGED KARRI REGENERATION**

Year of Regeneration Area (ha)	Multiple Use Forest		Conservation Forest		Totals	
	Annual Total (ha)	Cumulative Area (ha)	Annual Total (ha)	Cumulative Area (ha)	Annual Total (ha)	Cumulative (ha)
Before 1900	30	30	2,180	2,180	2,210	2,210
1900-10	0	30	0	2,180	0	2,210
1910-19	110	140	50	2,230	160	2,360
1920-29	130	260	90	2,310	210	2,570
1930-39	5,300	5,570	800	3,110	6,100	8,680
1940-49	530	6,100	660	3,780	1,200	9,880
1950-59	450	6,550	260	4,040	710	10,590
1960-65	200	6,750	30	4,070	230	10,810
1966	170	6,910	0	4,070	170	10,980
1967	200	7,110	90	4,160	290	11,270
1968	660	7,780	130	4,290	790	12,060
1969	1,200	8,970	380	4,670	1,580	13,640
1970	60	9,030	10	4,680	70	13,710
1971	20	9,050	70	4,750	90	13,800
1972	1,050	10,100	740	5,480	1,790	15,580
1973	150	10,250	40	5,520	180	15,770
1974	130	10,380	40	5,560	170	15,930
1975	580	10,960	210	5,770	790	16,730
1976	1,630	12,590	450	6,220	2,080	18,810
1977	1,590	14,180	260	6,490	1,860	20,660
1978	1,560	15,740	350	6,840	1,910	22,580
1979	1,760	17,510	450	7,280	2,210	24,790
1980	1,990	19,490	200	7,490	2,190	26,980
1981	2,850	22,340	360	7,850	3,210	30,190
1982	2,240	24,580	220	8,070	2,460	32,650
1983	1,850	26,430	430	8,500	2,280	34,930
1984	1,680	28,110	530	9,030	2,210	37,140
1985	2,360	30,470	20	9,050	2,380	39,520
1986	1,840	32,310	100	9,160	1,940	41,460
1987	1,110	33,420	0	9,160	1,110	42,570
1988	1,390	34,800	30	9,190	1,410	43,990
1989	1,090	35,890	0	9,190	1,090	45,070
1990	1,240	37,130	60	9,240	1,290	46,370
1991	1,250	38,370	10	9,250	1,260	47,630
1992	1,360	39,730	20	9,280	1,380	49,000
1993	1,910	41,640	10	9,290	1,920	50,920
1994	1,900	43,540	20	9,310	1,920	52,850
1995	1,850	45,390	0	9,310	1,850	54,700
1996	1,370	46,760	0	9,310	1,370	56,070
1997	1,270	48,030	0	9,310	1,270	57,340
1998	1,530	49,560	0	9,310	1,530	58,870
1999	1,780	51,340	0	9,310	1,780	60,650
Total	51,340		9,310		60,650	

Notes: 1. Conservation forest is as defined by the Comprehensive, Adequate, and Representative (CAR) reserve system included in the Regional Forest Agreement (RFA).

2. Areas differ from earlier reports due to mapping enhancements during the RFA. Areas will continue to be adjusted as ongoing stratification further refines the data.

APPENDIX 3
AREA OF STATE-OWNED CONIFEROUS PLANTATIONS AS AT 31-12-99

Planting Year	Pinus Radiata						Pinaster & Other Species						All Species		
	First Rotation (ha)	Replanted Areas (ha)	Cumulative Total (ha)	First Rotation (ha)	Replanted Areas (ha)	Cumulative Total (ha)	Year Total (ha)	Cumulative Total (ha)							
< 1959	220	(48)	16 (0)	236	(48)	3,356	(57)	32	(0)	3,388	(57)	3,624	(105)	3,624	(105)
1959	27	(2)	0 (0)	263	(50)	245	(0)	0	(0)	3,633	(57)	272	(2)	3,896	(107)
1960	51	(10)	3 (0)	317	(60)	306	(0)	0	(0)	3,939	(57)	360	(10)	4,256	(117)
1961	43	(0)	0 (0)	360	(60)	434	(0)	3	(0)	4,376	(57)	480	(0)	4,736	(117)
1962	92	(5)	0 (0)	452	(65)	412	(0)	0	(0)	4,788	(57)	504	(5)	5,240	(122)
1963	115	(2)	0 (0)	567	(67)	301	(0)	0	(0)	5,089	(57)	416	(2)	5,656	(124)
1964	122	(0)	0 (0)	689	(67)	531	(0)	26	(26)	5,646	(83)	679	(26)	6,335	(150)
1965	103	(0)	13 (0)	805	(67)	433	(0)	3	(0)	6,082	(83)	552	(0)	6,887	(150)
1966	241	(0)	6 (0)	1,052	(67)	705	(0)	2	(0)	6,789	(83)	954	(0)	7,841	(150)
1967	287	(0)	0 (0)	1,339	(67)	911	(0)	0	(0)	7,700	(83)	1,198	(0)	9,039	(150)
1968	329	(0)	16 (0)	1,684	(67)	1,259	(0)	3	(0)	8,962	(83)	1,607	(0)	10,646	(150)
1969	607	(0)	0 (0)	2,291	(67)	1,436	(0)	9	(0)	10,407	(83)	2,052	(0)	12,698	(150)
1970	983	(157)	0 (0)	3,274	(224)	1,192	(1)	19	(0)	11,618	(84)	2,194	(158)	14,892	(308)
1971	864	(28)	1 (0)	4,139	(252)	826	(1)	0	(0)	12,444	(85)	1,691	(29)	16,583	(337)
1972	957	(29)	4 (0)	5,100	(281)	668	(0)	0	(0)	13,112	(85)	1,629	(29)	18,212	(366)
1973	1,173	(102)	51 (0)	6,324	(383)	544	(0)	3	(0)	13,659	(85)	1,771	(102)	19,983	(468)
1974	1,364	(197)	2 (0)	7,690	(580)	321	(0)	0	(0)	13,980	(85)	1,687	(197)	21,670	(665)
1975	1,283	(159)	0 (0)	8,973	(739)	1,210	(0)	0	(0)	15,190	(85)	2,493	(159)	24,163	(824)
1976	1,484	(101)	5 (0)	10,462	(840)	1,122	(0)	1	(0)	16,313	(85)	2,612	(101)	26,775	(925)
1977	1,309	(9)	33 (0)	11,804	(849)	864	(0)	0	(0)	17,177	(85)	2,206	(9)	28,981	(934)
1978	2,004	(8)	17 (0)	13,825	(857)	495	(0)	0	(0)	17,672	(85)	2,516	(8)	31,497	(942)
1979	1,380	(2)	406 (0)	15,611	(859)	515	(0)	0	(0)	18,187	(85)	2,301	(2)	33,798	(944)
1980	1,505	(0)	0 (0)	17,116	(859)	899	(0)	0	(0)	19,086	(85)	2,404	(0)	36,202	(944)
1981	1,353	(0)	114 (0)	18,583	(859)	876	(0)	5	(0)	19,967	(85)	2,348	(0)	38,550	(944)
1982	1,199	(0)	279 (0)	20,061	(859)	463	(0)	5	(0)	20,435	(85)	1,946	(0)	40,496	(944)
1983	1,300	(0)	37 (0)	21,398	(859)	662	(0)	0	(0)	21,097	(85)	1,999	(0)	42,495	(944)
1984	1,823	(0)	3 (0)	23,224	(859)	506	(0)	9	(0)	21,612	(85)	2,341	(0)	44,836	(944)
1985	1,637	(48)	125 (0)	24,986	(907)	478	(0)	2	(0)	22,092	(85)	2,242	(48)	47,078	(992)
1986	1,044	(164)	0 (0)	26,030	(1,071)	481	(0)	0	(0)	22,573	(85)	1,525	(164)	48,603	(1,156)
1987	1,436	(742)	159 (0)	27,625	(1,813)	663	(0)	39	(39)	23,275	(124)	2,297	(781)	50,900	(1,937)
1988	1,655	(1,234)	134 (1)	29,414	(3,048)	194	(0)	1	(0)	23,470	(124)	1,984	(1,235)	52,884	(3,172)
1989	974	(420)	461 (32)	30,849	(3,500)	22	(0)	20	(0)	23,512	(124)	1,477	(452)	54,361	(3,624)
1990	888	(746)	356 (0)	32,093	(4,246)	0	(0)	6	(0)	23,518	(124)	1,250	(746)	55,611	(4,370)
1991	1,278	(1,197)	514 (1)	33,885	(5,444)	4	(0)	19	(0)	23,541	(124)	1,815	(1,198)	57,426	(5,568)
1992	1,784	(1,777)	494 (0)	36,163	(7,221)	118	(118)	345	(0)	24,004	(242)	2,741	(1,895)	60,167	(7,463)
1993	766	(681)	989 (0)	37,918	(7,902)	0	(0)	264	(0)	24,268	(242)	2,019	(681)	62,186	(8,144)
1994	544	(401)	419 (13)	38,881	(8,316)	0	(0)	182	(0)	24,450	(242)	1,145	(414)	63,331	(8,558)
1995	101	(97)	1,110 (1)	40,092	(8,414)	266	(266)	149	(0)	24,865	(508)	1,626	(364)	64,957	(8,922)
1996	16	(9)	1,172 (0)	41,280	(8,423)	609	(609)	30	(0)	25,504	(1,117)	1,827	(618)	66,784	(9,540)
1997	3	(0)	1,152 (0)	42,435	(8,423)	1,122	(1,122)	177	(0)	26,803	(2,239)	2,454	(1,122)	69,238	(10,662)
1998	81	(75)	55 (0)	42,571	(8,498)	1,615	(1,607)	0	(0)	28,418	(3,846)	1,751	(1,682)	70,989	(12,344)
1999	64	(32)	822 (0)	43,457	(8,530)	2,534	(2,530)	184	(0)	31,136	(6,376)	3,604	(2,562)	74,593	(14,906)
Totals	34,489	(8,482)	8,968 (48)	43,457 (8,530)	29,598 (6,311)	1,538 (65)	31,136 (6,376)	74,593 (14,906)	74,593 (14,906)						

Notes: Areas for years prior to 1999 have been adjusted to account for areas harvested, replantings, renegotiations of plantation boundaries and land sales.

Areas shown in brackets have been established under sharefarm agreements. These areas are included in the totals.

592 ha 1st rotation Pinaster assigned to BP Kwinana Refinery not included above.

**APPENDIX 4
AREA OF STATE-MANAGED BROADLEAVED PLANTATIONS
AS AT 31-12-99**

PLANTING YEAR	CALM-OWNED		CALM-MANAGED		ALL SPECIES			
	<i>E. globulus</i> (ha)	Other Eucs. (ha)	Owned by other Govt. <i>E. globulus</i> (ha)	Privately owned <i>E. globulus</i> (ha)	Year Total		Cumulative Total	
					<i>E. globulus</i> (ha)	Other Eucs. (ha)	<i>E. globulus</i> (ha)	Other (ha)
<1987	23 (0)	6,637 (3)	548	0	571	6,637	571	6,637
1987	0 (0)	24 (0)	43	0	43	24	614	6,661
1988	1,392 (1,392)	9 (0)	7	0	1,399	9	2,013	6,670
1989	2,835 (2,818)	2 (0)	24	20	2,879	2	4,892	6,672
1990	294 (247)	25 (0)	58	152	504	25	5,396	6,697
1991	441 (435)	40 (0)	79	281	801	40	6,197	6,737
1992	431 (417)	1 (1)	68	638	1,137	1	7,334	6,738
1993	284 (269)	15 (9)	36	1,368	1,688	15	9,022	6,753
1994	43 (43)	2 (0)	22	1,924	1,989	2	11,011	6,755
1995	6 (3)	0 (0)	3	3,578	3,587	0	14,598	6,755
1996	96 (96)	0 (0)	0	6,318	6,414	0	21,012	6,755
1997	78 (61)	0 (0)	0	6,517	6,595	0	27,607	6,755
1998	134 (108)	0 (0)	0	5,349	5,483	0	33,090	6,755
1999	0 (0)	1 (0)	0	5,797	5,797	1	38,887	6,756
Total	6,057 (5,889)	6,756(13)	888	31,942	38,887	6,756	38,887	6,756

Notes: Areas for years prior to 1999 have been adjusted to account for areas harvested, replantings, renegotiations of plantation boundaries and land sales. Areas shown in brackets have been established under sharefarm agreements. These areas are included in the total.
19.2 ha Sandalwood assigned to BP Kwinana Refinery not included above.
2.5 ha Sandalwood under sharefarming agreements not included above.

**APPENDIX 5
TRENDS IN PRODUCTION OF LOGS BY CALM**

Year Ended 30 June	HARDWOOD			SOFTWOOD			TOTAL		
	Crown Land (m ³)	Private Property (m ³)	Total (m ³)	Crown Land (m ³)	Private Property (m ³)	Total (m ³)	Crown Land (m ³)	Private Property (m ³)	Total (m ³)
1998	1,365,792	3,370	1,369,162	618,162	51,722	669,884	1,983,954	55,092	2,039,046
1999	1,258,683	136	1,258,819	560,816	29,064	589,880	1,819,499	29,200	1,848,699
2000	1,170,290	71,832	1,242,122	547,076	27,070	574,146	1,717,366	98,902	1,816,268

*Includes logs from Crown land sold under Forest Produce Licences.

**APPENDIX 6
TRENDS IN PRODUCTION OF HARDWOOD CHIPLOG BY CALM FROM NATIVE FOREST AND PLANTATIONS**

Year Ended 30 June	CROWN LAND				PRIVATE PROPERTY				TOTAL Produced by CALM (m ³)
	Bolewood + Branchwood				Bolewood + Branchwood				
	Marri	Karri	Other*	Total Crown land	Marri	Karri	Other P. Property	Total P. Property	
(m ³)	(m ³)	(m ³)	(m ³)	(m ³)	(m ³)	(m ³)	(m ³)	(m ³)	
1998	413,327	187,799	10,803	611,929	0	0	3,252	3,252	615,181
1999	317,596	197,005	14,526	529,127	0	0	0	0	529,127
2000	319,259	127,063	221	446,543	0	0	71,832	71,832	518,375

* includes chipwood from inforest chipping.

APPENDIX 7
LOG PRODUCTION BY CALM FROM CROWN LAND & PRIVATE PROPERTY 1999–2000

TYPE	Crown Land		Private Property		Total	
	(m ³)	(tonnes)	(m ³)	(tonnes)	(m ³)	(tonnes)
SAWLOG TIMBER*						
Jarrah	329,868	432,495	-	-	329,868	432,495
Karri	176,921	218,501	-	-	176,921	218,501
Marri	15,015	18,637	-	-	15,015	18,637
Blackbutt	2,073	2,643	-	-	2,073	2,643
Wandoo	414	541	-	-	414	541
Sheoak	2,655	2,655	-	-	2,655	2,655
Other	80	98	-	-	80	98
Total Native Hardwood	527,026	675,570	0	0	527,026	675,570
Globulus	63	75	-	-	63	75
Mallet	260	309	-	-	260	309
Total Plantation Hardwood	323	384	-	-	323	384
Pine Sawlogs and Veneer Logs	298,907	298,907	11,382	11,382	310,289	310,289
TOTAL SAWLOGS	826,256	974,861	11,382	11,382	837,638	986,243
OTHER LOG MATERIAL						
Native Hardwood						
Chiplogs	446,322	548,328	-	-	446,322	548,328
Firewood/charcoal logs	178,819	201,338	-	-	178,819	201,338
other**	16,661	19,954	-	-	16,661	19,954
SubTotal Native Forest/Other	641,802	769,620	0	0	641,802	769,620
Plantation Hardwood						
Chiplogs	221	259	71,832	78,385	72,053	78,644
lother**	918	930	-	-	918	930
SubTotal Hardwood Pltn/Other	1,139	1,189	71,832	78,385	72,971	79,574
Softwood						
Industrial wood***	235,127	244,019	14,041	14,041	249,168	258,060
Pine rounds	13,042	13,042	1,647	1,647	14,689	14,689
SubTotal Softwood/Other	248,169	257,061	15,688	15,688	263,857	272,749
Total Other Material	891,110	1,027,870	87,520	94,073	978,630	1,121,943
TOTAL LOG TIMBER	1,717,366	2,002,731	98,902	105,455	1,816,268	2,108,186

* Sawlog timber from all sources, including veneer, but not including chiplogs, particleboard, industrial wood, firewood, fencing material, poles, piles and minor forest products.

** Includes poles, bridge timbers, burls, chopping logs, mining timber, pegging logs and fencing material.

*** Includes pine woodchips.

Includes logs from Crown land sold under Forest Produce Licences.

Note: Trends in the production of logs are shown in Appendices 5 and 6.

**APPENDIX 8
PRODUCTION OF SAWN TIMBER 1998–1999**

Year ended 30 June	Hardwood m ³	Softwood m ³	Total m ³
1998	238,820	161,860	400,680
1999	242,524	171,240	413,764

Final figures for 1999–2000 not yet available. These will be published in the next annual report.

Note: Total sawn production figures supplied by sawmills include some timber from both CALM produced and privately produced logs, not separately identified. Log production published in the 1999 CALM Annual Report relates to CALM production only.

**APPENDIX 9
OFFENCES UNDER THE CALM ACT AND FOREST MANAGEMENT REGULATIONS 1999–2000**

Charges	Prosecution Recommended	Letter of Warning
CONSERVATION AND LAND MANAGEMENT ACT		
Unlawful taking of forest produce	4	
Willfully obstructing an authorised officer		
Performing a function under the Act	1	
FOREST MANAGEMENT REGULATIONS		
Offences relating to log delivery notes	1	
Offences relating to control and eradication of forest diseases	10	2
Totals	16	2

Note: All prosecution offences are pending and have not been dealt with in court. Letters of warning have been sent and finalised.

**APPENDIX 10
AREA OF PRESCRIBED BURNS FOR ALL CALM REGIONS 1997–98 TO 1999–2000**

	1997–98	1998–99	1999–2000
Indigenous Vegetation - Hand Burning (ha)			
State forest			
• handburns	10,488	10,883	8,722
• clearing burns	-	-	-
National parks	31,683	3,530 ¹	8,039 ³
Nature reserves	7,410	5,279 ¹	6,205 ³
Other Crown land and private property	133	1,000	4,158 ³
Total	49,714	20,692	27,124
Indigenous Vegetation - Aerial Burning (ha)			
State forest	86,637	51,893	73,889
National parks	16,355	1,776	22,712 ⁴
Nature reserves	2,700	3,244	24,083 ⁴
Other Crown land and private property	4,671	91,979 ²	970 ⁴
Total	110,363	148,892	121,654
Indigenous Vegetation - Silviculture Burning (ha)			
• Jarrah	39,842	13,816	38,485
• Karri	926	2,135	1,662
• Wandoo	-	110	-
Total	40,768	16,061	40,147
Softwood Plantation - Burning (ha)			
State forest			
• fuel reduction	4,384	6,896	5,488
• second rotation clearing burns	268	370	556
Total	4,652	7,266	6,044
Grand Total	205,497	192,910	194,968

For data specific to South-West Forest regions see Appendix 13 and 14.

¹ *Does not include buffer strips hand burnt within the Kimberley region.*

² *This consists of aerially ignited buffers and blocks burnt within the Kimberley (87,094 ha) and Swan (4,885 ha) regions.*

³ *Does not include 232km buffer strips hand burnt in the Kimberley region.*

⁴ *Does not include 300km aerially ignited buffers and blocks burnt in the Kimberley region.*

APPENDIX 11
WILDFIRES IN ALL CALM REGIONS 1997-98 TO 1999-2000
NUMBER AND AREA BY LAND CATEGORY
NUMBER AND PER CENT BY CAUSE

All CALM Regions	Number			Area Burnt (ha)		
	1997-98	1998-99	1999-2000	1997-98	1998-99	1999-2000
State forest						
• native hardwood	115	93	141	18,816	2,446	6,770
• softwood plantation	74	108	129	797	32	68
National parks	74	31	70	576,966	251,821 ¹	112,131 ²
Nature reserves	37	29	55	64,311	62,498	214,463 ²
Other CALM reserves	6	12	29	7,036	916	339,856 ²
Other Crown lands	62	89	84	543,790	1,089,750 ¹	167,607 ²
Private property	102	76	81	285,059	27,811	25,989
Total	470	438	589	1,496,775	1,435,274	866,885

CAUSES

	Number			Per cent		
	1997-98	1998-99	1999-2000	1997-98	1998-99	1999-2000
Deliberately/illegally lit	174	215	274	37	49	47
Escapes—CALM burns	25	3	11	5	1	2
Escapes—other burning	44	36	49	9	8	8
Accidental—timber industry	2	2	2	0	0	0
Accidental—other industries	33	17	28	7	4	5
Accidental—recreationists	22	20	14	5	5	2
Lightning	52	54	101	11	12	17
Unknown	102	75	88	22	17	15
Other causes	16	16	22	3	4	4
Total	470	438	589	100	100	100

¹ The majority of area burnt by wildfires during 1998-99 fire season occurred within the Kimberley and Pilbara regions.

² Kimberley Region data derived from DOLA fire scar mapping for the principal wildfire period July to October inclusive.

APPENDIX 12
AREA AND NUMBER OF WILDFIRES FOR ALL CALM REGIONS 1999-2000

Region		State forest native hardwood	State forest softwood plantation	National parks	Nature reserves	Crown lands and private property	Total
Swan	Area (ha)	2,993	34	156	171	1,172	4,526
	Number	83	120	21	13	129	366
Central Forest	Area (ha)	1,080	34	96	2	1,523	2,736
	Number	42	9	5	-	16	72
Southern Forest	Area (ha)	2,684	-	863	-	58	3,604
	Number	13	-	9	-	12	34
Sub Total	Area (ha)	6,757	68	1,115	173	2,753	10,866
	Number	138	129	35	13	157	472
Kimberley	Area (ha)	-	-	99,000	169,700	178,600	447,300 ¹
	Number	-	-	15	17	8	40 ¹
Pilbara	Area (ha)	-	-	8,850	1	336,400	345,251
	Number	-	-	4	1	5	10
Midwest	Area (ha)	-	-	2,817	37,700	8,830	49,347
	Number	-	-	4	4	8	16
Goldfields	Area (ha)	-	-	-	-	-	-
	Number	-	-	-	-	-	-
Wheatbelt	Area (ha)	12	-	-	6,535	5,604	12,150
	Number	1	-	-	9	3	13
South Coast	Area (ha)	1	-	349	354	1,266	1,970
	Number	2	-	12	11	13	38
Sub Total	Area (ha)	13	-	111,016	214,290	530,700	856,018
	Number	3	-	35	42	37	117
Grand Total	Area (ha)	6,770	68	112,131	214,463	533,453	866,885
	Number	141	129	70	55	194	589

¹ Kimberley Region data derived from DOLA fire scar mapping for the principal wildfire period July to October inclusive.

APPENDIX 13
AREAS PRESCRIBED BURNT WITHIN SOUTH-WEST FOREST REGIONS FOR 1999-2000

Dominant purpose	Forest Region	Area (hectares)				Years since last burnt*
		Winter	Spring	Summer	Autumn	
Fuel reduction**	Swan	5,751	29,358	-	6,238	2 - 18
	Central Forest	170	24,820	-	6,627	5 - 24
	Southern Forest	-	15,055	4,003	6,398	5 - 23
		5,921	69,233	4,003	19,263	
Silviculture ***	Swan	-	5,565	-	7,170	6 - 10
	Central Forest	-	21,275	-	1,227	4 - 16
	Southern Forest	20	2,743	785	1,362	5 - 18
		20	29,583	785	9,759	
Nature ****	Swan	191	8,200	-	2,742	7 - 18
	Central Forest	45	-	-	4	15
	Southern Forest	-	183	-	7,583	3 - 16
		236	8,383	-	10,329	
Tourism and Recreation	Swan	100	6,621	-	1,372	2 - 31
	Central Forest	231	1,654	20	-	10 - 15
	Southern Forest	33	4,950	1,950	10	6 - 15
		364	13,225	1,970	1,382	
Grand Total (ha)		6,541	120,424	6,758	40,732	

Notes * Does not include softwood plantation burns.

** Fuel reduction burning also protects nature conservation values.

*** Years since last burnt applies to jarrah silviculture only.

**** Nature conservation burning also provides community protection benefits.

Data supplied pursuant to the Minister's Statement (24.12.92) under the Environmental Protection Act (1986) that the proposed amendments to the 1987 Forest Regional Management Plan and Timber Strategy may proceed.

APPENDIX 14
NUMBER OF PRESCRIBED BURNS CONDUCTED IN NATIVE FORESTS WITHIN SOUTH-WEST FOREST REGIONS IN EACH SEASON FOR VARIOUS PURPOSES IN 1999-2000

Dominant purpose	Forest Region	Winter		Spring		Summer		Autumn		No. of escapes
		Aero	Hand	Aero	Hand	Aero	Hand	Aero	Hand	
Fuel reduction	Swan	7	22*	14	23	-	-	5	9	2
	Central Forest	-	1	10	7	-	-	2	14	1
	Southern Forest	-	-	5	4	6	3	4	15	3
		7	23	29	34	6	3	11	38	6
Silviculture	Swan	-	-	4	3	-	-	5	-	1
	Central Forest	-	-	12	2	-	-	1	-	2
	Southern Forest	-	1	4	26	2	16**	-	25	-
		-	1	20	31	2	16	6	25	3
Nature Conservation	Swan	-	1	2	-	-	-	1	3	-
	Central Forest	-	1	-	-	-	-	-	2	-
	Southern Forest	-	-	-	2	-	-	3	-	-
		-	2	2	2	-	-	4	5	-
Tourism and Recreation	Swan	-	1	2	4	-	-	1	-	-
	Central Forest	-	2	1	3	-	1	-	-	-
	Southern Forest	-	1	2	6	3	3	-	2	2
		-	4	5	13	3	4	1	2	2
Total		7	30	56	80***	11	23	22	70***	11
Aero Burns (% by season)		7		58		12		23		
Hand Burns (% by season)			15		40		11		34	

* Predominantly pine plantation burns during winter months.

** Predominantly karri regeneration burns during summer months.

*** Increased number of burn ignitions due to greater burn complexity.

Data supplied pursuant to the Minister's Statement (24.12.92) under the Environmental Protection Act (1986) that the proposed amendments to the 1987 Forest Regional Management Plan and Timber Strategy may proceed.

**APPENDIX 15
WILDLIFE LICENCES ISSUED IN 1999–2000**

Fauna Licences	Licences Issued	Fauna Licences (Cont.)	Licences Issued
SCIENTIFIC		CROCODILES	
Scientific Collection (Reg 17)	326	Crocodile Farming (Reg 14)	2
Bird/Bat Banding (Reg 23)	137	Skin Dealing (Reg 10)	1
		Processing (Reg 7)	2
EDUCATION & PUBLIC (to take) (Reg 15)		KANGAROO	
Marine interaction	247	Take Kangaroos for sale (Reg 6)	253
Other	189	Deal in carcasses (Reg 8)	26
		Skin Dealing (Reg 10)	20
EDUCATION & PUBLIC (to hold) (Reg 16)	140	Processing (Reg 7)	22
		EXPORTS INTERSTATE	
AVIAN FAUNA		Skins of fauna (or other dead fauna)	37
Keep & breed in captivity (Reg 12)	3,819	Fauna (live)	212
Deal (Reg 13)	55		249
Breed for Commercial Purposes (Reg 14)	1	EXPORT OVERSEAS	
Trap (Reg 11)	4	Skins of fauna (or other dead fauna) from WA	115
		Emu eggs or products (personal items) from WA	8
		Fauna (avian) from WA (live)	3
			126
		IMPORTS INTERSTATE	
		Skins of fauna (or other dead fauna) into WA	0
		Australian fauna (live)	399
		Live exotic birds and other animals	194
			593
		Total Fauna Licences	6,386
		Flora Licences	
		Commercial Purposes	538
		Commercial Producers	414
		Scientific/Prescribed Purposes	1,023
		Permits To Take Declared Rare Flora	124
			2,099
SPECIES TRAPPED COMMERCIALY	Number		
Twenty-eight Parrot	520		
Red-capped Parrot	289		
Western Rosella	304		
FAUNA			
Keep in Captivity (Reg 12A)	128		
EMUS			
Emu Farming (Reg 14)	31		
Dealing (Reg 8)	3		
Dealing (Emu eggshells Reg 13)	9		
Processing (Reg 7)	3		

APPENDIX 16
SUMMARY OF DAMAGE LICENCES AND DANGEROUS FAUNA LICENCES ISSUED IN 1999–2000

	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
WATERFOWL			OTHER AVIAN FAUNA		
Little Pied Cormorant	5	35 + scare only	Australian Hobby	1	trap and relocate
Maned Geese	18	261 + scare/trap and relocate	Australian Raven	30	189 + scare/trap and relocate
Mountain Duck	1	10	Brown Falcon	1	trap and relocate
Pacific Black Duck	2	40	Brown Goshawk	2	trap and relocate
Maggie Geese	1	scare only	Collared Sparrowhawk	1	trap and relocate
Brolga	1	scare only	Corella LB	4	400
			Little Corella	7	1,310 + scare only
EMU	37	1,936	Galah	9	1,660
			Grey Currawong	2	scare only
MAMMALS			Maggie Lark	1	trap and relocate
Black Footed Rock Wallaby	1	scare	Peregrine Falcon	1	trap and relocate
Grey Kangaroo	518	47,795	Red-capped Parrot	4	140
Red Kangaroo	10	3,477	Sacred Ibis	2	scare only
Euro	18	3,501	Silver Eye	1	20
			Silver Gull	3	1,050
DANGEROUS FAUNA			28's	22	725
Kookaburra	1	2	Wedge Tailed Eagles	1	1
Maggie	112	134	Welcome Swallow	5	trap and relocate
Saltwater Crocodile	6	1 + trap and relocate			
Western Grey Kangaroo	7	26			
Banded Lapwing	1	50			

Note: *Banded Lapwing represented a serious bird strike hazard at Jandakot Airport. Landscape design was not an option and scaring only was unsuccessful.*

APPENDIX 17
OFFENCES UNDER THE WILDLIFE CONSERVATION ACT AND REGULATIONS
1999–2000

Charges	Recomm'd Charges	Convic- tions	Fines \$	Costs \$	Dismissed	Letter of Warning	No. Further Action	Pending
WILDLIFE CONSERVATION ACT								
Use of illegal devices in taking fauna.	3	0	0	0	0	0	1	2
Illegal taking or possession of protected fauna.	56	12	4,000.00	484.55	0	19	4	21
Illegal importation, selling or taking for sale of fauna.	3	0	0	0	0	2	0	1
Offences relating to the taking or possession of rare or threatened fauna.	21	2	1,250.00	86.55	0	12	6	1
Illegal taking of protected flora.	54	10	5,000.00	1,086.50	0	17	2	25
Offences relating to the sale of protected flora.	18	2	750.00	170.00	0	5	1	10
Taking declared rare flora without the Minister's consent.	29	0	0	0	0	17	11	1
Offences against wildlife officers.	9	0	0	0	0	1	1	7
Failing to comply with licence conditions.	28	0	0	0	0	25	2	1
WILDLIFE CONSERVATION REGULATIONS								
Offences relating to the acquisition, possession, control and disposal of fauna.	20	2	450.00	115.40	0	11	3	4
Offences relating to activities on Nature Reserves.	31	0	0	0	0	5	7	19
Totals	272	28	\$11,450.00	\$1,943.00	0	114	38	92

APPENDIX 18 PUBLICATIONS PRODUCED IN 1999–2000

GENERAL

Analysis of Public Submissions Stirling Range and Porogurup National Park Management Plan
 Annual Report of the Department of Conservation and Land Management 1998–1999
CALM Book News (leaflet, 4 issues)
 CALM Briefing Paper
 CALM Bush Ranger (leaflet)
 CALM Bush Ranger CD-ROM
 CALM Bush Ranger Manual, Vol 1-3
 CALM Mission Statement (Poster)
CALM News (newspaper, 6 issues)
 CALM Training and Development Manual 2000
 Conservation and Land Management (magpaper)
 Jurabi and Bundegi Murion Island Management Plan
LANDSCOPE Calendar 2001
LANDSCOPE Expeditions 2000 (Catalogue)
LANDSCOPE Expeditions Program
LANDSCOPE Magazine (4 issues)
 Marine Parks and Reserves Scientific Advisory Committee Annual Report 98-99
 National Parks and Nature Conservation Authority Annual Report 98-99
 Our Observatory (leaflet)
 Sensationally Summer Nights (leaflet)
 Serpentine National Park Management Plan
 Shark Bay Terrestrial Reserves Management Plan
 Stars and Telescopes (leaflet)
 Stirling Range and Porogurup National Park Management Plan
 Swan Estuary Reserves Management Plan
 Wedge and Grey Management Plan
 Yellagonga Regional Park Draft Management Plan

NATURE CONSERVATION

A Representative Marine Reserve System (report)
 A Seasoned Performance – *LANDSCOPE* extract (leaflet)
 Aviary Bird Information sheet 1-97
 Bouncing Back – *LANDSCOPE* extract (leaflet)
 Broome and Beyond (book)
 CALM Science Strategic Plan 1999-2000
 CALM Science Supplement
 Catchment Carers Trail 2000 (leaflet)
 Common Trees of the South West Forests – Bush Book
 Critically Endangered Species (3 posters)
 Discovering the Swan River – Discovery Book
 Dongolocking (report)
 Experiencing Whale Sharks (leaflet)
 First Aid for Wildlife (leaflet)
 Gascoyne Hinterland – *LANDSCOPE* extract (leaflet)
 How to Manage Your Wandoo Woodlands (book)
 Jeemuluk the Noisy Scrub-Bird (book)
 Karakamia Wildlife Sanctuary – *LANDSCOPE* extract (leaflet)
 Land for Wildlife (leaflet)
 Living With Possums (leaflet)
 Managing your Bushland (book)
 Marine Conservation Matters (2 Newsletters)
 Name that Plant – *LANDSCOPE* extract (leaflet)
 No Take Areas in Marine Management (leaflet)
 Nuytsia Vol 13 No 1 (journal)
 Pilbara Marine Conservation Reserves (flyer)
 School of Wood Graduates Catalogue 99
 Sea Lions and Fur Seals (leaflet)

State Salinity Council July Newsletter
 The Hills Forest (poster)
 The Wildflower Killer – You Can Help (leaflet)
 Tuart Trees Deaths/Crown Decline (leaflet)
 Western Australian Roadside Land (book)
 Western Shield Action Pack (school kit)
 Western Wildlife Newsletter (4 issues)
 Whale Watching (leaflet)
 Wildlife Carers List 1999 (booklet)
 Wildlife Notes (various leaflets)
 Wildlife Notes No 6 "Encouraging Possums" (leaflet)
 Your Land – Its Future (leaflet)

TOURISM AND RECREATION

A Guide to Karri Country (magpaper)
 Avon Valley National Park – Avon Descent (leaflet)
 Badgingarra National Park Nature Trail (leaflet)
 Coastal Plain Walk Trail: Map and Guide (leaflet)
 Cruising the Wandjina Coast (leaflet)
 Developing Eco-Tours (book)
 Dryandra Woodland Ecology (leaflet)
 Dryandra Woodland Ecology (poster)
 Esperance National Parks (leaflet)
 Family Walks in Perth Outdoors (book)
 Fremantle Aboriginal Heritage Walking Tour (leaflet)
 Go Bush Autumn 2000 (leaflet)
 Go Bush Spring 99 (leaflet)
 Hills Forest Aboriginal Culture – Certificate of Involvement
 Hills Forest Festival of Animals (leaflet)
 Kalbarri National Park (leaflet)
 Karijini National Park (leaflet)
 Kimberley Tourism Manual
 Lane-Poole Reserve (magpaper)
 Leeuwin-Naturaliste National Park Car Stickers
 Marmion Marine Park Sanctuary Zone (leaflet)
 Marmion Marine Park Sanctuary Zone (poster)
 Monkey Mia Dolphin Sanctuary (leaflet)
 Montebello/Barrow Islands Regional Perspective 2000
 Nambung National Park (leaflet)
 National Park "Your Ticket to Nature" Passes
 National Park Fact Sheet
 National Park Visitor Guide (leaflet)
 Parry Lagoons Nature Reserve (leaflet)
 Penguin Island and Shoalwater Marine Park (leaflet)
 Pilbara Region Marine Park (leaflet)
 Port Kennedy Scientific Park (leaflet)
 Purnululu National Park (leaflet)
 Serpentine National Park (leaflet)
 Stirling Range and Porogurup National Park (leaflet)
 Tour Operator Handbook
 Touring WA Newsletter (3 leaflets)
 Whale Shark Experience Pass
 Wilderness Survival Card
 Yanchep National Park (leaflet)
 Yanchep National Park Display
 Yanchep National Park Visitor Guide (leaflet)

FOREST RESOURCES MANAGEMENT

A Crop of Maritime Pines (booklet)
 A Crop of Trees – *LANDSCOPE* extract (leaflet)
 A New Direction in Forest Conservation (booklet)

Arbor Day Poster 2000
 Discovering the Dwellingup Forest Heritage Centre (leaflet)
 Farming Carbon – LANDSCOPE extract (leaflet)
 Goldfields Timber Research Project
 Maritime Pine (flyer)
 Regional Forest Agreement offers Balance (leaflet)
 Sandalwood Information Sheet No 2
 Sandalwood Newsletter
 Seed Price List (booklet)
 Sharefarm and Tree Compendium – LANDSCOPE extract (leaflet)
 Sustainable Forest Management – Independent Review – Public Submissions (report)
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