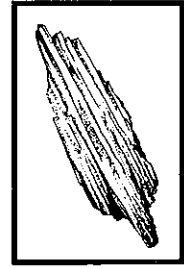
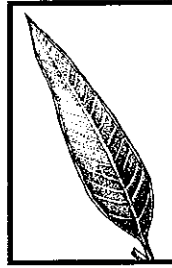
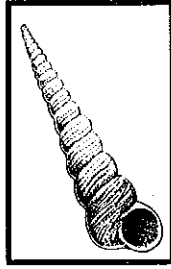


ANNUAL REPORT

Department of Conservation & Land Management

1 July 1988 - 30 June 1989



ANNUAL REPORT

1 July 1988 - 30 June 1989



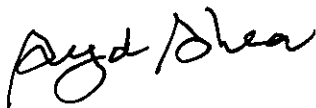
HON MINISTER FOR CONSERVATION AND LAND MANAGEMENT

IN accordance with Section 62 of the Financial Administration and Audit Act 1985, I submit for your information and presentation to Parliament the Annual Reports of the Department of Conservation and Land Management and the Roadside Vegetation Conservation Committee, for the year ending 30 June 1989.

Included in this report are performance indicators by which the effectiveness and efficiency of some departmental operations can be measured. These are as prescribed in the Financial Administration and Audit Act.

Development of these indicators to take account of all primary and supporting programs is continuing.

Meanwhile, this Report contains general statistics, tables and appendices which convey the Department's performance for the year and provide a comparison against previous years.



Syd Shea
EXECUTIVE DIRECTOR

This document contains the annual reports of the:

- Department of Conservation and Land Management
- Roadside Conservation Committee

Address: Department of Conservation and Land Management
50 Hayman Road
COMO WA 6152
Telephone: 367 0333

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EXECUTIVE DIRECTOR'S REVIEW

In each year since CALM's formation in 1985, the Department has seen a major increase in its responsibilities. This year, there has been an even greater workload in the Department, partly as a consequence of the acquisition of more conservation lands and new projects, such as the Tree Trust, but also because of the exponential increase in public interest in environmental matters.

Inevitably, because of this increased interest, throughout the State CALM has been subjected to considerable scrutiny. Unfortunately, because of the nature of the debate on "the environment", often the Department has found itself in controversial situations.

CALM's charter is to manage the land and wildlife of the State on behalf of the public. What is not always recognised is that the public is composed of many different constituencies each with their particular interests and demands. Often these constituencies are in conflict.

The Department has, with the support of the Minister, adopted a philosophy that it should vigorously pursue the issues in a public forum so that at least the public has the best information upon which to make decisions. While it would undoubtedly be less stressful on the Department to adopt a 'bunker' mentality, I believe if we were to do so, we would not be fulfilling our obligations to the community. Nonetheless, by adopting a deliberate policy of publicly addressing issues, CALM inevitably receives considerable criticism. As I have mentioned in my previous Review, I have some concern about unfair, and often deliberate manipulation, of issues by some members of the media. But I am extremely pleased and proud of the response of the Department, at all levels, to the policy to take the message of the Department's activities to the public.

The formation of CALM involved considerable trauma and consequently there was a deliberate policy to minimise further changes until the Department settled down. This year, we have completed major reviews of the functions, structure and organisation of the Department and it was decided that the Department was mature enough to accept a change in its structure organisations and priorities. I am very pleased to record the very positive approach of the staff to these necessary changes.

I am confident the Department has been able to fulfil all its functions despite its increased workload and despite the controversies that often rage in the press about our activities. I am reluctant to single out any particular achievement, however I would be remiss if I did not highlight the fact that the Department, in association with farmers, community groups and contractors, has planted more than 13 million trees. This is the largest tree planting program in Western Australia's history. Practically every person in CALM, in one form or another, is responsible for the success of the program.

Finally, I take this opportunity to thank all members of the Department for their excellent contribution over the past year. I know that, in many situations, the workload has resulted in excessive demands on staff and families.

GENERAL INFORMATION

THE Department of Conservation and Land Management and three statutory controlling bodies were established under the Conservation and Land Management Act 1984. The controlling bodies are the Lands and Forest Commission, the National Parks and Nature Conservation Authority and the Forest Production Council. All are responsible to the Minister for Conservation and Land Management.

Functions under the Legislation

The Conservation and Land Management Act specifies a series of functions for the three controlling bodies¹ and the Department.

In brief the functions of the Lands and Forest Commission, in which State forests and timber reserves are vested, are:-

- consider changes to the purpose, boundary and area of vested lands;
- develop policies to achieve or promote the multiple use and sustained yield of the indigenous forest resource for the satisfaction of long term social and economic needs, and for exotic species, the optimum yield in production;
- process and monitor land management plans for vested areas;
- advise the Minister for Conservation and Land Management when requested;
- provide advice to the public on matters related to vested lands;
- instigate policy research.

The functions of the National Parks and Nature Conservation Authority, in which national parks, nature reserves, marine reserves and other lands are vested, are:-

- consider changes to the purpose, boundary and area of vested lands;
- develop policies for the preservation and enjoyment of the natural environment and the promotion of appreciation of flora and fauna, consistent with the essential purposes of vested lands;
- process and monitor land management plans for vested lands;
- advise the Minister on the development of policies for the conservation and management of flora and fauna when requested;
- provide advice to the public on matters related to vested lands;
- instigate appropriate research.

The Forest Production Council's functions are to advise the Minister on:-

- matters relevant to production from State forests and timber reserves;
- improvement in production consistent with maintenance of other forest values;

¹While the functions of the three controlling bodies are reported here, their activities and achievements for 1988/89 are described in a separate report.

- improvement in use, processing and marketing of forest produce;
- research to achieve multiple use and sustained yield of the forest resource;
- contents of proposed management plans.

The functions of the Department of Conservation and Land Management are:-

- manage State forests, national parks, nature reserves and other lands and the associated forest produce, fauna and flora;
- assist the Commission, Authority and Council in their functions;
- encourage the development of forest production requirements;
- conserve and protect flora and fauna, and administer the Wildlife Conservation Act;
- carry out research into land management, and conservation and protection of flora and fauna;
- advise and cooperate with others in the public interest;
- advise the Minister on land matters.

The Conservation and Land Management Amendment Act, No. 76 of 1988 included powers relating to marine reserves, tree plantations and timber sharefarming agreements.

Further amendments to the Conservation and Land Management Act have been proposed and submitted for consideration. These amendments will primarily seek to apply integrated management over the broad estate managed by the Department.

In its nature conservation functions the Department administers the Wildlife Conservation Act 1950 and associated regulations. This Act applies to any indigenous or migratory fauna and any flora native to the State, whether found on Crown land, private land or territorial waters of the Commonwealth. Its essential purpose is the conservation of flora and fauna in the State.

Although the Forests Act 1918 and the National Parks Authority Act 1976 were repealed to make way for the Conservation and Land Management Act 1984, the Forests regulations and the National Parks regulations remain in force until replaced by new regulations.

Associated with the passage of the Conservation and Land Management Act in 1984 were appropriate amendments to the Wildlife Conservation Act 1950, the Land Act 1933, the Bush Fires Act 1954, the Agriculture and Related Resources Protection Act 1976, the Fisheries Act 1905, and the Public Works Act 1902.

The Department also administers the following Acts:

Timber Industry Regulation Act 1926, which empowers it to record, investigate and secure safe working practices in the bush and mill operations of the timber industry.

Sandalwood Act 1929, which gives control over sandalwood gathering via a fixed quota, licensing and limiting collection of sandalwood on private property.

East Perth Cemeteries Act 1932, for management and control of the disused cemeteries which are now an historical precinct.

Other Legislation

The Minister for Conservation and Land Management has a specific role under Section 24 of the Mining Act 1978. Applications for mining tenements on any national parks, A Class nature reserves, State forest, CALM Act timber reserves and any A Class reserves managed by the Department within the South-West Land Division and the Shires of Esperance and Ravensthorpe must be referred by the Minister for Mines for concurrence by the Minister for CALM. Applications for mining tenements on any other reserves managed by the Department must be referred by the Minister for Mines for the recommendation of the Minister for CALM.

The Department is involved in drawing up conditions for mining activity.

Other acts under which the Department has specific responsibilities are:

- Alumina Refinery Agreement Act, 1961
- Alumina Refinery (Pinjarra) Agreement Act, 1969
- Alumina Refinery (Wagerup) Agreement and Acts Amendment Act, 1978
- Alumina Refinery (Worsley) Agreement Act Amendment Act, 1978
- Bush Fires Act, 1954
- Collie Coal (Griffin) Agreement Act, 1979
- Collie Coal (Western Collieries) Agreement Act, 1979
- Fisheries Act, 1905
- Silicon (Picton) Agreement Act, 1987
- Wesply (Dardanup) Agreement Authorisation Act, 1975
- Wood Chipping Industry Agreement Act, 1969

Other acts which affect the Department's land management responsibilities are:

- Aboriginal Heritage Act, 1972
- Aerial Spraying Control Act, 1966
- Agriculture and Related Resources Protection Act, 1976
- Agriculture Protection Board Act, 1950
- Control of Vehicles (Off Road Areas) Act, 1978
- Country Areas Water Supply Act, 1947
- Environmental Protection Act, 1986
- Land Act, 1933
- Local Government Act, 1960
- Main Roads Act, 1930
- Metropolitan Water Supply Sewerage and Drainage Act, 1909
- Mineral Sands (Western Titanium) Agreement Act, 1975
- Petroleum Act, 1967
- Petroleum Pipelines Act, 1969
- Rights in Water and Irrigation Act 1914
- Soil and Land Conservation Act, 1945
- State Energy Commission Act, 1979
- Town Planning and Development Act, 1928

Commonwealth Acts relevant to the Department's activities:

- Arts, Territories and Environment Legislation Amendment Act, 1982
- Australian Heritage Commission Act, 1975
- Conservation Legislation Amendment Act, 1988
- National Parks & Wildlife Conservation Act, 1975
- Whale Protection Act, 1980

Wildlife Protection (Regulation of Exports and Imports) Act, 1982
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.

Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Convention for the Protection of the World Cultural and Natural Heritage.

Ministerial Responsibility

The Department is responsible to the Minister for Conservation and Land Management.

CALM's Mission

Western Australia has a beautiful and diverse natural environment which provides material, aesthetic and spiritual benefits. The natural environment is an essential component of the quality of life for West Australians. The statement of mission adopted for the Department of Conservation and Land Management is therefore:-

TO CONSERVE WESTERN AUSTRALIA'S WILDLIFE AND MANAGE LANDS AND WATERS ENTRUSTED TO THE DEPARTMENT FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.

Primary objectives are:

Management

To protect, restore and enhance the value of resources entrusted to the Department so as to meet, as far as possible, the diverse expectations of the community.

Conservation

To conserve the indigenous plant and animal species and environmental processes in natural habitats throughout the State.

Production

To provide and regulate the supply of those renewable resources that Government decides should be used, on a sustained yield basis for the satisfaction of long-term social and economic needs, and in a manner that minimises impact on other values.

Recreation

To facilitate the public enjoyment of the natural attributes of public lands and reserved waters in a manner that does not compromise conservation and other management objectives.

Knowledge

To seek a better understanding of the natural environment and to promote awareness and appreciation of its values.

To achieve the primary objectives the Department will:

Provide an effective administrative framework for the conservation of wildlife throughout the State and the management of lands, waters and natural resources entrusted to the Department.

This will involve:

- The maintenance of a corporate executive to establish, review and refine departmental aims, policies and priorities; to monitor the implementation of management plans and to see that goals are achieved.
- The maintenance of operations staff to implement policies and management plans and to set up efficient financial, administrative and management systems.
- The provision of a Research Division to provide the scientific basis for conservation and land management, and provide scientific and environmental monitoring and advice to managers.
- The establishment of a system of regional and district management, where staff convert plans and policies into work programs, carry out the work, provide feedback on progress and policy and planning needs, and maintain close, constructive relationships with local communities.
- The maintenance of supporting or service branches to prepare management plans, to set standards and to assist with the implementation of research findings, new technology, and improved methods of conservation and land management.
- The development and maintenance of corporate information systems to facilitate the sharing of data, efficient communication and decision making.
- The recruitment and maintenance of a well motivated and competent staff.
- The provision of programs for staff, health, safety development and training.
- Ensuring liaison, cooperation and co-ordination with other agencies or people with a function or interest in conservation and land management.
- The maintenance of national and international liaison and cooperation in the field of nature conservation and the management of renewable natural resources.

Establish and maintain a system of secure reserves which protect viable representative samples of all the State's natural ecosystems and species, both terrestrial and aquatic, as well as areas suitable for recreation and the production of renewable natural resources.

This will involve:

- The development and maintenance, in conjunction with other government instrumentalities and the public, of a comprehensive data base on the occurrence and conservation status of the State's ecosystems and species.

- The maintenance of a representative committee to evaluate existing nature conservation reserves and to recommend additions, deletions or exchanges.
- Categorising lands and waters entrusted to the Department into priority use zones and applying the principle of multiple use to provide for the needs of nature conservation, recreation and production.
- Protecting ecosystems, landscape and the cultural heritage on lands and waters entrusted to the Department from damage by fire, disease, chemicals, grazing, feral animals and people.
- Developing prescriptions for control of disturbance and for rehabilitation of damaged forests, parks and reserves.
- Opposing the incompatible use of lands and waters entrusted to the Department and opposing the release of such lands and waters for other purposes.

Ensure that conservation and land management is carried out according to sound, well-researched scientific principles.

This will involve:

- Carrying out, encouraging, supporting and publishing scientific, economic and social research relevant to the Department's needs.
- Establishing long-term monitoring of ecosystems and individual species, and of recreation requirements and effects.
- Developing and maintaining inventories of biological resources on lands and waters entrusted to the Department, and where appropriate, Statewide.
- Liaising with other research and land management organisations to define, prioritise and co-ordinate research programs and publishing results.
- Ensuring the efficient transmission of research findings into operational practice.

Provide public education and information programs designed to increase community understanding of and support for nature conservation and natural land management.

This will involve:

- The establishment of interpretation centres with appropriate facilities for education and activity programs.
- The dissemination of relevant information.
- The promotion of direct interaction between staff and the public.
- The encouragement and facilitation of publicity for nature conservation and natural resource management.
- The establishment and maintenance of demonstration areas (e.g. arboreta and trial plots) to demonstrate the performance of trees and other plants to rural communities.

- The promotion and facilitation of the use of native trees and plants to combat land degradation, create wildlife habitat, conserve water resources and enhance the human environment.

Encourage and assist the public to participate in the development of conservation and land management policies and the implementation of management and research programs.

This will involve:

- The use of formal processes which involve the:
 - Lands and Forest Commission;
 - National Parks and Nature Conservation Authority;
 - Forest Production Council; and
 - public submissions to the planning process, as described in the Conservation and Land Management Act, 1984.
- The establishment of consultative and advisory committees, when appropriate, to facilitate an exchange of information between organisations and public groups and to provide advice to the Executive Director.
- The formation of 'friends' groups and similar associations and the organisation of voluntary assistance programs.
- The training of staff in the objectives and techniques of public participation.

Prepare and implement management plans for lands and waters entrusted to the Department.

This will involve:

- The establishment of priorities for management plan preparation according to set criteria.
- Restricting procedures to necessary operations to maintain public safety and the status quo of area management where no management plan exists.

Prepare and implement wildlife management programs for wildlife throughout the State.

This will involve:

- Providing special protection for declared rare (threatened) flora by regulating use of their habitat.
- Managing rare animal populations to ensure their survival.

Prepare and implement strategies to promote and encourage development of the forest production requirements of the State.

This will involve:

- Continuous review of supply and demand data for forest products.
- The development of cost effective procedures for growing, processing and marketing timber at the level sustainable under sound forest management.
- Establishment of pine forests to supplement available hardwood supplies when necessary.

- Intensive management of the highest quality hardwood forest to maximise timber production.
- Re-forestation of cleared lands with hardwood forests to supplement production from native forests and to assist in soil and water conservation.

Manage approved commercial operations on renewable natural resources according to the following principles:

- resources are managed to ensure their long-term conservation;
- a fair and equitable return is received by the State for the resource;
- wherever possible the operation is commercially viable;
- the resource is managed to minimise waste.

Prepare and implement strategies to promote and encourage recreational use of lands and waters entrusted to the Department in ways which:

- are consistent with the purpose of the area;
- produce a return to the Department for services and amenities provided;
- provide an equitable allocation of land and resources where there is competition between user groups;
- allow for commercial operators to provide services where appropriate.

Using expertise in conservation, land management and associated training, provide skills and services to other organisations and groups.

Administrative Structure

The Department is headed by an Executive Director who is appointed for a five-year term. Besides being the permanent head the Executive Director is a member of the Lands and Forest Commission, an ex-officio member of the National Parks and Nature Conservation Authority and Chairman of the Forest Production Council.

The management philosophy adopted by the Department is one of devolution of authority and recognition, development and utilisation of the skills of staff. Given requisite ability there should be no impediment to the progress of an individual in the organisation.

The Department operates a successful corporate executive known as the Policy Directorate. The diverse nature of functions makes this approach essential. The directorate comprises the Executive Director, General Manager, the Policy Directors and Divisional Managers. Regional, branch and other specialist officers are involved according to the relevance of matters discussed.

CALM is extensively regionalised in a way which provides the benefits of small autonomous organisations in close proximity to their area of operations while providing access to services that are best provided by a larger integrated organisation. Regions are responsible for the management of all departmental lands and waters and for conservation of flora and fauna within their boundaries. According to the intensity of activity regions are subdivided into districts.

Accordingly, the Department is spread over many locations. In the country there are 10 regional, 19 district and 4 sub. district offices. Figure 1 shows CALM regional boundaries and the location of regional and district offices. Within the regions National Park Rangers are at 29 other locations, a District Wildlife Officer at one other.

In the Metropolitan Area, the Policy Directorate and the Economics and Public Affairs branches are at Crawley responding to the Executive Director. The General Manager and four Divisional Managers function from the Como establishment where several of the supporting or specialist branches are located. There are also 2 branches at Canning Bridge with the Metropolitan Region.

Research is conducted at 2 metropolitan centres. There are seven others in country areas, usually associated with regional offices.

The detailed structure of divisions, branches and regions as at 30 June 1989 is shown in Figure 2. The names and qualifications of the officers occupying managerial positions are shown in the table following.

Responsibilities of Branches and Regions

The essential tasks for branches and regions are as follows:

Economics Branch - advises the Executive Director on economics, socio-economics and long-term strategic management planning across all functions and activities of the Department. The work directly influences the magnitude of the Department's revenues and expenditures, and the management of forests and other resources.

Public Affairs Branch - produces publications, displays, media releases and audio-visuals.

Internal Audit - responds directly to the General Manager, providing regular management oriented appraisals of operations and activities within the Department.

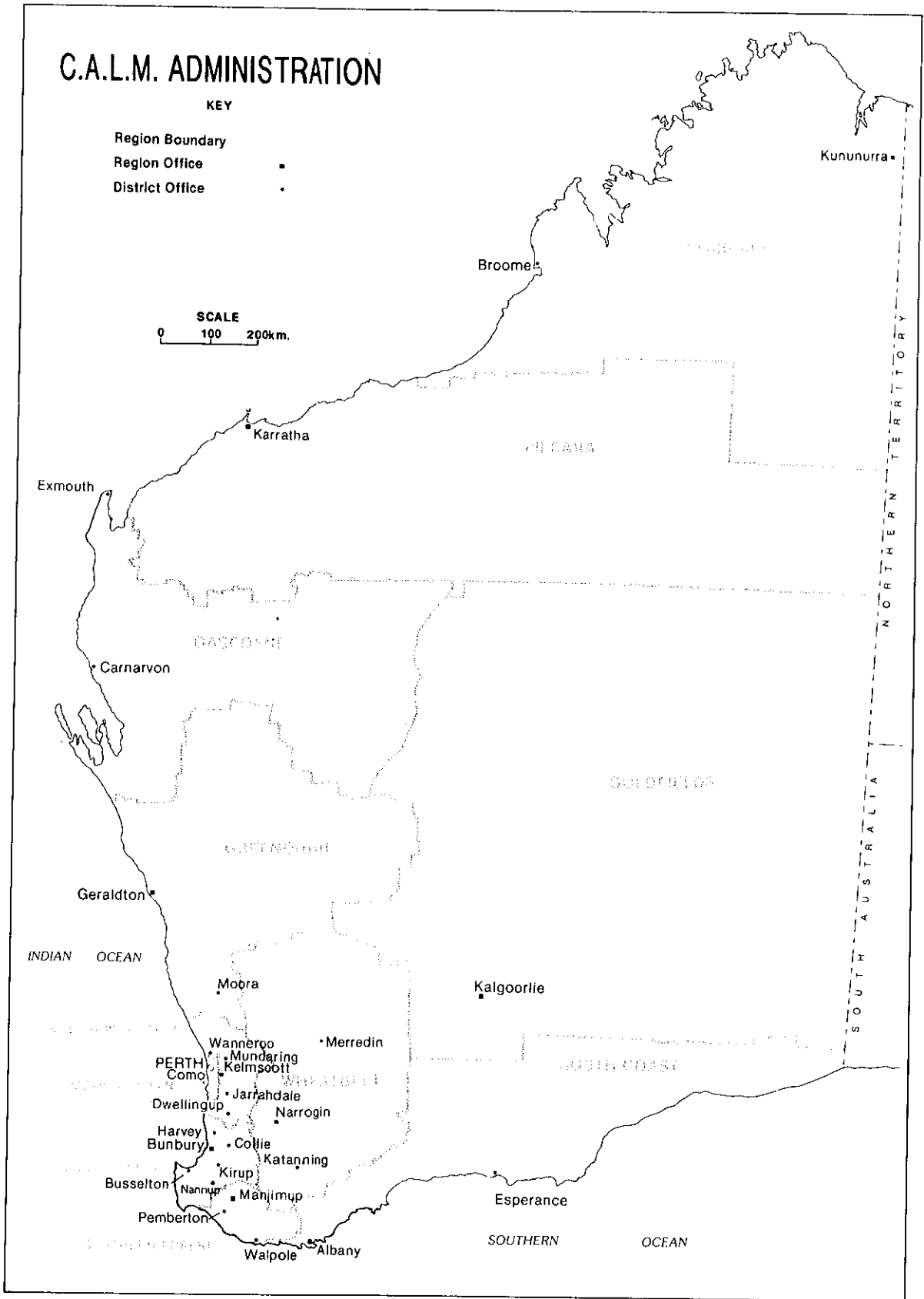


Figure 1

Research - there are 12 major research programs designed to provide specialised information which will support conservation of flora and fauna, land and resource management planning in discrete areas of the CALM estate. In particular, issue plans and wildlife management programs are based on research findings which are related to operational practice.

Planning Branch - prepares management plans in draft and final form according to requirements of the Act and provides planning advice.

Recreation, Landscape and Community Education Branch - provides landscape planning and design assistance, recreation planning research and management advice, co ordinates interpretation and community education programs.

Fire Protection Branch - prepares fire protection and suppression plans, provides detection and aerial prescribed burning services, and conducts fire training courses.

Environmental Protection Branch - prepares guidelines and procedures for protection from dieback, weeds and vermin, evaluates mining proposals, and advises on implementation and rehabilitation of CALM land.

Information Resources Branch - co-ordinates the management of the Department's corporate information resources; facilitates its computerisation and flow throughout the Department; provides and maintains a digital computing facility with networking to major country locations; provides management maps and a specialist mapping service for operational and public information requirements.

Timber Production Branch - controls and monitors the harvesting of timber and collection of royalties; advises on timber quality, wood technology and related matters.

Silviculture Branch - develops silvicultural guidelines and practices, advises on their implementation and manages nurseries and seed supplies.

Inventory Branch - services management operations of the Department with resource information and plans for forest production, disease protection; develops computer systems.

Wildlife and Land Administration Branch - administers land tenure and transactions, wildlife licences and permits, offences, and mining applications on CALM lands.

Human Resources Branch - provides human resource management through co-ordination of selection and training of staff, liaison with unions and industrial associations, conducting a safety, health and welfare program, and maintaining staff records.

Engineering Services Branch - administers the vehicle fleet, houses and buildings, and stores, and consults on the engineering of various projects.

Finance Branch - administers finances and maintains accounting systems and procedures.

Wildlife Protection Branch - protects native flora and fauna throughout the State and its waters, investigates and reports on compliance with the Wildlife Conservation Act and other related Acts and prosecutes as necessary, provides information and advice on wildlife protection and management.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
ORGANISATIONAL STRUCTURE AS AT JUNE 30, 1989**

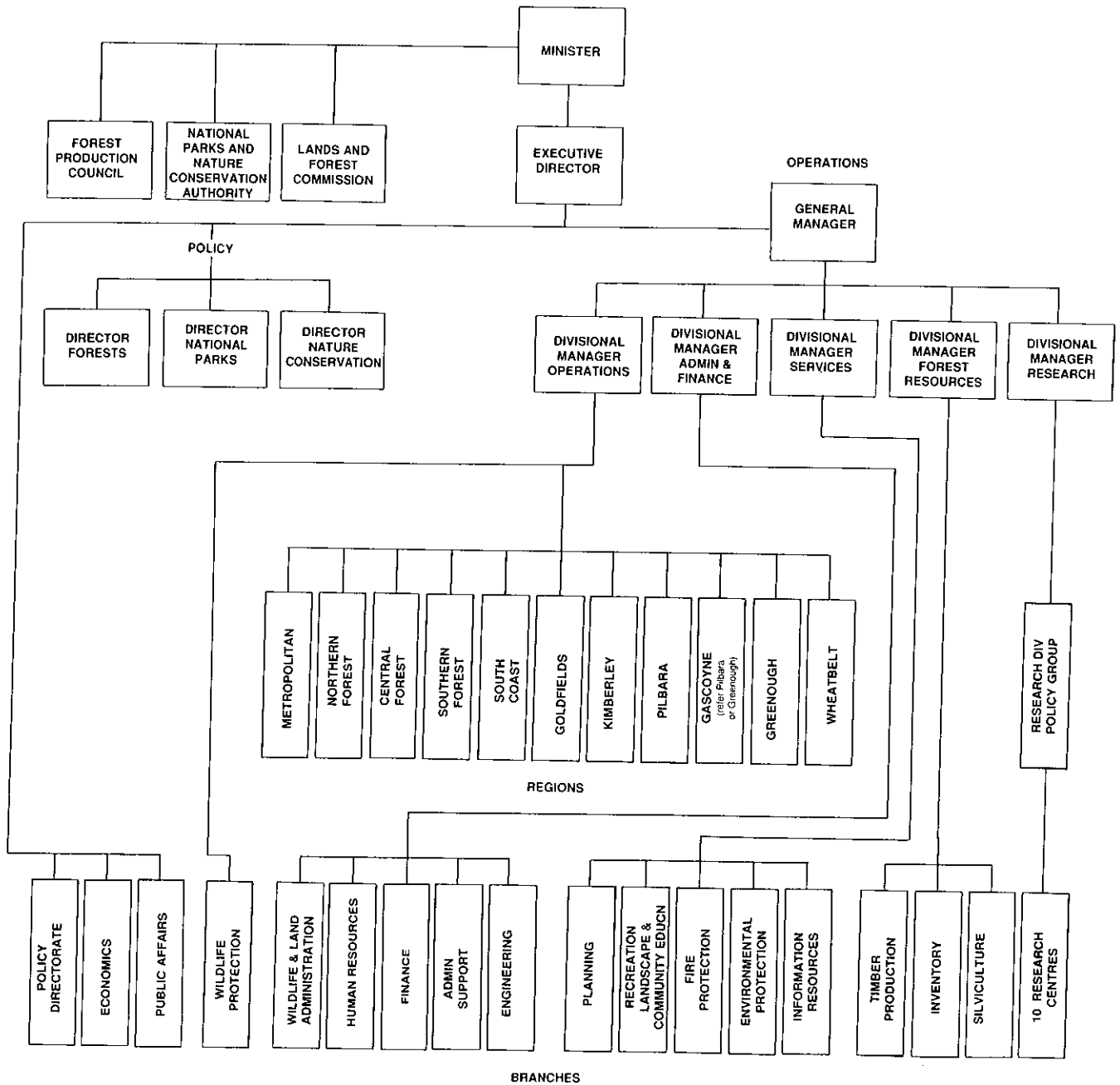


Figure 2

SENIOR DEPARTMENTAL OFFICERS

Executive Director	S R Shea Ph D, MSc, BSc
General Manager	R J Underwood M For, BSc, Dip For
Director of Forests	P N Hewett BSc, BA, Dip For
Director of National Parks	C D Haynes BSc For
Director of Nature Conservation	B R Wilson PhD, BSc, FTS
Co-ordinator, Policy Councils and Committees	Vacant
Manager, Policy Directorate	D B Johnston M App Sci, Dip Cart
Manager, Economics Branch	G Malajczuk PhD, MSc, BSc
Manager, Public Affairs Branch	Vacant
Divisional Manager, Operations	C J Edwards BSc For
Divisional Manager, Admin & Finance	A G Errington AIT Pub Admin
Divisional Manager, Services	F H McKinnell PhD, Dip For
Divisional Manager, Forest Resources	D J Keene BSc For
Divisional Manager, Research	A A Burbidge PhD, BSc Hons
Principal Operations Officer	P C Kimber BSc For Hons
Chief Wildlife Officer	D J Mell AATA
Regional Manager, Metropolitan	D A Haswell MSc, BSc For
Regional Manager, Northern Forest	Vacant
Regional Manager, Central Forest	D Spriggins BSc For
Regional Manager, Southern Forest	A Walker BSc For Hons
Regional Manager, South Coast	J R Watson PhD, BSc ARIC
Regional Manager, Goldfields	I G Kcally BSc For
Regional Manager, Kimberley	C C Done BSc For
Regional Manager, Pilbara/Gascoyne	H W Chevis BSc For
Regional Manager, Greenough/Gascoyne	G Mercer B App Sci, Grad Dip (Env Studies), Dip T
Regional Manager, Wheatbelt	K J Wallace BSc Hons, Dip Ed
Manager, Wildlife and Land Administration	D R Hampton B Econ
Manager, Human Resources Branch	R G Cooper BA
Manager, Finance Branch	Vacant
Manager, Engineering Services Branch	I R Darragh AIT Mech Eng
Manager, Planning Branch	A J Williamson M For, MSc, BSc
Manager, Recreation and Landscape Branch	W G Schmidt M For, BSc
Manager, Fire Protection Branch	J K Smart BSc For
Manager, Environmental Protection Branch	F E Batini MSc, BSc For
Manager, Information Resources Branch	Vacant
Manager, Timber Production Branch	J B Sclater BSc For
Manager, Inventory Branch	H Campbell BSc For
Manager, Silviculture Branch	F J Bradshaw BSc For
Curator, WA Herbarium	J A Armstrong BSc Agric Hons
Senior Principal Research Scientist	P E Christensen PhD, BSc Hons
Senior Principal Research Scientist	S D Hopper PhD, BSc Hons

Regions

The general responsibilities allocated to regions are to:

- prepare financial estimates and manage approved budgets;
- participate in project teams preparing land and marine area management plans;
- prepare and supervise work programs (based on approved management plans or necessary operations) for staff, employees and contractors;
- help, guide and train departmental staff in the region and promote the health and safety of the departmental personnel;
- ensure the conservation of indigenous flora and fauna;
- supervise and regulate industry (e.g. wildflower pickers, apiarists, timber and mining operations) on departmental lands;
- preserve or restore the natural environment on departmental land;
- provide information and advice on land management and conservation to people in the region; promote conservation and good land and marine area management;
- provide a focal point for interaction between research and operations; and
- liaise with State government and local government agencies in the region; represent the Department on interdisciplinary working groups, and advisory committees.

Further Information

Further information about the functions and activities of the Department can be obtained from the following sources by:

- writing to the Executive Director, PO Box 104, Como, WA, 6152, or telephoning 386 8811.
- visiting the operations headquarters at 50 Hayman Road, Como, or telephone 367 0333.
- subscribing to *Landscape*, a quarterly conservation, wildlife and forests magazine published by the Department, which features current policy and management issues.

CHANGE AND ORGANISATIONAL DEVELOPMENT

Government Policy and Legislative Changes

DURING 1988/89 the following activities were committed to the Department by Government decisions:

1. Expansion of the hardwood afforestation sharefarming project - to achieve 100 000 ha over a 10 year period.
2. Development of an investment package in association with major timber companies to support hardwood sharefarming.
3. Protection of remnants of native vegetation on privately owned land in the State's agricultural areas in conjunction with the Department of Agriculture.
4. Establishment of a Whale Strandings Fellowship.
5. Commencement of Crocodile Farming in W.A.
6. Initiation of an Implementation Programme for recommendations contained in the Shark Bay Region Plan.
7. Development of a Conservation and Resource Management Policy in Shark Bay in conjunction with the State Planning Commission.
8. Establishment of a National Park at Walcott Inlet.
9. Establishment of the Monkey Mia Dolphin Research and Education Trust.

In addition, work continued on the following government initiated projects:

- Implementing the three Forest Region Management plans
- Implementing the Timber Strategy
- review of the tenure of all nature reserves

A small but significant change was enacted to the Conservation and Land Management Act to provide power in regard to marine reserves, tree plantations and timber sharefarming agreements. More substantial legislative changes have been proposed from reviews of both the CALM Act and the Wildlife Conservation Act. These have been submitted for Government and Parliamentary consideration.

Organisational Change

An internal functional review was undertaken of Information Branch (which comprised Publications, Media Relations, Advisory Services, Community Education, displays and counter/switchboard staff at State Operations Headquarters) and Recreation and Landscape Branch. Responsibilities were re-allocated to form two new groups, the Public Affairs Branch and the Recreation, Landscape and Community Education Branch.

The Public Affairs Branch comprises Publications and Media Relations.

The Recreation, Landscape and Community Education Branch comprises recreation planning, research and design, landscape and community education.

Rural advisory officers and regional information officers now report to Regional Managers while counter and switchboard staff are part of the General Manager's group.

After formal approval of the re-structure, resulting from an information management consultancy the position of Manager, Information Resources Branch was advertised. no suitable application was received. To retain impetus in this important area, the second stage was implemented by appointment of a Manager, Land Information Section. The section comprises the Mapping and Geographic Information System (GIS) groups and is a subset of the Information Resources Branch.

During the year the corporate executive reviewed the overall departmental structure and proposed some changes. The Public Service Commissioner has approved a six month trial of the proposals during which its effectiveness will be monitored. The trial will commence early in the next financial year.

Briefly the proposed structure abandons the separation of Policy Directors and Divisional Managers as in practice both groups have become part of the corporate executive and been involved in operational affairs. The new arrangement provides for:

- the creation of divisions of Nature Conservation and Parks, Recreation and Planning;
- creation of a new branch of Wildlife Management which will include the Wildlife Protection group and provide a much needed expansion of wildlife management and administration capability. With Environment Protection Branch it forms the Nature Conservation Division;
- creation of a new branch for Policy and Extension to be located in the Parks, Recreation and Planning Division with Planning and Recreation Landscape and Community Education Branches;
- a further re-grouping of portfolios to create an Information Resources Division in lieu of the Services Division;
- a change of name for the Division of Administration and Finance to Corporate Services.

POLICY DEVELOPMENT

Tree Trust

The Department has been actively working to develop the "Tree Trust" afforestation scheme announced by the Hon Premier in December 1988. Under the scheme, more than 100 million Tasmanian Bluegum (*Eucalyptus globulus*) trees will be planted on cleared farmland by the year 2000.

This has encompassed two facets:

- (1) The field operations which have included negotiation with farmers to obtain approximately 5 000 ha of land and the preparation of that land for planting in the winter of 1989. Research on site preparation methods and research on the growth performance and pulping quality of *E. globulus* on various sites in the South West. Considerable development in the nursery technique to efficiently raise the most suitable seedlings has also been undertaken.
- (2) The Development of an Investment Vehicle has been progressed during the year through consultants. This has included:
 - a study into the marketability of *E. globulus* wood fibre, concentrating in the Pacific Rim
 - a study into the profitability, for investors, of the growing of *E. globulus* as a pulp crop
 - a study into taxation law as it applies to deductability of costs for various parties in the investment vehicle and professional advice on the most efficient corporate structure for this type of investment vehicle.

Park Improvement Program

The Department brought a considerable effort to bear during 1987-88 in planning and completing projects under the Government's Park Improvement Program. Projects providing new or improved old facilities were completed in 20 national parks and 6 nature reserves. Two contractors were hired for the year to assist with the projects. The overall cost for 1988/89 was \$2 million.

Mining on National Parks and Nature Reserves

The review of the status and conservation value of all B and C class nature reserves and national parks has been largely completed. Nine hundred and forty eight reserves were included in the review and 899 found to merit retention and upgrading to A class on nature conservation grounds. The upgrading to A class of 531 reserves has been agreed to by the Mines Department and 444 of these approved by Cabinet for reclassification; 286 of those 444 were gazetted as A class prior to 1 July 1989. Gazettal of reserves agreed upon for reclassification is continuing, as are negotiations over those not yet submitted for gazettal as A class. Assessment of 49 reserves which may not meet the criteria for reclassification to A class is continuing.

The task force established by the Government to accelerate the implementation of earlier EPA Red Book recommendations was not able to achieve any major progress. However, four System 6 recommendations, one for System 9 and one for System 2, totalling 3 243 hectares were gazetted during the year.

Remnant Vegetation Protection Scheme

This major new Government initiative, with the Department of Agriculture as lead agency was announced during the year. Its major aim is to encourage the voluntary protection of privately owned remnants of natural vegetation which are seen to have value for nature conservation. The key element of the scheme is the allocation of \$1.5 million over the next three years to provide half the cost of fencing-off such remnants, the registration of their protected status on the title of the land, and protection of lands subject to this agreement under the Land Conservation Act.

Officers of CALM drew up the criteria and guidelines for assessment of nature conservation, and shared this assessment with local Land Conservation District Committees and the Department of Agriculture. Of 350 applications, 150 both met nature conservation criteria and fell within the initial cut off point for funding. Of these, one hundred and ten applicants accepted a subsidy and were registered under the scheme.

The Interests of Aboriginal People

There are very clear expectations by Aboriginal individuals and communities and other community interest groups, that CALM fulfils a very important role in the interaction between the Aboriginal communities of the State and the remainder of the community. In the Kimberley, Pilbara, South Coast and Wheatbelt, regions where CALM is becoming increasingly active, Aboriginal people are expressing a desire to become involved in land management.

During the year frequent discussions have occurred between interest groups over questions of access to land and the methods by which land will be managed, and also employment and training of Aboriginal people on lands managed by the Department and other agencies, eg. Aboriginal Land Trusts.

Discussions continued towards the establishment of an agreement to govern the Purnululu Park Council which will operate in the Purnululu (Bungle Bungle) National Park. Half the members of the Council will be drawn from the Purnululu Aboriginal Corporation, the other half from CALM.

Discussions were also held in relation to Aboriginal involvement in land management in other areas of the Kimberley, the Goldfields and the Wheatbelt/South Coast regions and included participation by the Aboriginal Advisory Committee for the State, the Aboriginal Lands Trust and the Aboriginal Affairs Planning Authority.

During the year, Isabelle Procter from the Education Department was seconded to CALM under the Executive Development Programme. She has developed the "Aboriginal Employment and Training Management Plan" for the Department. This document sets out the background to employment and training within the Department and strategies for future operations in this area. The production of the document included considerable consultation with interest groups within and outside the Department, and has resulted in the implementation of some of the recommendations of the report already, eg. a number of Aboriginal people employed to participate in CALM's field officer cadet training and a grant from the Australian National Parks and Wildlife Service to establish an Aboriginal Employment and Training Officer to coordinate the implementation of this programme.

As a result of the management plan, it is expected that the numbers of Aboriginal people employed by CALM will gradually extend beyond the present employment areas of national park rangers, wildlife officers and some clerical staff.

Guidelines for Tour Operators

Tour operators use the estate covered by the CALM Act in a wide variety of ways. In some cases operators derive all or a substantial part of their income from concessions to operate within national parks or marine parks. In other cases, tour operators may be visiting from the Eastern States, for example, and may simply take a bus load of visitors through a national park on their way around Australia.

During the year guidelines governing these activities were produced under the cover of the Recreation Policy. As experience is gained in this important activity, it is expected that the guidelines will be modified.

Crocodile Management

The Department continued to give high priority to policy development for the protection and management of crocodiles, particularly Saltwater Crocodiles, and to informing the public about safe behaviour in crocodile habitat.

The Government decided to permit the commencement of crocodile farming in Western Australia, based on the establishment of a single farm on a trial basis in the east Kimberley. Establishment of a farm commenced at Wyndham and it will raise both Saltwater and Freshwater Crocodiles for their skins, meat and other products. Crocodile farming is well established in Queensland, the Northern Territory and Overseas.

Associated with the crocodile farming decision, the Government provided funds for some survey work necessary to determine allowable capture levels to stock the farm, and to help establish baselines for future monitoring of wild crocodile populations. Projects completed by a consultant working with Departmental staff were a survey of Saltwater Crocodile nesting activity between the Ord and Prince Regent Rivers, and surveys of the Freshwater Crocodile populations in Lake Argyle and Lake Kununurra.

During the year the Government also decided to approve the establishment of a crocodile display park at Fremantle.

Marine and Estuarine Reserves

The Marine Parks and Reserves Selection Working Group is systematically investigating the State's coastline and waters to produce proposals for a comprehensive system of marine and estuarine reserves.

Notices of Intent for marine parks at Clerke and Emperieuse reefs in the Rowley Shoals were made public in September with all seven submissions received supporting the proposal.

Proposals were initiated for three marine parks and a marine nature reserve in Shark Bay in the implementation process for recommendations contained in the region plan for Shark Bay adopted by Government in June 1988.

The final report of a planning strategy for the Houtman Abrolhos Islands in which the Department was involved, was released in January. It proposes three areas for marine parks.

Action towards the declaration of marine parks at Shoalwater Bay and in the Swan River Estuary at Alfred Cove was initiated during the year.

Species Planted on Bauxite Mine Sites

The reforestation of bauxite mine sites has been a long term experiment since it was first attempted at Jarrahdale in 1965.

More than 50 species of trees have been tried over the 23 years of trials, many of them being dieback resistant Eucalypts from the Eastern States. The degree of success in growing these species has been variable, and they all have created problems for fire control. The cost of fire control can vary from 10 to 50 times as great as for WA species. Trials of local species have also been successfully undertaken.

Following a detailed study, it has now been decided that all future planting will be with local species - jarrah, blackbutt, marri and bullich and they will be integrated with the surrounding forest.

Silviculture Specifications

A series of nine hardwood Silviculture Specifications has been prepared during the year encompassing mangement practices including protection of fauna habitat in multiple use forests, rehabilitation of dieback affected forest, techniques of bluegum plantation establishment and a revision of the Jarrah Silviculture Specification.

Tree Nurseries

In addition to continuing with the rationalisation of the Department's tree nurseries a major increase in the capacity of the hardwood nursery at Manjimup was achieved. This was essential to meet the demand for seedlings created by the increase in the hardwood sharefarming scheme announced by the Government. Output of seedlings of multiple tree species by the Department's nurseries for the winter of 1989 is projected at 13 million.

Greenhouse Effect and Climatic Change

The Department is represented on the State Greenhouse Advisory Committee, which coordinates the development of Government planning and management strategies to ameliorate, and prepare for, any changes resulting from the greenhouse effect. An internal Greenhouse Policy Committee, reporting to the Policy Directorate, has been established, and is conducting a review of the implications of potential climate change for nature conservation and land management responsibilities.

Equal Employment Opportunity Management Plan

As requested by Statute, the Department completed the development of an Equal Employment Opportunity Management Plan. The plan has been approved by The Directorate of Equal Opportunity in Public Employment.

Commonwealth Involvement in Conservation and Resource Development

In November 1988 the Prime Minister announced a series of new principles and processes to apply to future conservation and development decisions.

- The establishment of a Resource Assessment Commission (RAC).
- Streamlining and enhancing the operations of the Australian Heritage Commission.
- The development of a National Forest Inventory (NFI).

- The establishment of a National Resource Information Centre (NRIC).

The RAC is still awaiting the passage of legislation, but the NRIC is operational and planning for the NFI has commenced. CALM will be heavily involved in the NFI which will produce detailed information about all forested lands of all tenures in the State.

It is expected the national inventory will allow for more rational decisions to be made by the Commonwealth Government in dealing with the listing of forest areas on the Register of the National Estate and approvals for production of timber by industry.

External Participation in Policy Development

Development of policy related to land management and nature conservation continues to be by consultative committees and other less formal means of communication with individuals, community groups and Government agencies. Consultative or advisory committees, or working groups, continue to be convened by this Department for the karri forest, Shark Bay, Marmion and Ningaloo Marine Parks, Herdsman Lake, the Peel-Harvey Estuary, the proposed Beeliar Regional Park and for kangaroo management. CALM also convenes the Roadside Conservation Committee and the Aquatic Ecosystems Research Sub-committee. During the year, the first of what are planned to be regular meetings at senior level with representatives of the environmental movement was held.

Policy staff also have input to committees and working groups convened by other Departments in regard to emu farming and World Heritage listing matters, and are involved in developing State policies on many issues including coastal management, the use of water resources, protection of wetlands and management of the Abrolhos Islands. They also contribute to national policy co-ordination and consultation with various interest groups through their membership of the Standing Committees and working groups of two Ministerial Councils (Council of Nature Conservation Ministers and Australian Forestry Council) and other bodies such as the Australian Committee for the International Union for the Conservation of Nature and Natural Resources (ACIUCN).

Policy Statements

Specific policy statements developed and approved during the year are:

- 22 Taking, Keeping and Display of Live Reptiles January 1989
- 28 Reporting, Monitoring and Re-evaluation of Ecosystems and Ecosystem Management September 1988
- 30 Harrassment in the Workplace December 1988

Policy statements revised during the year are:

- 3 Dieback and Logging December 1988
- 5 Research and Technical Publications August 1988

At an advanced stage of development and, at year's end, with outside bodies for final comment before approval:

- 23 Conservation and Management of Emus
- 24 Conservation and Management of Saltwater Crocodiles

Several others are being developed or are in the process of being negotiated with organisations.

Consistent with the usual procedure, policies are developed by either the Policy Directorate or specialist branches and before examination by the Corporate Executive are passed to regions and branches and other specialists for comment. After approval by the Corporate Executive, the documents are submitted to the National Parks and Nature Conservation Authority and/or the Lands and Forest Commission as appropriate.

THE LAND ESTATE

Nature Reserves

The area in these categories as at 30 June 1989 was 10 419 039 ha; an increase of 424 067 ha during the year. Important reserves were created or enlarged at Nerren, Lake Magenta, Owingup Swamp and Eneabba. All are vested with the National Parks and Nature Conservation Authority.

National Parks

On 23 December 1988 two areas, one of 30 830 ha north of Walpole and the other of 52 598 ha comprising the Shannon River catchment, were reserved and vested in the National Parks and Nature Conservation Authority as national parks. Significant additions also occurred to the Fitzgerald River, D'Entrecasteaux and Serpentine National Parks.

As at 30 June 1989, there were 59 national parks vested with the National Parks and Nature Conservation Authority with the following areas:

National Park	Area (ha)	National Park	Area (ha)
Alexander Morrison	8 501	Lesmurdie Falls	56
Avon Valley	4 366	Millstream-Chichester	199 746
Badgingarra	13 121	Moore River	17 543
Beedelup	1 530	Mt Frankland	30 830
Boorabbin	26 000	Nambung	17 491
Brockman	250	Nowergup Lake	116
Bungle Bungle	208 723	Neerabup	1 082
Cape Arid	279 415	Peak Charles	39 959
Cape Le Grand	31 390	Porongurup	2 572
Cape Range	50 581	Rudall River	1 569 459
Collier Range	277 841	Scott	3 273
D'Entrecasteaux	57 623	Serpentine	4 362
Drovers Cave	2 681	Shannon	52 598
Drysdale River	435 906	Sir James Mitchell	497
Eucla	3 342	Stirling Range	115 661
Fitzgerald River	319 602	Stockyard Gully	1 406
Frank Hann	61 420	Stokes	9 742
Geikie Gorge	3 136	Tathra	4 322
Goongarrie	60 356	Torndirrup	3 938
Gooseberry Hill	33	Tuart Forest	1 785
Greenmount	58	Tunnel Creek	91
Hamersley Range	617 602	Walpole-Nornalup	15 877
Hassell	1 265	Walyunga	1 812
Hidden Valley	2 068	Warren	1 355
John Forrest	1 508	Watheroo	44 512
Kalamunda	375	West Cape Howe	3 517
Kalbarri	186 071	William Bay	1 739
Leeuwin-Naturaliste	16 201	Windjana Gorge	2 134
		Wolfe Creek Crater	1 460
		Yalgorup	11 819
		Yanchep	2 799
TOTAL AREA			4 834 518

NATURE RESERVES

Nature reserves are for the purposes of wildlife and landscape conservation, scientific study and preservation of features of archeological, historic or scientific interest. Wildlife values may not be commercially exploited, and no recreation which damages natural ecosystems is allowed.

Area of "conservation of flora and fauna" reserves as at 30 June 1989 - 10 419 039 ha.

NATIONAL PARKS

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

Area of National Parks as at 30 June 1989 - 4 834 518 ha.

STATE FORESTS

State Forests are managed for multiple uses including water supplies, recreation, sustainable timber production and wildlife conservation. They also provide for public utilities and mineral production, where these activities are imposed.

Area of State Forest as at 30 June 1989 - 1 747 867 ha.

MARINE PARKS

Marine Parks are managed for marine conservation and recreation, with areas zoned for commercial fishing on a sustained yield basis. Note that marine nature reserves can be designated, where controlled exploitation is not allowed.

Area of marine parks as at 30 June 1989 - 233 350 ha (approx).

OTHER RESERVES AND FREEHOLD LAND

Miscellaneous and timber reserves are normally a transitional classification, and in the interim may be managed for wildlife conservation, recreation or sustainable timber production.

Area of other reserves as at 30 June 1989
conservation/recreation reserves - 188 880 ha
timber reserves - 144 399 ha.

Area of freehold land held by the Executive Director as at 30 June 1989 - 32 333 ha.

TOTAL CALM ESTATE

As at 30 June 1989 total area was 17 600 386 ha.

This was a net increase of 532 083 ha for 1988/89.

The terrestrial area is 6.9 per cent of the land area of Western Australia.

State Forests and Timber Reserves

The total area of State forest as at 30 June 1989 was 1 747 867 ha, which is 72 498 ha less than last year's total. This decrease was mainly due to the excision of portions of State forest Nos. 38, 40, 41, 43 55 and 59 to enable the creation of the Shannon and Mr Frankland National Parks.

The aggregate area of timber reserves fell by 456 ha during 1988/89 to 144 399 ha. This reduction can be attributed to the cancellation of a timber reserve near Bridgetown (the land involved was subsequently added to State forest No. 9).

The following table shows the major forest types which occur within State forest and timber reserves as at 30 June 1989.

TYPE	AREA (Ha)
Jarrah	1 367 000
Karri	128 000
Wandoo	104 000
Mallet	8 000
Tuart	1 000
Goldfields' species	54 000
Radiata pine	35 000
Pinaster pine	29 000
Exotic eucalypts	4 000
Very open areas	195 000
Total	1 925 000

Description of Forest Types

Jarrah includes: pure jarrah; jarrah with marri, W.A. blackbutt, wandoo, W.A. sheoak and bullich as minor species; stands dominated by marri with jarrah as the minor species; stands dominated by W.A. blackbutt with jarrah or marri as the minor species; stands dominated by bullich with jarrah or marri as the minor species.

Karri includes: pure karri; karri with marri, and/or jarrah and the three species of tingle as the major or minor species.

Wandoo includes: pure wandoo; pure powderbark wandoo; wandoo and powderbark wandoo with jarrah, marri and brown mallet as minor species.

Mallet includes: plantations; natural mallet with wandoo as the minor species.

Tuart consists of pure stands only.

Goldfields species include: pure stands of salmon gum, Dundas Mahogany, Dundas blackbutt, Cleland's blackbutt, silver gimlet, sandalwood, jam and many others, or any of these species in combination.

Radiata pine includes: pure stands plus a very small area of other species, in plantations only.

Pinaster pine includes: pure stands plus a very small area of other species, in plantations only.

Exotic eucalypts include: many species in rehabilitated dieback and mined areas and in trial plots.

Very open areas includes: swampy and rocky areas; areas with sparse tree canopy; areas cleared for mining and not yet rehabilitated; powerlines and dams.

Marine Parks

There are two marine parks reserved and vested under the Conservation and Land Management Act, 1984.

The Ningaloo Marine Park extends from Amherst Point, approximately 50 km south of Coral Bay, to Exmouth, on North West Cape. The marine component comprises both State and Commonwealth waters with a coastal strip of 40 m between high water mark and the adjacent pastoral stations also included. The State's component of the Ningaloo Marine Park is approximately 224 000 ha.

The Marmion Marine Park extends from just south of Trigg Island to just north of Burns Rock, adjacent to Perth's northern suburbs. It has an area of 9 350 ha.

Conservation and Recreation Reserves

The area of reserves in this category as at 30 June 1988 was 188 880 ha. New reserves were created at Monkey Mia and north of Cape Range National Park, while the 3 727 ha reserve at Serpentine was included in the adjacent Serpentine National Park.

Freehold Land

Freehold land held in the name of the Executive Director totalled 32 333 ha, an increase of 90 ha for the year. The major portion of this land has been committed to forestry operations.

Purchases

The Department purchased the following areas of freehold property for addition to various categories of the land estate:

- 188 ha of uncleared land within the boundaries of the Cape Le Grand National Park for inclusion in the Park.
- 170 ha of uncleared bush south west of Woodanilling to be reserved for conservation of flora and fauna.
- 121 ha of uncleared land for addition to the Leeuwin-Naturaliste National Park.
- 65 ha of uncleared land adjacent to State Forest west of Manjimup.
- 50 ha of uncleared bush south east of Beverley to be reserved for conservation of flora and fauna.
- 40 ha of land within the boundaries of Nambung National Park for addition to the Park.
- 32 ha of uncleared land within the boundaries of Fitzgerald River National Park for addition to the Park.
- 29 ha of uncleared land adjacent to Boyagin Nature Reserve to be added to the reserve.
- 4 ha of land at Bengier Swamp as part of a program to buy the remaining freehold land within the swamp.

- 1 ha of land adjacent to State Forest west of Collie.

Additionally, a 1230 ha pastoral lease within the D'Entrecasteaux National Park was purchased for addition to the Park.

Agreement has been reached with the vendors of a further eight properties and these purchases will be finalised in 1989/90.

MANAGEMENT OF LANDS AND WATERS

Nature Reserves

Planning and Consultation

The draft management plan for Alfred Cove Nature Reserve was commenced at a Ministerial function on 18 December 1988. A Marine Park is proposed to protect the adjacent mudflats and shallows. A public workshop was held and two newsletters were prepared.

Commencement of the Boyagin/Tutanning Nature Reserve draft management plan was approved by the Policy Directorate on 8 March 1989.

Work proceeded on the Shoalwater Bay Islands and Two Peoples Bay Nature Reserves draft management plans.

The draft management plan for Dampier Archipelago was sent to the Minister's Office ready to be released for public comment.

Interim guidelines have been prepared for the management of Red Hill Nature Reserve and Thevenard Island.

Implementation of the Bengier Swamp nature Reserve Management Plan has commenced.

Development plans for passive recreation areas and nature trails were also prepared for sites within Yandin Nature Reserve, Boyagin Rock Nature Reserve and Two Peoples Bay Nature Reserve.

Conservation and Protection

A summary of prescribed burning for fire protection is provided in Appendix 9.

Aerial photography over 1300 ha in nature reserves was interpreted for the presence of dieback disease.

A major fox control program using the poison 1080 continued in various wheatbelt reserves and also at Ellen Brook, Twin Swamps and Thomsons Lake.

Continued problems with dingo/feral dogs on Lake Magenta Nature Reserve in the Lake Grace and Kent Shires has led to a specific management programme being developed. To date this programme is proving successful.

Proposals by neighbours to modify drainage channels in reserves at Sabina and Scott river were evaluated and recommendations were made.

During cyclone Orson, Derrick Barge No. 20 broke its moorings and broke its back on Eaglehawk island off Karratha. Eaglehawk Island is a nature reserve. The wreck was inspected with marine and Harbours, the Environmental Protection Authority, the owners and insurers. Recommendations for disposal were made. Tender documents for salvage are currently being prepared.

Feral animal control of shooting and mustering was carried out on:

- Wanjarri Nature Reserve	420 goats
- Cave Hill Nature Reserve	13 donkeys
- Rowles Lagoon Nature Reserve	40 cattle
- desert nature reserves	20 camels

Pumping to lower the water table continues on Lake Toolibin Nature Reserve. Insufficient data has been collected yet to assess the efficacy of the pumping.

Recreation and Other Works

Recreation development, site rehabilitation and visitor information projects were implemented at several Nature Reserves including:

- Penguin Island Nature Reserve - removal of 7 buildings and commencement of planning for future recreation and interpretation facilities.
- Alfred Cove Nature Reserve - realignment of existing cycleway.
- Victoria Rock Nature Reserve - progressive implementation of site rehabilitation and development plan and installation of a visitor information shelter in association with the Goldfields Naturalist Club.
- Burra Rock Nature Reserve - commencement of site clean up and rehabilitation.
- Lake Pollarup Nature Reserve - installation of a visitor information shelter in association with the Shire of Lake Grace.

Development plans for passive recreation areas and nature tracks were also prepared for sites within Yandin Nature Reserve, Boyagin Rock Nature Reserve and Two Peoples Bay Nature Reserve.

National Parks

Planning and Consultation

The final management plan for Leeuwin Naturalist National Park was approved by the Minister on 21 March 1989 and released in the Busselton Shire Office. An advisory committee and a land management committee are to be appointed shortly.

The Yanchep National Park draft management plan received fifty five submissions and the final plan has progressed to near completion.

The following draft management plans were released for public comment.

- Fitzgerald River National Park
- Hamersley Range National Park
- Purnululu (Bungle Bungle) National Park
- South Coast Region R.M.P.

A large contingent, comprising of the Minister, the NPNCA, FRNP Advisory Committee, media and CALM personnel were present at the Fitzgerald River National Park for the release of the draft plan.

The draft management plan for Hamersley Range National Park, being the second largest National Park in Western Australia, was released in Perth with good media coverage on 31 May 1989.

Work continued on the Rudall River (Karlamilyi) National Park management plan. A five day meeting was held at Parrngurr (Cotten Creek) Aboriginal Community in the Rudall River National Park as part of a Social Impact Study being prepared by the Murdoch University. A resource document (the significance of the Karlamilyi Region to the Martujarra of the Western Desert) was prepared by the Western Desert Working Group for the Department to provide some background for the Management Plan.

Work commenced on the Walpole-Nornalup National Park Management Plan and extensive public participation programs have been conducted, including two visitors surveys and three public work shops.

Negotiations are continuing with the Shire of Exmouth for development of management plans for the Jurabi and Bundegi Coastal Reserves.

Conservation and Protection

A summary of fuel reduction burning carried out to protect values from fires is provided in Appendix 9.

Draft fire management plans and interim guidelines for necessary operations were completed for 13 national parks.

Dieback hygiene, regulation and monitoring measures continued in accordance with existing policies and dieback protection plans. A draft protection plan was prepared for the Greenough Region. The plan for the South Coast Region was reviewed after two years of operation and a modified five year plan prepared, the preparation of dieback maps continue, particularly at Fitzgerald River, Stirling Range and Torndirrup National Parks. Aerial photography and its interpretation for the presence of dieback was completed for 300 ha in national parks. As well, 800 km of roads, tracks and firebreaks were checked.

Environmental weeds were controlled, particularly at the Porongorup (blackberry) and Millstream-Chichester National Parks (date palms, Gallon's curse).

Control of feral animals continues in accordance with approved guidelines and in liaison with the Agriculture Protection Board. Poison baiting (1080) programs for fox control at Cape Range National Park continued. Rangers at Kalbarri trapped 29 pigs and shot 248 goats. About 1540 goats were mustered from Zuytdorp Cliffs and 409 mustered or shot in the Cape Range National Park.

An Agriculture Protection Board helicopter shoot at Bungle Bungle and Hamersley Range National Parks accounted for 667 donkeys, 3 camels and 918 cattle.

Landscape Planning and Recreation

Improvements to recreation and visitor information facilities were initiated in a number of National Parks during the year. Much of this work was carried out as part of a state-wide Parks Improvement Programme funded through a \$5 million government grant spread over 3 years. Developments commenced and/or completed during 1988/89 include:

- Purnululu (Bungle Bungle) National Park - sinking and equipping of bores for drinking water; conductance of archaeological, cultural and engineering surveys in advance of road realignment and airstrip development; commencement of work to realign the park access road.

- Cape Range National Park and Ningaloo Marine Park - the Recreation Plan for Cape Range National Park is being implemented. The plan outlines site specific developments which will be phased in over the next 3 - 6 years. The plan has evolved after an extensive consultation period and initial works have begun with the construction of new camping and day use facilities at Osprey Bay. Extensive tree planting has occurred at the Milyering Bicentennial Visitor Centre. The Yardie Creek Mobile Rangers Pad has been completed and is operational for the current tourist season.
- Geikie Gorge National Park - further consolidating of staff area and campground in accordance with development plan.
- Windjana Gorge National Park - completion of road improvements and redevelopment within the day use and camping areas.
- Cape Range National Park - continuation of road realignment and upgrading of coastal access points.
- Kalbarri National Park - completion of main access and spur roads, parking areas and walk tracks at coastal gorge sites; redevelopment of Z Bend and realignment of walk track to river lookout.
- Nambung National Park - realignment of Park entry road and construction of a new service depot.
- Walyunga National Park - redevelopment of Walyunga Pool carpark and stabilisation of bank area; construction of Walyunga Heritage Trail.
- John Forrest National Park - rationalisation and construction of walk tracks and installation of visitor information shelter.
- Lesmurdie Falls National Park - rationalisation and construction of walk tracks and installation of visitor information shelter.
- Yanchep National Park - installation of new lighting and improvement of access within Crystal Cave.
- Leeuwin-Naturaliste National Park - development of individual and group camp facilities at Contos Field; rationalisation of vehicular access and parking and commencement of site rehabilitation at Contos Springs; construction of walk track and boardwalk from Ellensbrook Homestead to falls and grotto area upstream on Ellen Brook.
- Shannon-D'Entrecasteaux National Park - construction of access road, parking area and toilets at Salmon Beach.
- Warren National Park - selection and pegging of Warren Bicentennial Tree; design and installation of cabin and viewing platform in consultation with BMA; official opening of the Tree in early December by the Hon. Minister for Conservation and Land Management, Mr Hodge.
- Torndirrup National Park - redevelopment of stairway at Salmon Holes and a commencement of work on stairway access to Cable Beach by the 2nd year Field Cadets.
- Cape Arid National Park - development of a vehicle-based camping area and coastal access track between Poison Creek and Seal Creek.

- Walpole Nornalup National Park - a swing bridge has been constructed across the Deep River to provide pedestrian access to the Nuyts Wilderness area within Walpole-Nornalup National Park.
- Recreation development and landscape rehabilitation plans were also prepared for over 25 other National Park sites throughout the State. These will be progressively implemented subject to the necessary planning approvals and availability of funds.

Other noteworthy events during the year included:

- Official opening of the South Coast Heritage Trail and the launch of the publication "Rugged Mountains, Jewelled Seas" by the Hon. Julian Grill at Cape Le Grand national Park.
- Organisation of a 1 day seminar on upland footpath management for South Coast Region and other Department staff at Stirling Range National Park.
- A volunteer program to train 10 people to assist in the running of Milyering Bicentennial Visitor Centre has been completed.
- A volunteer group of people are now available to care for injured and disabled wildlife from Cape Range National Park and environs.

Offences in National Parks

One breach of the National Parks Regulations was reported. This case involved the unauthorised discharge of a firearm in a National Park. The offender was prosecuted and a fine of \$125.00 was imposed.

Forests

Planning and Consultation

Manuscripts for final management plans are ready for editing for the Lane Poole Reserve, Waroona Catchment and Logue Brook Catchment.

Approval was granted by the Policy Directorate to commence a management plan for Dryandra State Forest (in the Wheatbelt Region) on 8 March 1989.

Implementation was commenced on the following management plans:

Northern Forest Region Management Plan

A 2 year implementation program has been developed from priorities established in the regional plan.

Existing operations cover conservation, recreation, logging, mining, fire protection and environmental protection. New initiatives include work on information and interpretation and the appointment of an ecologist.

A task force has been established to prepare a regional recreation framework plan.

Central Forest Region Management Plan

A program for implementing priorities identified in the regional plan has been developed.

Existing operations cover conservation, recreation, logging, mining, fire protection and environmental protection.

Southern Forest Region Management Plan

A Strategic Plan which specifies the priorities for implementation of the regional plan strategies has been developed.

The Karri/D'Entrecasteaux Region Advisory committee continues to provide advice to CALM on a wide range of issues including the preparation and implementation of management plans.

An advisory committee was formed at Pemberton to develop plans and prescriptions for the protection and development of the Gloucester Tree and adjoining recreation site.

Other Management Planning

Preliminary planning for the management of Timber and Sandalwood reserves has commenced with the compilation of management information on each area into a reserves management control system.

Landscape Planning

Work continued on the development of a visual Resource Management System in the Southern Forest Region. The delineation of landscape character types and assessment and mapping of scenic quality classes, sensitivity and landscape management zones has been completed throughout the Region. Further field trials to evaluate the effectiveness of various landscape management techniques were initiated and are being monitored.

Regeneration and Tending of Hardwood Forests

Areas Cutover and Regenerated	Northern Forest Region	Central Forest Region	Southern Forest Region	1988 Total ha	1987
Jarrah					
- selection cut and regen.	4 704	10 785	6 399	21 888	16 732
- clear felled for mining	321	355		676	448
- clear felled for Harris R. Dam		834		834	-
Jarrah/Wandoo					
- selection cut and regen.	445	47		492	1 376
Karri					
- clear felled or cut to seed tree, regeneration commenced			1 180	1 180	1 311
- seed tree removal and regeneration commenced			990	990	827
- thinned regrowth			750	750	702
- thinned old growth			88	88	-
Mallet					
- thinned	104			104	90
F.I.R.S.	730	35		765	1 232
Jarrah Stand Improvement	1 322	2 288	1 521	5 131	2 319
Wandoo Stand "	1 326			1 326	-
Karri regeneration completed					
- natural seed fall			800	800	596
- hand planting			645	645	566
- sown with seed				-	100
Tuart Regeneration		38		38	

The level of cutting is controlled by the volume of sawlogs removed rather than by the area covered. Volumes are detailed in the next section. All cut over forests are regenerated. See Appendices 1 and 2(a) for further details of the karri forest.

The Forest Improvement and Rehabilitation Scheme (FIRS), which is funded by ALCOA, aims to rehabilitate areas of jarrah forest adjacent to bauxite mining areas to increase the capacity of the land to support long term land uses and to minimize the effects of dieback.

Jarrah and Wandoo Stand Improvement are silvicultural programs to increase the productivity of hardwood forests. The work involves the thinning of regrowth stands and the preparation of sites for regeneration.

The long term trend in areas of regrowth following clear felling of karri is shown in Appendix 2(a).

During the year, trials were set up to examine establishment of regeneration on shelterwood sites, the use of chemicals to control stump coppice, and the fertilisation of marri lignotubers on dieback sites.

Standards of implementation of silvicultural practice were checked during on-going monitoring of operations. At the same time, the overall status of jarrah silviculture was reviewed as were budgetting and costing arrangements for all hardwood silviculture.

A review of potential implications of the Greenhouse Effect on hardwood forest management was carried out. Given the worst scenario, it is considered that potential changes to the activities of insects and diseases represent the greatest risk to forest health. The capacity to manipulate the forest through various management practices is thought likely to reduce susceptibility to climatic change.

Establishment and Tending of Pine Forests.

At 31 December 1988 the areas of State owned pine forests were 38 272 ha *Pinus radiata* and 29 438 ha *Pinus pinaster* and other species, totalling 67 710 ha. This includes 1 615 ha of radiata pine planted on private property under a Softwood Sharefarming Scheme.

For the calendar year 1988 planting details were as follows:

	1987	1988
Area planted with pines (ha)	3 281	2 556
Radiata	2 180 *	2 373
Pinaster and other species	1 101	183

* Approx 360 ha of this area failed and was replanted in 1988. It is duplicated in the 1988 figure. It is excluded from 1987 planting in all other statistics.

Districts Planting Pines (ha)

District	Radiata	Pinaster & Other Species	Total
Wanneroo		42	42
Mundaring	37		37
Harvey	31	141	172
Collie	63		63
Kirup	365		365
Busselton	21		21
Nannup	219		219
Manjimup	727		727
Pemberton	122		122
Albany	788		788
TOTAL	2 373	183	2 556

The above figures include second rotation planting as follows:

Radiata - Mundaring 21 ha, Harvey 31 ha, Collie 63 ha, Nannup 46 ha.

The longer term trend in pine planting is shown in Appendix 3.

The following pine forest tending was carried out during 1988/89:

Prior to Planting -	Scrub control *	819 ha
	Ripping	424 ha
	Ploughing	40 ha
	Furrowlining/Mounding	530 ha
	Weed control	2 082 ha
	Drainage	100 ha
	Roading	24 km
Post Planting -	Weed Control	286 ha
	Scrub Control	2 357 ha
	Wildling control	58 ha
	Fertilizing	6 252 ha
	Zinc Spraying	141 ha
	Low pruning	2 555 ha
	High pruning	2 296 ha
	Firebreak maintenance	1 266 km

* Includes clearing up of clearfelled pines for second rotation.

The following is a summary of pine plantation thinning and clearfelling for 1988/89.

Operation	Northern Forest Region	Central Forest Region	Southern Forest Region	Total ha
Thinned	717	2 161	78	2 956
Clear felled - mature stands	88	404		492
- xmas trees	38			38
- damaged stands		330 *		330

* Damage to stands resulting in early clearfelling or salvage from fire, windthrow and drought.

1988/89 was a difficult year in terms of managing pine plantations. A number of challenges arose which required resolution. These included drought in the Blackwood Valley, windthrow on the Sunklands, replanting of part of the Folly pine plantation which had been damaged by fire and large scale replanting of second rotation areas.

The drought and the windthrow events have heightened the debate on site selection for new plantation and second rotation areas. Further research has been initiated.

During the year, a review was conducted of the techniques and success of pine plantation establishment. This highlighted the need for better nursery stock, improved weed control and site preparation. This is particularly the case on the South Coast where new weeds and sites have been experienced. In terms of site preparation a major initiative was the purchase of a high profile moulder for use in wetter areas.

A major review of operational costs was undertaken. One initiative introduced to improve the cost efficiency of preparation for planting on steep and second rotation sites was the use of a helicopter for spraying of competing weeds. This trial demonstrated efficient weed control but as yet, the technique has not gained public acceptance.

Establishment and Tending of Eucalyptus Globulus Forest

During the year the following operations were carried out as a part of the *E. globulus* planting project on private property :

Operation:

Slashing	120 ha
Ploughing	776 ha
Ripping	2 069 ha
Mounding	1 810 ha
Furrowlining	345 ha
Grass Control	3 636 ha
Planting	1 991 ha

The trend in planting of *E. globulus* and *E. muellerana* forest is shown in Appendix 2 (b).

Commercial Plantings and Woodlots on Private Property

Information supplied to the Department from private sources indicate that the private forest estate increased by about 1 100 ha for softwood and 1 100 ha for hardwood in the 1988 calendar year. Major forest management companies contributed most of this.

Many other farmers and small land-owners planted shelterbelts, woodlots and small plantations. An accurate and meaningful area statement to give an idea of the potential timber production from these plantings is not available.

The total area of private pine plantations known to this Department as at 31 December 1988 is about 16 500 ha. The corresponding area for hardwood plantations is 3 200 ha.

Rehabilitation of Forests

During 1988/89 the following areas were rehabilitated to be compatible with the prescribed land use for the area. "Catchments" works were carried out on Water Authority of W.A. lands.

	Northern Forest Region	Central Forest Region	Southern Forest Region	Total ha
Bauxite Mining	135	55		190
Tin Mining		37		37
Coal Mining		60		60
Gravel Pits	43	44	26	113
Catchments	15	640		655

Protection of Forests

An area of 200 300 ha of indigenous State forest were prescribed burned for a variety of purposes including fuel reduction for fire protection, habitat management, disposal of logging debris, site preparation for hardwood regeneration. Aerial burns were 178 700 ha and hand burning by ground crews 21 600 ha. A further 5 787 ha of winter burning was conducted under pines for fuel reduction purposes. In addition several hundred kilometres of fire breaks and forest tracks were maintained or upgraded.

Fire detection and suppression activities are reported later in this report.

Dieback hygiene, regulation and monitoring measures continued. The target of 42 235 ha of forest estate was photographed under the 230 mm format for interpretation for the disease. Over a number of areas 23 500 ha of forest and 900 km of roads, tracks and firebreaks in the forest were interpreted for dieback.

A review of the general dieback status of extensive areas within the Central Forest Region was carried out at a strategic level to assist in the planning for establishment of logging operations to supply charcoal for the Barrack Silicon Project.

In the Southern Forest Region 6 700 ha of forest was classified into vegetation types. This information is then used to predict the hazard (or potential impact) of dieback disease should it be inadvertently introduced.

In the Northern Forest Region field work began for a vegetation mapping system being developed by the Research Division to replace the 'Havel System'.

Noxious weeds, including blackberry, variegated thistle, arum lily were treated, in liaison with the Agricultural Protection Board, and in accordance with existing policies and recommended control techniques. A herbicides user manual was prepared and distributed.

In the Northern and Central Forest Regions 210 feral pigs were destroyed by trapping or hunting. Others were killed as the result of baiting programmes. An accreditation course on the handling of the poison 1080, run by the Agricultural Protection Board was attended by Departmental personnel. Other feral animal control included dogs, foxes and rabbits.

Mineral prospectivity on Goldfields Timber and Sandalwood reserves is high and as a result of the new Government Policy on exploration and mining on reserves, there is now increasing activity. Conditions for avoiding disturbance of the environment and for its rehabilitation after mining are being satisfactorily improved.

Details of mining applications referred are provided later in this report.

The Sandalwood Conservation and Regeneration Project commenced in September 1988. So far, details of grazing on existing Goldfields Timber Reserves have been finalised and negotiations

commenced for its removal and for fencing the two reserves. Negotiations to purchase Jaurdi Station as a Sandalwood Reserve are proceeding. In the Kimberley 8 ha have been prepared for irrigation and planting.

Recreation in Forest Areas

Recreation site development plans and specifications were prepared and implemented in the following areas:

- Gooralong Park - work commenced on the construction of a vehicle based tent camping area and the redevelopment of the existing day-use area.
- Wellington Dam - a major day-use facility known as the Potters Gorge Picnic Area was planned and developed in association with the South West Development Authority, Ministry of Sport and Recreation, Water Authority of W.A. and Collie Shire. Developments include an access road and parking area, grassed picnic area, toilet block and change rooms, information shelter, beach and boat launching area. The facilities were completed in time for the 1989 Australian Rowing Championships.
- Hoffman Mill - an information shelter, composting toilet and disabled walk trail were constructed.
- Leschenault Peninsula - in association with the South West Development Authority plans for a boat-in campground and entry information area were finalised and implemented.
- Golden Valley Tree Park - an information shelter was installed and construction of stabilised paths to the toilets completed.
- Revelly Bridge Picnic Area - a small day-use area on the Blackwood River was constructed.
- Wildflower Drive - a scenic drive featuring wildflowers in the Nannup area was developed and signposted.
- Barrabup Pool - the existing day-use facilities at this site were upgraded.
- Karri Gully - the parking area and walk track at this road-side picnic site were upgraded.
- Gloucester Tree - in association with a local advisory committee, a protective deck and seating area was constructed at the base of the Gloucester Tree.
- Four Aces - vehicular access and parking facilities were rationalised and a visitor information shelter, toilets, walk tracks and protective post and rail fencing installed.
- Big Brook - work continued on the implementation of the recreation master plan with the clearing and completion of the earthworks for a disabled trail.
- Chindalup Pool - a bridge was constructed to provide vehicular access to this recreation site on the Tone River.

In addition to the preceding projects, preliminary development plans were also prepared for several other areas including the Valley of the Giants and Kemerton Park.

Work on the realignment and signposting of the Bibbulmun Track, which extends from Kalamunda to Walpole, was completed and the Track officially reopened as a Heritage Trail in early October. As a prelude to the opening, a 9 day walk along the northern section of the Track

between Kalamunda and Dwellingup was held. Day walks were also organised by the 10 CALM Districts through which the Track passes and a new guidebook was released as part of this event.

Gazetted off road vehicle areas have been established at Gnangara and Pinjar. The sites cater for motorcycles and are zoned for machines of less than 150cc and over 150cc.

Preparation is well under way for the second staging of Rally Australia, an international event. Roads and stream crossings to be used in the rally have been upgraded at the organisers' cost. It is scheduled to take place over 15, 16 and 17 September and will extend over six CALM districts (Mundaring to Collie).

Forest Offences

Six cases of illegal removal of forest produce were investigated and four offenders were prosecuted. Penalties imposed resulted in a total of \$1250.00 in fines and \$520.91 in damages being paid.

There were three breaches of the Forest Regulation prohibiting unauthorised use of firearms in State forest. In each case the offenders were prosecuted and fines amounting to \$150.00 were imposed.

Two breaches of the Forest Disease Regulations also occurred and in both cases the offenders were prosecuted and fines totalling \$350.00 were imposed.

Warnings were issued to offenders who were not prosecuted.

Marine Areas

Planning and Consultation

The Marine Parks and Reserves Selection Working Group is progressing with proposals for a system of marine reserves for State waters. Progress is reported elsewhere in this report.

Submissions on the draft management plan for the Ningaloo Marine Park were reviewed and the plan redrafted in the light of public comment. The draft final plan was approved for transmission to the Minister for Conservation and Land Management in May.

Work continued on the Marmion Marine Park final management plan.

Conservation and Protection

An extensive survey of coral habitats in the Ningaloo Marine Park was conducted in February to determine the extent of damage by the marine snail *Drupella*. Extensive areas of coral had been eaten by the snail and several research projects were instituted to gain a greater understanding of the phenomenon and to assist in development of management strategies for the marine park.

Following the disappearance in late January/early February, of 7 bottlenose dolphins at Monkey Mia; the Environmental Protection Authority was asked to undertake water sampling from the nearshore and groundwater environments. This study showed that there was some minor contamination of the nearshore area, however there is no conclusive evidence that there is a link between the pollution and the disappearance of the dolphins. To minimize the risk of marine contamination, waste from the Caravan Park and Dolphin Information Centre septic systems is being pumped 1.5 kms inland. The department has designed a 12 month "Water Quality Monitoring Program" to gain an understanding of the hydrodynamics of the nearshore lagoon at Monkey Mia.

Recreation and Other Works

A series of detailed coastal recreation development plans has been prepared as an adjunct to the Cape Range and Ningaloo Marine Park Management Plans. The redevelopment of existing sites and provision of new recreation areas and facilities in accordance with the Management plans is being progressively tackled as funds permit. During the year, further signposting of areas within Marmion Marine Park was also carried out.

Tourist numbers are continuing to increase at Monkey Mia, and have necessitated the upgrading of facilities. The construction of the carpark and landscaped garden have improved the functioning and aesthetics of the Information Centre, Shade Shelters and barbecue facilities have been installed. A walk trail has been designed for the reserve and it is hoped this will reduce pressure on the beach during peak usage times.

The appointment of a District Manager to Shark Bay has provided a District Office in Denham.

Other Areas

Planning and Consultation

Kemerton - A Government sponsored structure plan prepared by a consultant has recommended the proportional allocation of land to CALM and Industrial Lands Development Authority. CALM will look after the western half which is mostly native woodland and the eastern part will be an industrial zone. When approved by Government the plan will clear the last obstacles to CALM producing a management plan and establishing a stable pattern of operations. The Park will remain an unusual mix of natural values and developments which will challenge customary perceptions of Park management. It was pleasing to see the consultants plan strongly influenced by CALM's previous planning for the estate.

Matilda Bay Reserve - Building plans and specifications for a new toilet block have been prepared and work on a recreation master plan has commenced.

Leschenault Peninsula - The two advisory committees for this proposed park are working well. The suggestions preferred have been adopted and will help to guide the formation of the management plan.

During 1988/89 significant inter-agency liaison was undertaken concerning conservation and recreation landuse in the metropolitan area. These involved:

- Technical Advisory Group involvement in urban development and drainage management programmes at South Jandakot.
- the development of urban quality criteria for wetlands affected by Stage 2 of the Jandakot Groundwater Abstraction Scheme.
- review of the Notice of Intent for naval expansion at Garden Island.
- review of the Notice of Intent for clay extraction adjacent to Ellen Brook nature Reserve (habitat of the rare and endangered western short-necked tortoise).

- Technical Advisory Group involvement in urban/conservation/tourism development at Buckland Hill, Cape Peron and Woodman Point.

Conservation and Protection

Wellington Catchment - Approximately 720 ha of eucalypts were planted on behalf of the Water Authority of W.A. on the Wellington Catchment east of Collie in winter 1988 and approximately 80 ha in 1989.

Mining Rehabilitation -

Tin - After 100 years of mining at Greenbushes a rehabilitation plan for the highly disturbed minesite is finally underway. Greenbushes Ltd and CALM, with the assistance of the Mines Department have completed a Working Arrangement agreement which addresses all aspects of rehabilitation. The company is progressively rehabilitating a backlog of historical disturbance as well as more recent operations.

Coal - Through the auspices of the Collie Coal Mining Rehabilitation Committee (CCMRC) chaired by DRD, continued progress towards rehabilitating mine pits and waste dumps has been achieved. Annual and Triennial reports from the two Companies show a consolidating professionalism in rehabilitation with commensurate efforts in the field. Relations between the Company and Government Officers are co-operative and positive.

Mineral Sand - A.M.C. Mineral Sands Ltd at Capel have produced a management and rehabilitation plan. This resulted from a condition on their renewed leases and encouragement from CALM and Mines Department. It is hoped that the management plan and continued close interest by CALM and Mines Department should ensure progress in this area.

Weeds and Pests - Important weed and pest control programmes were commenced for Arum lily control (Garden Island) and for eradication (Ellen Brook, Twin Swamps and Thomsons Lake).

Prescribed burns were carried out at Canningvale to assist the regeneration of the rare and endangered Purdie's Donkey Orchard (*Diruris purdeii*) in an area subject to urban development.

Requests from the Main Roads Department resulted in 16 km of proposed extensions to the Kwinana Freeway and the Northern Perimeter Highway being interpreted for the presence of dieback disease.

The Royal Australian Navy benefited from assistance in disease recognition and distribution on Garden Island.

Recreation

Garden Island - Commencement of site redevelopment plans for 2 public access areas in consultation with the Commonwealth.

Kalgoorlie Arboretum - signposting, fencing and associated developments in accordance with a landscape master plan.

The Wheatbelt Heritage Trail - which links various areas and features of ecological and historical interest in the south central wheatbelt, was also opened and a guidebook "Voices of the Bush" published.

MANAGEMENT AND PROTECTION OF WILDLIFE

The Department has the responsibility for conserving the indigenous plant and animal species and environmental processes in natural habitats throughout the State. These responsibilities go well beyond managing wildlife on CALM's estate, and are supported by the Wildlife Conservation Act. They included the following tasks:

- Producing and implementing wildlife management programmes for species classed as endangered (eg Numbat) or otherwise in need of special protection (eg Saltwater Crocodile).
- Overseeing and regulating activities such as wildflower picking, whale and dolphin watching, aviculture and duck-shooting which affect native species or have the potential to do so.
- Preventing illegal activities such as the unauthorized taking of protected species from the wild.
- Encouraging the conservation of native wildlife on private property and other non-CALM land such as road reserves.
- Coordinating State programmes for emergency action relating to wildlife, such as whale strandings and the oiling of sea birds.

In addition to items listed earlier in this report, important events and achievements during 1988/89 relating to the management and protection of wildlife are as follows.

Kangaroo Management

Kangaroo Management continues to be directed towards damage control, and to ensure the maintenance of viable populations of the three target species in the wild. A new system which identifies rangeland regeneration areas and directs control to areas of most need was introduced.

After consultation with the Kangaroo Management Advisory Committee and the National Parks and Nature Conservation Authority, 1989 management programs for Red Kangaroos, Western Grey Kangaroos and Euros were forwarded to and approved by the Commonwealth Government. The commercial take in 1988 was 216 000 Red Kangaroos, 29 000 Western Grey Kangaroos and 1 000 Euros. Commercial quotas for 1989 were set at 290 000, 45 000 and 10 000 respectively.

Following receipt of a report from a working party convened by the Health Department, the Government decided to permit the sale of kangaroo meat for human consumption. This decision is to take effect when the necessary health regulations are put in place.

Emu Farming

Interest in expansion of the emu farming industry continued during the year. The number of emu farms licensed under the Wildlife Conservation Act increased from six to nine. Capture of emus from the wild was not permitted. There was continuing policy development through an interdepartmental committee and then a government/industry liaison committee which replaced the interdepartmental committee. The Department was represented on both. Two additional Wildlife Officers have been appointed to assist in overseeing this growing industry.

The Department also hosted a meeting of a CONCOM (Council of Nature Conservation Ministers) working group formed to consider wildlife utilisation issues, with emu farming as first priority

because of the level of interest around Australia. All State, Territory and Commonwealth wildlife authorities attended and the meeting included field inspections of an emu farm and an Agriculture Department research station where emu husbandry is being studied.

Duck Shooting

The moratorium on duck shooting continued through 1988/89, in line with the December 1987 announcement by the Minister for Conservation and Land Management that there would be no duck shooting for two years, because of concern about the declining condition of wetland habitats.

Marine Mammals

The Department's Wildlife Officers attended 27 separate events involving the stranding of whales and dolphins, ranging from single animals to over 80.

A total of 129 animals from at least 11 species were involved, and 54 of these were successfully returned to the sea by the combined efforts of CALM staff and many volunteers.

Over 20 strandings of seals and sea lions also occurred during the year, many of which animals were injured or ill. Five were successfully treated and returned to the wild.

Activities of Wildlife Officers

The 1988/89 financial year saw a slight decrease in the number of offences detected against the Wildlife Conservation Act and Regulations. Some 171 offences were reported compared to 182 during the previous 12 months. Many more minor offences were dealt with by Wildlife Officers giving offenders verbal warnings. The majority of reported offences related to the illegal taking of protected flora and protected fauna, though several more serious offences included the attempted smuggling of fauna out of the State, and 12 cases involving the illegal taking or unlawful possession of declared rare fauna and flora.

Cases already dealt with by the courts have resulted in fines totalling \$10 090 with \$781.30 costs. 6 offences resulted in no further action being taken, 26 resulted in letters of warning, and a further 125 are pending.

In recent years there has been a noticeable decline in some specific types of offences, such as parrot nest robbing and illegal kangaroo shooting. Such declines may well be attributable to the high profile of Wildlife Officers in these areas of concern. Publicity given to penalties imposed on offenders who have been prosecuted as well as educational media programs on these topics, have also contributed to a more informed general public.

Regular patrols continue to be made of various offshore island nature reserves in the Department's patrol vessel "Pseudorca". Most of these patrols are centred on islands close to the metropolitan area, although several wider-ranging patrols were made to island nature reserves at Geraldton, Jurien Bay, Lancelin, Augusta, Albany and Bremer Bay. Island nature reserve in other districts such as Esperance, Carnarvon, Karratha and Broome were also patrolled by Wildlife Officers using other CALM vessels, charter vessels or vessels provided by the Fisheries, Marine and Harbours or Customs departments. The purpose of these patrols is manifold but includes such things as assisting with research programs, inspecting fauna and flora populations and ascertaining whether offences are occurring on the islands.

An additional Wildlife Officer is now based in the Kimberley, with one being stationed at Broome. Investigation, capture and relocation of potentially dangerous Saltwater Crocodiles, as well as public education for "crocodile safety", are important tasks for Kimberley Wildlife Officers.

Licensing

There were minor alterations to the declared rare flora species, gazetted under the Wildlife Conservation Act this year. The rare fauna schedule was regazetted with the main change being the division of the list into fauna which is likely to become extinct or is rare, and fauna which is otherwise in need of special protection.

There was only one open season declared this year and that was for waterfowl population management. Details are provided in Appendix 17. The open season for the agile wallaby was cancelled.

Many thousands of licences were issued for the taking, keeping, export or import of fauna and fauna products. Details are provided in Appendix 16.

The Wildlife and Land Administration Branch has now finalised the transition to computer generated licences and is currently using in excess of forty different licence types for wildlife management.

RESOURCE MANAGEMENT

Wood Production

Timber Strategy

A timber strategy for the State entitled Timber Production in Western Australia and Regional Management Plans for the three Forest Regions were adopted by the Government in February 1988. Together the documents provide a blue print for the State's forestry operations based on a commitment to manage the forest on a sustained yield basis, to increase its productivity, to increase the value added component of timber processing and to improve utilisation. At the same time there was a commitment to provide security for forest areas reserved for conservation and the timber resource on which the timber industry is based.

Changes to land tenure as a result of the last commitment are reported in detail in the Land Estate section of this report.

During 1988/89 there were a number of major steps in the implementation of the Timber Strategy.

In July the Minister for Conservation and Land Management announced the signing of major pine-milling contracts which will yield \$100 million in royalties to the community over 10 years. Three new sawmills, worth about \$40 million, will be constructed over the next 5 years. When operating at full capacity the mills, and associated logging will create more than 500 new jobs.

CALM has entered into a series of long term hardwood sawlog supply arrangements based on the availability of resource. All buyers are now supplied under new Contracts of Sale which replace the old licence system. These changes to wood allocation procedures will help improve utilisation of the forest resource.

Further changes involve amendments to the craftwood licence scheme, and a new lower royalty for third grade quality logs, to encourage greater use of these marginal resources.

Westralian Forest Industries (WESFI) commenced construction of a medium density fibre board plant at Kewdale. Medium density fibre is a fine grain compressed board which has a special application in the furniture industry. The plant will process 90 000 m³/year of thinnings from CALM operations mainly in the northern pinaster forest above the Gnangara mound. By thinning the plantation the draw by the trees on the water resource of the Gnangara mound will be reduced. Delivery of logs to this plant is planned to begin in early 1990.

At Kemerton, just north of Bunbury, construction has continued of a charcoal production facility to service Barrack Mines silicon smelter. Delivery of logs for charcoal production to a stockpile commenced in April 1989.

The signing of timber contracts means that there will be a massive investment in new sawmilling technology, which will substantially increase production of value-added products from Western Australian native hardwoods. With successful implementation of the Strategy, use of hardwood for high value products and greater use of softwood for structural timber will be achieved.

Log Production

The production of hardwood sawlogs for 1989/89 is summarised in the following table, and can be compared with the projected intake.

Hardwood Sawlog production From Crown Land 1988/89 Cubic Metres (m³)

Species	* 1st Grade		* 2nd & 3rd Grade		* Regrowth Thinnings		Veneer	**	Total	
	Actual	Projected	Actual	Projected	Actual	Projected	Logs		Actual	Projected
Jarrah	*** 501 892	459 000	60 342	68 000	247				562 481	527 000
Karri	150 750	160 500	39 536	19 000	43 740	50 000	2 417		236 443	229 500
Marri	6 143	30 000	10 652					98	16 893	30 000
Wandoo	720		766						1 486	
Blackbutt	1 454		11						1 465	
Sheoak	428		37						465	
Other									0	
Total	661 387	649 500	111 344	87 000	43 987	50 000	2 417	98	819 233	786 500

* Projected intakes are the average for 1988 and 1989 as set out in the timber Strategy, Tables 14, 15 and 17.

Note: no separate projected figure for minor species.

** Includes mill construction logs and reject logs.

*** 40 000 c. metres 1st Grade jarrah logs uncut in 1987/88 carried forward and cut in 1988/89.

In the table above, the actual production of first grade jarrah sawlogs is shown as exceeding the volume projected in the Timber Strategy for the period. This is because of 40 000 cubic metres of unutilised 1987/88 allocation was carried forward and used in 1988/89.

Other sources of log production - veneer logs, small logs from regrowth karri forests, pine sawlogs, hardwood chiplogs and softwood pulping logs contributed to a total production from Crown land of 1.75 million cubic metres for 1988/89. Another 192 133 cubic metres of log materials were taken from private property.

Log Production From Crown Land and Private Property 1988/89

Type	Crown Land (m ³)	Private Property (m ³)	Total (m ³)
Sawlog Timber *			
Jarrah	562 481	21 449	583 930
Karri	236 443	13 145	249 588
Marri	16 893	5 446	22 339
Blackbutt	1 465	1 519	2 984
Wandoo	1 486	1 408	2 894
Sheoak	465	27	492
Other		522	522
Total hardwood	819 233	43 516	862 749
Pine	120 274	15 463	135 737
Total Sawlogs	939 507	58 979	998 486
Other Log Material **			
Hardwood	613 297	91 865	705 162
Softwood	198 250	41 289	239 539
Total Log Timber	1 751 054	192 133	1 943 187

* Sawlog timber from all sources, including veneer, but not including chiplogs, firewood, piles and poles.

** Includes chiplogs, pine particleboard material and pine rounds.

Compared with the previous year the volume of all log materials increased 7 436 m³ to 1 943 187 m³, and pine logs by 41 668 m³ to 375 276 m³.

Longer term trends are shown in Appendices 4, 5 and 6.

Sawn Production from Crown Land and Private Property

	1987/88 (m ³)	1988/89 * (m ³)
Sawn Timber Production		
Crown Land	266 382	285 006
Private Property	27 279	20 344
Sawn Sleeper Production		
Crown Land	24 321	28 953
Private Property	670	888
Total	318 652	335 191

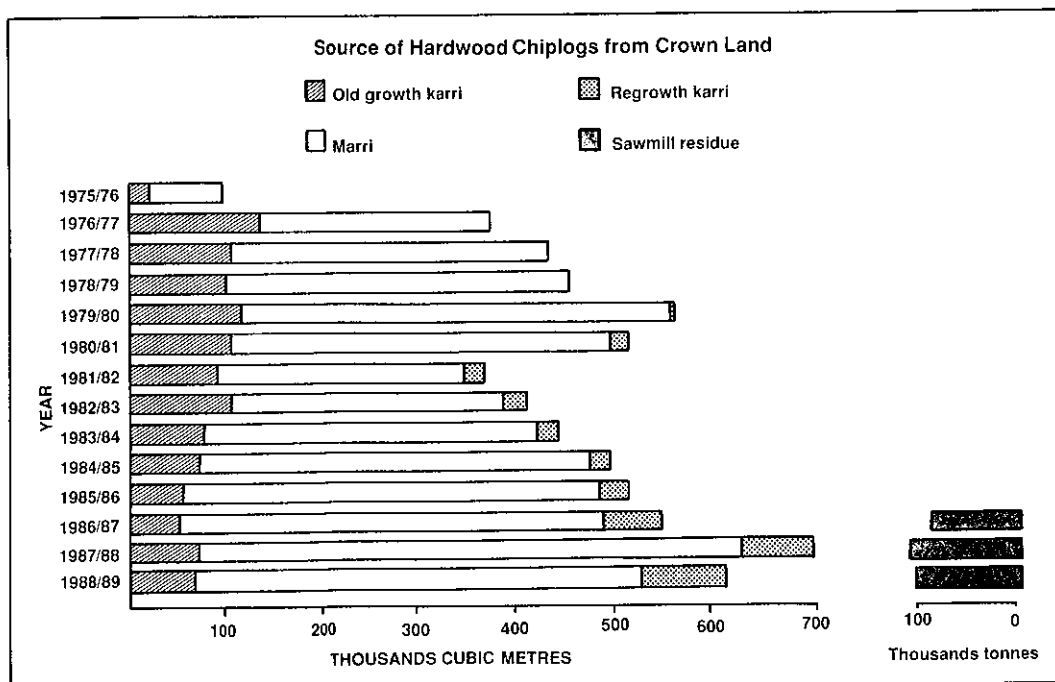
* Provisional figures.

It is to be noted that the 1988/89 figures in this table are provisional. At the time of compiling the report, final returns were not available.

Veneer Log Production

	1987/88 (m ³)	1988/89 (m ³)
Karri	3 129	2 417
Jarrah	-	-
Pine	5 397	5 723
Total	8 526	8 140

The supply of high quality karri logs for production of veneer decreased by 712 cubic metres to 2 417 cubic metres.



Hardwood Chiplog Production from Crown Land and Private Property.

	1987/88		1988/89		Variations with prev. year
	m ³	%	m ³	%	
Crown land					
Old Growth Forest		89.55		86.61	
Marri	551 673	79.15	459 775	74.97	-16.66%
Karri	72 490	10.40	71 397	11.64	-1.51%
Regrowth Forest (thinnings)		10.45		13.39	
Marri	764	0.11	4 214	0.69	451.57%
Karri	72 040	10.34	77 911	12.70	8.15%
Sub-Total Crown land	696 967	100.00	613 297	100.00	-12.00%
Private Property					
Marri	101 695		80 829		-20.52%
Karri	11 189		11 036		-1.37%
Total Crown land and Private Property	809 851		705 162		-12.93%

The supply of marri and karri chiplogs from Crown Land decreased by 83 670 m³ (12%) to 613 297 m³.

The trend in a relative decline of chiplogs from the mature karri forest continued. In 1988/89 approx. 75 per cent were marri and 11.6 per cent were karri. An increasing proportion of chiplogs came from thinnings from regrowth forests (karri 12.7 per cent, marri 0.7 per cent).

The W.A. Chip and Pulp Co. Pty. Ltd. also obtained 91 865 m³ from private property; a decrease of 21 019 m³ from 1987/88. Sawmill residues contributed 102 321 tonnes to woodchip production.

Longer term trends for hardwood chiplog production are shown in Appendix 6.

Sandalwood Production 1988/89

	1987/88 tonnes	1988/89 tonnes
From Crown Land		
Green Sandalwood	642	768
Dead Sandalwood	1 159	1 123
From Private Property	207	207
Total	2 008	2 098

Sandalwood production increased by 90 tonnes to 2098 tonnes. Production included 6 tonnes by pastoralists under the economic hardship provisions and 176 tonnes of dead wood salvage and chips.

Licences to obtain sandalwood were issued to 28 contractors (10 full time, 8 part time, 4 pastoralists and 6 private property).

Exports totalled 1 960 tonnes for 1988/89 compared with 1 816 tonnes for the previous year.

Firewood Production and Consumption 1988/89

Source	Type	1987/88 (tonnes)	1988/89 (tonnes)
Crown land sawmills	For Sale	39 876	53 151 *
	For Own Use	697	2 845
Firewood Contractors	Local Firewood Permit	718	174
	Contracts of Sale		5 518
Industrial use	Forest Produce Licences	21 702	14 146
	Charcoal Logs		2 056
Sub Total		62 993	77 890
Private property sawmills	For Sale	6 667	2 156
	For Own Use	244	145
Total		69 904	77 564

* July-Dec 1988 figures only, Jan-June data not yet available. Above data includes Solid Wood, Sawdust Shavings, Chips and Edgings sold as fuel and for own use.

Firewood is obtained as a by-product of sawmilling, from forest thinning operations, and from dead trees fallen in the forest.

These figures do not take into account the private collection of firewood from the forest by members of the public for their own use.

Other Forest Produce 1988/89

			1987/88	1988/89
South West Division Agricultural Areas				
Mining timber	(m3)	Crown land	2 051	1 336
		Private property	N/A	N/A
Piles, Poles & Bridge timbers	(m)	Crown land:		
		Hardwood	108 318	97 977
		Softwood	13 746	8 562
		Private property	10 485	7 078
Fence posts & rails	(nos.)	Crown land	169 635	149 988
		Private property	19 902	18 095
General fencing material	(tonnes)	Crown land (Contracts of Sale)		775
Strainer posts	(nos.)	Crown land	12 204	6 107
		Private property	N/A	N/A
Goldfields Area				
Mining timber	(tonnes)	Crown land	1 709	1 365
Fence posts & rails	(nos.)	Crown land	9 654	7 991
Strainer posts	(nos.)	Crown land	1 170	743

Mining timber production in the goldfields decreased by 344 tonnes to 1365 tonnes, due to increased open cut mining and new methods of mechanised underground mining reducing demand for mining timber.

Thinning operations in the mallet forest at Narrogin yielded 46 679 pieces of fence post material and 338 tonnes for tool handles.

The updated summaries of exports and imports of forest produce, taken from figures supplied by the Australian Bureau of Statistics, are shown in Appendices 7 and 8.

Timber Industry Regulation and Employment.

At 30 June 1989 a total of 113 mills were registered under the provisions of the Timber Industry Regulation Act: 53 mills receiving logs from Crown Land, 37 mills receiving logs from both Crown Land and Private property and 23 mills receiving log supplies solely from private property. The average number of persons employed in all timber mills each month throughout the year was 2 080.

The district inspectors made 1 116 mill inspections and 816 bush inspections. there were 126 notifiable accidents during the period, one being fatal. A notifiable accident under Section 14 of the Timber Industry Regulation Act is comparable with a lost time accident as defined by the Australian standard. The number of accidents is approximately 0.97 accidents per sawmill. This is equivalent to a frequency rate of approximately 22. (The frequency rate is calculated as the number of lost time accidents per 1 000 000 man hours worked).

The cost of administering the Timber Industry Regulation Act for the year was as follows:

Salaries:	102 230
Travel Allowances; plant costs and sundries	29 797
TOTAL	\$132 027

The overall employment in forest based industries for 1988/89 was estimated as follows :

Sawmilling employees, including bush workers (employees of registered sawmills only) :	2 080
Other wood processing industries (includes employees "working in wood" as defined under the Factories and Shops Act (1963)) :	3 000
Firewood, mining timber and pole scutters working under licence or contract :	20
Sandalwood workers	63
Apiarists (2 424 sites registered) :	141
TOTAL	5 304

Seed Handling

Seeds of the principal species needed for Departmental forest plantings, rehabilitation and conservation projects, as well as for public sales were acquired, processed and stored at both the Como Seed Centre and Manjimup Seed Store.

The following amounts of seed were acquired:

- Karri : 141 kg - contract and Dept. collection.
- Pine : 716 kg - mainly Dept. collection of *P. radiata*.
- Blue Gum : 1 270 kg - (of seed and chaff) - mainly purchased from interstate.
- Other Species : 295 kg - purchases and Dept. collections.

Seed disbursement (mostly to Nurseries) totalled 677 kg which included 40 kg of blue gum seed recovered by cleaning at the Seed Stores, from about 300 kg of acquired seed with chaff. Receipts from public sales totalled \$19 543.

Tree Nurseries

The 2nd stage of the nursery rationalization occurred in 1988/89 with closure of the Nannup Pine Nursery and significant expansion at the Manjimup Nursery.

Broome and Narrogin, primarily commercial nurseries, continued to grow plants suitable for rural revegetation, roadside and mine rehabilitation, community projects and amenity. Production at Narrogin increased by 30% in response to demand for more on-farm plantings. Broome Nursery distributed plants to 27 major centres from Kununurra to Carnarvon.

Four species of pine seedlings were grown again at Gnangara, with 10% produced for private sale, and the bulk for CALM's plantation programme.

At West Manjimup, installation of new facilities enabled an increase in production of container stock from 3 million to nearly 8.5 million. Most of these were blue gums for the expanded Hardwood Sharefarming programme. Seedlings of twenty other species, including 1.7 million karri and nearly 306 000 jarrah and marri trees, were raised for rehabilitation works, forest regeneration and private sale.

Adjacent to the Hardwood Nursery, early preparation of 20 hectares of leased property began the conversion of pastured land to nursery beds which will be used to grow all pine open rooted seedlings from 1990.

Building of a new Seed Store and laboratory commenced late in the period at the site which, with the amalgamation of nursery, seed and later tree breeding functions, is to be called the Plant Propagation Centre.

Research trials in the Nursery funded by the National Afforestation Programme, were directed at comparison of seedling performance in a range of container types and soil media. On-going evaluation of field response of these seedlings is intended.

Departmental Nursery Production 1988/89

Plant Type	Nursery	For Public Sale	For Dept Use	Total
Container Stock				
Mixed sp.	Narrogin	358 000	45 600	403 600
Mixed sp.	Manjimup	128 000	273 000	401 000
Karri			1 050 000	1 050 000
Jarrah & Marri			306 000	306 000
Blue Gum		420 000	5 940 000	6 360 000
NAP Research			324 000	324 000
Mixed sp.	Broome	41 000	1 400	42 400
Open Rooted				
Karri	Manjimup		730 000	730 000
Pine (ex seed)	Gnangara	266 000	2 500 000	2 766 000
Pine cuttings			150 000	150 000

Forest Inventory

The new two-stage inventory of the jarrah forest entered its second year with a further 350 000 ha of production forest being sampled. This produced approximately 6 000 photoplots of 0.25% sampling intensity and of these 600 were used in the second sampling stage as ground plots. The remainder of last year's ground plots (240) were measured as well as about 300 of the 600 ground plots in this year's program.

Due to problems of equipment and staffing only 1 500 of last year's photoplots have been measured. Recent additional staffing and priority given to this task should clear the backlog and proceed well into this year's photoplots during the coming year.

In Manjimup, staff remeasured 12 karri regrowth plots as a part of the routine procedure.

Assessments of all available forest products on 220 ha of private property and 400 ha of CALM land subject to possible land exchange were carried out.

A total of 778 permanent plots were measured in Departmental pine plantations as a part of routine procedure to update growth rate information and to provide the basis for decisions on silvicultural and logging planning.

Additional projects were undertaken in the Blackwood Valley CALM pine plantations to assess wind and drought effects.

In Jarrahdale and Dwellingup Districts 74 plots were remeasured to assist in the continuing studies on jarrah seedling and lignotuber development.

Operational Planning and Control

In the Northern and Central Forest Regions, six softwood logging plans have been prepared. Nine hardwood logging plans were prepared for the three forest regions.

A major review of both hardwood and softwood logging planning procedures was commenced. This has been necessitated by the additional complexities brought about in implementing the Timber Strategy which requires formal planning for the removal of a wide range of forest products from any one operational area. The review and recommendations should be completed to allow implementation of new procedures in the compilation of the next year's logging plans.

Further use was made of vertical 70 mm photography taken from the Departmental fire spotter planes to ensure accurate mapping of the boundaries of logging and regeneration in both hardwood and softwood forests. Together with other commercial and tending details, this information was used to update and maintain the established records systems.

Following on the previous year's 73 loads of karri sawlogs, an additional 9 truckloads of chiplogs and 28 truckloads of sawlogs were measured and analysed for the establishment and monitoring of weight-volume conversion factors.

COMMUNITY EDUCATION AND INTERPRETATION

Community Education and Interpretation are important aspects of the Department's work, linking directly with its primary objectives and broad strategies.

The Department is committed to the principle that it is managing public land and natural resources, and conserving indigenous wildlife on behalf of the public of Western Australia. Consequently, particular importance is placed on informing the public of the Department's activities and wherever possible involving the public.

Three principal and most important activities are:-

- Staff involvement in talking to community groups of all sorts, describing aspects of conservation, natural land management and other CALM activities.
- Provision of interpretive facilities as displays and signs at visitor sites on lands managed by CALM.
- Brochures produced for recreation sites and the Department's journal 'Landscape' and other special publications which are aimed at providing a general readership with education items on conservation, forests and wildlife. Details of these are in Appendix 15.

Important community education and interpretation activities completed by the Department in 1988/89 are:-

- The Education Officer has significantly increased consultation and advice to teachers, in program planning; talks to teacher organisations and promotion within the Ministry of Education of CALM educational materials, resources, facilities and activities. Community Education programs have been further developed on the issues of dieback, natural risk areas, greenhouse effect, and Arbor Day. In addition, teachers and community group leaders have attended CALM sponsored training programs in Earth Education (Yanchep, Woodvale), Forest Ecology (Perup) and Expedition Skills (Pemberton).
- Community awareness of the various functions of the Department of CALM was successfully promoted at the Public Service Expo.
- Forest Recreation and Wildlife exhibits have been displayed at a number of metropolitan shopping centres; marine wildlife display panels were CALM's contribution to the Atlantis Marine Park Education Centre; A Tree of Life exhibit was loaned to the SciTech Discovery Centre during the week of World Environment Day (5 June) and Arbor Day (9 June); a CALM Greenhouse Effect display contributed to the Australian Association for Environmental Education's World Environment Day forum and information market on the Greenhouse Effect.
- Publications in the educational series have continued with the printing of a Coastal Wetlands Explorer booklet, Bush Corridors and Arbor Day posters, and additions and reprints of educational Resource Notes.
- Productions of interpretive signs and displays saw the placement of 8 information display shelters. Interpretive signs (sealions, whales and dolphins) for the South Coast Region and Marmion Marine Park, and the Boyinaboat dive trail at Hillary's Boat Harbour, Marmion Marine Park, were also prepared and installed.
- CALM contributed significantly to the Bicentennial celebrations establishing 23 heritage trails on CALM lands including production of books (3), brochures (15), display shelters

(3), trailhead (9 trails) and trailside signs (11 trails). Details are shown in the Services section of this report.

- The culmination of CALM's Bicentennial projects was the completion of the Milyering Bicentennial Visitor Centre for the Cape Range National Park/Ningaloo Marine Park. The building was opened in September by the Hon Barry Hodge.
- The interactive videodisc project, part of the Milyering Visitor Centre's exhibits was publicly launched at the Public Service Expo in May and then exhibited at Underwater World, Atlantis Marine Park, Curtin Univeristy and CALM's Como and Crawley centres in Perth.
- A volunteer program to train 10 people to assist in the running of Milyering Bicentennial Visitor Centre has been completed.
- A volunteer group of people are now available to care for injured and disabled wildlife from Cape Range National Park and environs.
- The Kelmscott office hours have been extended. They are now open from 10am to 3pm on weekends and public holidays except Christmas Day.
- The crocodile awareness campaign in the Kimberley continued with the installation of large and small format signs, distribution of drink coasters and the running of a community service television announcement. Illegal souveniring of the small format warning signs has been lessened with the introduction of a new fixing system. Sales of the signs as a souvenir have continued.
- Ongoing extension was provided to the rural community. The main thrust is to provide farmers and Shires with information on tree species and methods of rehabilitation.
- Twenty eight presentations of marine management were given to interest groups in the metropolitan area.
- CALM Goldfields Region staff participated in the activities of the Goldfields Dust Abatement Committee and organised the planting of 2,000 trees near Boulder.
- A Summer Interpretive Programme grew to involve most Walpole district staff and a number of volunteers. The programme was crafted to highlight the many facets of Walpole Nornalup National Park and surrounding State forests.
- Planning, researching and drafting a comprehensive set of 6 scenic drives for the Walpole district, each with a separate focus was undertaken. Care was taken to integrate interpretation/recreation and district operations priorities. Local people were used to research and illustrate the brochure.
- The Northcliffe information project was relocated from the CALM ranger's office to the Tourist Information Centre at the crossroads. New interpretive design and functions were drawn up with input from the Tourist Bureau Manager. Local people were used to put displays together. Display, design and planning is complete. Construction and production are underway.
- In the Manjimup Timber Park, construction of a fire lookout tower was completed with the assistance of volunteers. An associated display reconstructing the fabric of life for the early fire observers, equipping of an early District Forester's office, and a bush telephone system linking most of the display buildings were also completed.

- A successful public relations and information program including, "On the Ridge 1989", displays at local shows and improved relations with local government authorities and other special interest groups was achieved in Busselton.
- A public contact programme was run at Yanchep National Park in early 1989. The public was offered the opportunity to go wild-caving, walking through history, through a collapsed cave system, on a fauna survey or on other interesting walks in the park. The programme will be repeated.
- A display was mounted at Hyde Park for the WA Playgroup Association in October. 2-3,000 toddlers were at the festival and the CALM tent was packed all day as the children played with the interactive boxes, puzzles, toys and were painted to look like numbats and possums.
- Regional personnel again manned a locally produced display at Wagin's Woolorama. Increased queries from the public have resulted in a more positive achievement from this important show in 1988/89.
- A permanent display on sandalwood funded by the Sandalwood Conservation and Regeneration Project has been completed at the Museum of the Goldfields which opened in mid June.

Training and Extensions

A number of training programs were conducted throughout the year:

Introductory and Advanced Recreation Planning and Management Courses at Dwellingup and Point Walter for CALM staff.

Earth Education Courses at Yanchep and Woodvale for external participants.

Perup Forest Ecology Course as part of the University of WA Extension program.

Four Expedition Skills and eight Outback Safety and Bushcraft courses, principally for outsiders.

Two technical papers were presented at the National Interpreters Conference. Talk were given to various community groups and associations.

Visitor Data Collection Program

The visitor data collection programme designed during 1987/88 has been implemented throughout the Department. Visitor use is currently being monitored in 47 parks, reserves and forest areas through the use of observational and questionnaire surveys and vehicle counts. Approximately 80 traffic counters were purchased from Parks Improvement Program funds and distributed to all Regions, Districts and Park centres involved in the data collection program. A computer programme for collating and analysing this information is currently being written.

RESEARCH

Administrative changes

In 1988-9 the re-organization of Research Division begun in 1987-8 was completed. In particular, the Policy Group led by the Director of Research was restructured so as to better supervise the research programs, and a new Curator of the Herbarium, Mr James Armstrong, was appointed.

The appointment of Dr James Stoddart has enabled a Marine Conservation Program to commence.

Major achievements

The overall aim of Research Division is to develop a scientific basis for conservation and land management in Western Australia by conducting research and providing expert advice.

The significant accomplishments of each program are summarized below. Further details of activities during the year are included in the second edition of the Division's rolling Five Year Plan.

Executive And Administrative Support Program

During 1988/89 the Program concentrated on three main areas: bringing all staff into the same titles, awards and conditions; improving financial management and reporting; and reviewing the efficiency and organization of Research Programs and the Research Division Policy Group (RDPG).

Considerable progress has now been made towards achieving a uniform system of titles, conditions and awards. Account numbers and expenditure reporting systems were revised so that Program Leaders and the RDPG are better able to control expenditure. The Executive and Administrative Support Program was reviewed by RDPG in March 1989, resulting in minor changes in duties and responsibilities of senior staff.

Biogeography Program

Field work for the National Rainforest Conservation Program, and the Yanchep National Park and Cape Arid National Park surveys was completed. Reviews of the flora of the Warren District and Shark Bay area were prepared for publication. Surveys of the Dampier Archipelago and the Southern Beekeepers Reserve were published. Flora lists for North West Cape, Porongurup and Torndirrup National Parks were prepared for use by Operations staff. A review of pastoral land for conservation was undertaken, and the update of the CTRC System 7 report was completed.

Entomology Program

An Operational-scale experiment examining if a single autumn fire can reduce Jarrah Leafminer infestation was set up in Collie District. This consisted of a 240 ha plot, half of which was burnt in Spring 1988 and the rest burnt in Autumn 1989. Leafminer abundance was sampled before burning, as was the condition of the crowns of 180 sample jarrah trees.

The hypothesis being tested is that, because Autumn fires scorch tree crowns, the flush of new, small leaves would be unsuitable oviposition sites. The Jarrah in the stand should then have one full year in which to develop crowns and increase starch reserves. If successful, the research could lead to modification of current fire protection practices in Jarrah forests where leaf miner is a pest.

Three species of parasitoid of Gumleaf Skeletonizer have been collected. One of these was common in the southern Jarrah forest. Another occurred infrequently, although in South Australia it is common.

Two biological forms of Gumleaf Skeletonizer have now been found in Western Australia. One form, with one generation per year, occurs in Jarrah forest whereas a form with two generations per year occurs in the lower southern Wheatbelt and south coast near Walpole.

Identification of the Lerp infesting Flat-topped Yate has been verified as *Cardiaspina brunnea*. Prior to 1982 this species was known only from New South Wales.

Construction of a modern, functional insectary complex at the Manjimup Research Centre has been approved.

Fauna Conservation Program

Co-operative research on captive breeding of the Western Swamp Tortoise in 1988/89 resulted in the production of 11 hatchlings. It is hoped that these hatchlings can be reared to maturity and thus add substantially to the known numbers of this critically endangered reptile.

Continuing studies of the marine turtles have now shown that adult female green turtles dispersing from west Kimberley rookeries can travel as far as Northern Territory and Queensland waters. An Exmouth Gulf nesting loggerhead (one of only 21 females tagged) was also reported from the Northern Territory. A loggerhead turtle nesting at Varanus Island in the Lowendal Islands Nature Reserve in the 1988/89 season was the fourth nesting species to be recorded from this site. Continued involvement of West Kimberley Aboriginal people in the project work was sustained and at North West Cape - Ningaloo and in the Pilbara, other members of the public were successfully involved.

Better reporting of the occurrence of leatherback turtles in Western Australian west coastal areas has pointed to a possible problem of significance to conservation of this most endangered marine turtle. The majority of reports have resulted from fatal but accidental entrapment in commercial fishing gear.

Some important flatback turtle rookery sites have been identified off the Kimberley coast.

Funding from World Wildlife Fund Australia permitted expansion of research on the Ground Parrot. It was discovered that breeding commenced at least two months earlier than previously believed, and that these birds were inhabiting long unburnt plant species-rich heaths on the south coast, and were also at much lower densities than in eastern Australia.

Surveys in February 1989 at Boyagin Nature Reserve showed that the Numbats re-introduction project conducted through 1985-87 was having continued success. Numbats were found through most of the eastern half of the reserve.

Numbats were also bred in captivity again, the only success since 1985, when it was first achieved. Provision of improved diet and quiet surroundings apparently contributed to this favourable result.

Wheatbelt rock-wallaby populations remained high in areas where fox numbers were controlled. This emphasises the value of fox control in protecting remnant mammal populations.

Further information on distribution of the Chuditch was obtained and a reporting network at Operations level initiated.

Fire Program

The proceedings of the National Workshop on Fire Management on Nature Conservation Lands, hosted by CALM in October 1987, were published as a Departmental Occasional Paper (1/89) in May 1989. Copies have been distributed to all Workshop delegates, and to many individuals and organizations concerned with fire management and conservation in Australia. The document makes a valuable contribution to knowledge of this subject.

In the arid zone, a study of early black and white aerial photography was initiated to gather information on Aboriginal burning practices in desert areas. In association with this work, patch burning, using incendiaries dropped from aircraft, was successfully implemented in the Gibson Desert Nature Reserve. Data on fire behaviour, and the response of mammal, bird and reptile populations to these burning patterns are also being gathered in this Reserve. Similar work on the effect of fire on small desert vertebrates is also being undertaken at Queen Victoria Springs Nature Reserve. In the Goldfields a plan for fire research and management of desert reserves was prepared in conjunction with Regional staff.

In the south-west of the State a successful experimental burn was carried out in Durokoppin Nature Reserve (near Kellerberrin) in mid March 1989; work on invertebrates in the burnt area and on adjacent unburnt plots is continuing. Near the south coast, integrated studies on fire behaviour and the effects of fire on vegetation and small vertebrates have commenced in mallee-heath shrublands in the Stirling Range National Park. Work on invertebrates (particularly spiders, beetles and termites) in relation to fire is also underway in the Park, through a consultancy using funds provided by the World Wildlife Fund. Guidelines for eradicating wildings from *Pinus radiata* plantations were provided for use by Operations staff; and a summary of information concerning the fire ecology of rare plants occurring in south-west forests also was prepared.

Flora Conservation Program

Two Rare Flora Wildlife Management Programs - one for all rare flora in the Northern Forest Region and the other for the Rose Mallee (*Eucalyptus rhodantha*) - have been completed and will be published later in 1989. These are the first Wildlife Management Programs to deal with rare flora and the program for the Northern Forest Region is the first in a series which will eventually cover all CALM regions.

The rare flora data base has been expanded and now consists of five categories of priority species in addition to the Declared Rare Flora. Updating the schedule of Declared Rare Flora has continued with the new list to be released in mid 1989.

Herbarium Program

The Herbarium was formally amalgamated into CALM and the process of integrating its functions with those of the Research Division commenced. A new interim Herbarium structure has been established to facilitate the integration process and to optimise productivity.

Two CALM Regional Herbaria were established at Albany and Manjimup; these, together with the Karratha Regional Herbarium, now form the nucleus of CALM's Regional Herbarium Network.

Herbarium staff made significant contributions to the Kimberley Regional Flora Project as well as to two external projects: the Flora of Australia and the Flora of New South Wales.

Two significant collections were processed and incorporated into the Herbarium during the year. These were the Ken Newbey collection (5 000 specimens) and The University of Western

Australia collection (15 000 specimens). The *Verticordia* Reference Collection, prepared by the *Verticordia* Study Group, was incorporated into the Herbarium's Community Reference Herbarium.

A number of important research papers were published during the year, including one interpreting biogeographic patterns in *Acacia*.

Marine Conservation Program

A major research and monitoring program has been established at Ningaloo Marine Park, including a survey of the entire Ningaloo Reef to examine the predator-prey relationship of *Drupella* and corals.

Plant Diseases Program

Highlights of plant disease research extension has been the production of a major review of *Phytophthora cinnamomi* in the jarrah forest and a 9 minute video on south coast dieback.

Systems using presence of indicator plant species have been developed to rate *P. cinnamomi* hazard in the high and the intermediate-low rainfall zones of the northern jarrah forest. The high rainfall zone system has been validated and accurately predicted 80% of the high impact (many jarrah dying or dead) types. The system for the intermediate-low rainfall zone is presently being validated. Under evaluation are potential improvements to the systems by the incorporation of position in the landscape and aspect.

Stress and growth of jarrah on *P. cinnamomi* infected high impact sites and on intermediate/low impact (few if any dead jarrah, few to many dead *Banksia grandis*) sites have been compared during summer droughts. Water stress was greatest in jarrah trees on infected than those on uninfected sites. The level of stress was greater on high than on intermediate/low sites. Overall effects of *P. cinnamomi* on tree growth are complex, being determined by the level of infection of individual trees, the "thinning effect" caused by the fungus killing competing trees on site.

Jarrah resistant to *P. cinnamomi* have been identified. The heritability of the resistant character in the field trial was found to be 0.86. A broader screening program has now commenced to select resistant lines for use in a *P. cinnamomi*-resistant jarrah seed orchard.

Research over the last two years has significantly advanced knowledge of the impact, development and spread of *Phytophthora* species in non-forested areas. The rate of expansion of disease in banksia woodland infected with *P. cinnamomi* has been determined from aerial photographs over a period of 35 years. When not assisted by movement of soil or free water the diseased areas increased by 1.0 m yr⁻¹. In two banksia woodland communities the fungus was recovered from groundwater 3 m and 5 m below the soil surface.

A major investigation of the impact of *P. cinnamomi* on the vegetation of the Stirling Range National Park commenced in December. Collections have accumulated in excess of 523 plant species representing 432 herbarium vouchers and 466 field vouchers. Of the 281 plant species rated for susceptibility to the fungus, one third were affected by disease and 30% of these were very susceptible. Relationships between community structure and impact of the disease have been determined.

Assessment of chemicals to control *Phytophthora* species is a continuing high priority. One application of metalaxyl significantly reduced recovery of *P. cinnamomi* from colonized pine plugs buried up to 1.3 m in Bassendean Dune sand. Ten per cent phosphorous acid has arrested lesion extension in *B. grandis*.

Isozyme analysis has been used to determine the identity of *Endothia* and *Cryphonectria* species isolated from cankers of jarrah.

Of the 318 cultures that were forwarded by the detection service for the identification of *Phytophthora* species, 59 were identified to species level. A database of distribution and hosts of *Phytophthora* species is being compiled from the sampling data.

Rehabilitation Program

The long involvement in rehabilitation after bauxite mining in the jarrah forest has been substantially concluded with the publication of a major review and with the introduction of comprehensive dieback control procedures into the mining operation.

The Rehabilitation program has made a large contribution to the emergence of short-rotation eucalypts as a potential farm crop. Such a crop is of great importance to agriculture, water resources and riverine and wetland conservation throughout the lower south west. To further enhance the development of the crop a large three year Federal Government grant under the National Afforestation Program has been obtained. This will be a major part of the program's activity for this period. It is clear that farm tree planting will need to integrate with other farming practices and the long period of research into agro-forestry undertaken within the Rehabilitation and Silviculture programs will prove especially valuable in helping to achieve this.

Farm tree planting research in drier areas (less than 600 mm rainfall per year) has been concluded and will be replaced with a project to identify and develop management practices for remnants of native vegetation on farms.

Research Computing Support Program

The goal of providing at least one personal computer terminal per research scientist was accomplished. Training courses were conducted regularly at Woodvale, Herbarium, Manjimup and Busselton. There has been a considerable increase in the level of computer literacy, expertise and useage among Research Division staff.

Within the Division the computing approach and equipment in use have been standardized. Hardware and software have been integrated.

The NUMTRACK system was transferred from the Tektronix to the VAX.

A Video digitizer has been acquired.

Research Methods Support Program

In the past year 40 Research Project Plans have been vetted. Some of these plans extend into the next century. Data sets drawn from fauna conservation, silviculture, hydrology, timber technology, human recreation, biogeography, wetlands, entomology and plant disease have been analysed. New methods such as a Community Attrition Index and a novel approach to measuring the pattern and density of natural entities have been developed.

Silviculture Program

In the past year a range of major long term silviculture experiments commenced. In the jarrah forest a family/provenance trial comprising 250 families from 25 populations from the main range of jarrah forest was established in regenerated forest on minesites at Huntly and Jarrahdale. Large scale experiments examining the interaction between thinning and fertilizer were established in both karri forest and radiata pine plantations. These experiments will yield data on the effects of intensive management on the productivity of these systems. It is intended to replicate these experiments on a range of sites.

Experiments on the chemical emasculation of *Pinus radiata* have demonstrated that pollen production can be inhibited. This major advance will allow much greater control of pollination within the new hedged artificially pollinated seed orchard (HAPSO) at Manjimup and thus increase the gains possible from pine breeding. A second generation *P. pinaster* seed orchard was also established at Manjimup during 1988. This will allow the consolidation of gains made by *P. pinaster* breeding research.

A survey of factors affecting the occurrence of drought death in *P. radiata* plantations in the Blackwood Valley was conducted in 1988. The major factors found to influence the occurrence of drought death are tree stocking, soil depth, landscape position, and aspect. The understanding of the interaction between these factors will allow better prediction of the stocking that different sites can carry. A survey of the factors that contributed to the severe windthrow in the sunkland pine plantations was also carried out.

A major review of research on the interaction between *Phytophthora cinnamomi* and *Pinus radiata* was completed. Resistance to the infection of *P. radiata* by *P. cinnamomi* is under strong genetic control. It appears that the resistance of *P. radiata* to *P. cinnamomi* is controlled by a large number of genes each having a small but additive effect. To minimize productivity losses in plantations it is essential that resistance to *P. cinnamomi* be included as a major character in the genotype of seedlings and cuttings used in afforestation.

A study of the economics of pine agroforestry in the 500-700 mm rainfall zone was carried out in conjunction with Economics Branch using data from long term experiments near Mundaring.

Wetlands And Waterbirds Program

Significant accomplishments were:

Publication of "Wetlands in Nature Reserves of South-Western Australia, 1981-1985" RAOU Report No. 30.

State Government commitment to funding a major new project on waterbird usage of wetlands of the Swan Coastal Plain.

Publication of a major review paper - "Western Australian Wetlands" - concerning the characteristics, conservation and management of the State's wetlands.

Department commitment to funding a three year continuation and expansion of annual waterfowl abundance monitoring in South-Western Australia.

Significant advances in methodology of monitoring and controlling populations of nuisance midges (chironomids) on Perth's wetlands.

Assessment of potential for harvesting of saltwater and freshwater crocodiles (*Crocodylus porosus* and *C. johnstoni*) in Western Australia.

Wood Utilization Program

Continuing trials of stockpiling jarrah logs under watersprays showed that a regime of 15 minutes on and 165 minutes off did not adversely affect log quality. This is a 92 per cent saving in water and energy required to operate pumps. A trial using low pressure watering systems to stockpile logs was commenced.

Sawmilling trials of regrowth jarrah, karri, marri and Tasmanian blue gum were carried out. All species produced satisfactory sawn recoveries.

Timber drying studies continued, using a research batch kiln and an experimental high temperature kiln.

The major advance was the development of a system to edgejoint and face-joint thin sections of regrowth eucalypts to produce either furniture quality panels or structural material. This has great advantages for the forest products industry and furniture manufacturers.

A study of radiata pine assessed the sawn graded recoveries from logs taken from the green crown of the trees.

Several successful field days at the Wood Utilization Research Centre, Harvey, resulted in research findings being taken up by industry and put into commercial practice. Wood Utilization staff delivered lectures on wood properties to students in the T.A.F.E. Certificate in Timber Technology. Seven W.U.R.C. Reports were published during the year, and six Technical Reports for limited distribution prepared.

Accommodation

Shortage of laboratory and office space was overcome at the Como Research Centre. However, problems remain at the Dwellingup, Herbarium and Woodvale centres.

External Liaison

Cooperation among Government departments and between Government departments and private organizations continue to be of an excellent standard. Research staff have often been called upon in a consultative capacity over the year. Collaborative studies have been conducted with the Environmental Protection Authority, Water Authority of Western Australia, ALCOA, CSIRO and various other bodies.

External funds were received to carry out and continue with a number of research projects throughout the year. Major funding bodies during 1988/89 were Australian National Parks and Wildlife Service (\$93 000), World Wildlife Fund of Australia (\$60 000), Australian Biological Resources Study (\$79 000), Western Australian Heritage Committee (\$10 000), ALCOA (\$90 000), Department of Industry, Technology and Commerce (\$386 000), Department of Arts, Sport, the Environment, Tourism and Territories - National Rainforest Conservation Program (\$110 000), Department of Primary Industries and Energy - National Afforestation Program (\$500 000). In addition \$20 000 was again received from the Western Australian Department of Agriculture as part of the National Soil Conservation Program for a three-year research project at Esperance.

Research Project Plans

All proposed research is vetted for relevance, cost effectiveness and scientific excellence. During 1988/89 40 of these plans were approved.

Publications

All manuscripts are vetted by appropriate senior staff for scientific merit and policy implications before papers are submitted to scientific journals for publication. During 1988/89 50 papers were approved. In addition, over 80 papers and reports were published by Research Division staff during the year. Most of these appeared in journals published by organizations independent of CALM; this helps ensure that the research done receives external refereeing and achieves national and international exposure, thereby maintaining the high scientific profile enjoyed by CALM.

Seminars

Seventeen formal seminars were presented by Research Division staff during the year, with CALM staff outside Research Division and scientists from Tertiary institutions and other Government agencies in attendance, as well as a number of the public.

SUPPORTING SERVICES

Computing

Systems

The payroll system was modified to allow costing of salaries to Departmental programs. It was a major effort for salaried staff throughout the Department to fill in timesheets each fortnight. This move was a significant step towards CALM's goal of accurate costing of all activities to the Department's corporate objectives.

A project to introduce a new integrated accounting system to do program accounting was commenced. Overheads are currently the only part of the Departments expenditure not fully costed.

The new system will allow reallocation of these overheads to the primary programs. It will also provide project costs and improve the clerical procedures for processing finance. Specifications for the system were produced in 1988 and tenders were called for the supply and installation of a package. Assessment of the tender responses is nearing completion. The new system will also handle debtors, creditors, and the stores and assets register.

The project to upgrade the Hardwood Logging system proceeded. It culminated in the inclusion of Softwood Logging into the same system in early 1989. The system is now known as the Logging Operations Information System. Improvements made to the system include an automated interface to the debtors system, credit adjustments, automated price indexation, printing of schedules, new management reports and processing of mill returns.

A project was started to provide complete management information for Hardwood Sharefarming. The specifications for the project are currently being defined. It will integrate many areas including economics, land information, financial costing, logging operations and research.

A small system was development for storing and retrieving information about the conservation value of roadside vegetation. It is being used by the Roadside Vegetation Conservation Committee and data is to be distributed to Shires.

The reserves system was extended to assist in the assessment of reserves as a result of the Bailey Committee report on Exploration and Mining in National Parks and Nature Reserves. Reserve assessment can also be stored providing more detailed management information than previously available.

Hardware

The Departments Intergraph Vax computer was upgraded to an Intergraph 350 early in 1989. This provided much needed additional resources for the increasing number of land related Geographic Information Systems.

The number of microcomputers in the Department has increased to over 200. These are providing increased efficiency in offices throughout the State for word processing and other clerical tasks.

Economics

Hardwood and Softwood Sharefarming

A review was made of principles and parameters used to calculate payments to landowners joining the sharefarming schemes. Payments were calculated for a number of properties and contracts were negotiated with landowners. In addition, annuities were indexed for payment to landowners who had joined the schemes earlier. All sharefarming records were updated. A summary of contracts negotiated during the year is presented below.

A. Softwood Sharefarming

Contracts completed for 1989 plantings

Central Forest Region	2 contracts	78 ha
Southern Forest Region	2 "	80 ha
South Coast Region	5 "	165 ha
Total	9 "	323 ha
New areas offered and under assessment		500 ha

B. Hardwood Sharefarming

Contracts completed for 1989 plantings

Northern Forest Region	2 contracts	64 ha
Central Forest Region	25 "	3 069 ha
Southern Forest Region	8 "	840 ha
South Coast Region	4 "	77 ha
Total	39 "	4 050 ha
New areas offered and under assessment		2 500 ha

Tree Trust

Developmental work including economic analysis and liaison with private and public officials was completed for the proposed Tree Trust.

Wanneroo Region Softwoods

Analysis was made of the value and management of timber production aimed at meeting economic and social objectives. Various scenarios were investigated, with regard to their effects on timber yields and profitability in the long term, subject to water production and other goals. This work is continuing aimed at assisting multiple use resources management.

Agroforestry

A study was made of the viability and profitability of agroforestry (softwoods and sheep) as a possible land use for the State's medium rainfall zone (550 to 700mm annually). Agroforestry would assist to control land degradation.

Timber/Tree Royalties

A major review of hardwood and softwood sawlog royalties was initiated. The softwood particle board royalty was reviewed. Royalties for Christmas trees (young pines) were calculated.

Public Interest Project

Further assistance was given to develop a computer model of the State's hardwood processing industry. The work is part of the Public Interest Project, funded jointly by local industry and the Commonwealth and State Governments.

Wildlife and Recreation Economics

Royalty calculations were finalized for wildflower and seed collected from Crown Lands. A number of externally produced reports were considered eg. on the economics of kangaroo management and crocodile farming in the State.

Engineering

Fleet Management and Workshops

The Department maintained the standard of its vehicle fleet with 226 new replacement vehicles put into service. Twenty four additional vehicles were also put into service including fifteen as part of the National Parks Improvement Program and four for use on the National Afforestation Program.

Included in the replacements were five heavy duty 4 x 4 fire trucks, and three 4 x 4 Gang Trucks, plus one rubber tyred loader.

The operating costs of the fleet again declined in real terms. This continuing trend reflects the Department's sound fleet management practices.

Regional workshops at Manjimup, Collie and Mundaring carried out normal fleet maintenance, major plant repairs and specialised equipment development and fabrication. Ten small district workshops in the forest areas undertook normal fleet maintenance. Considerable use was made of private business workshops.

Housing and Buildings

The Milyering Bicentennial Visitor Centre and associated support buildings to serve Ningaloo Marine Park, were completed on the Department's behalf by the Building Management Authority.

Contracts were let for the construction of an insectary at Manjimup and upgraded ablution facilities at Geikie Gorge National Park. Other minor works were completed.

Investigation and preparation of briefs for future works continued. These included planning for the Narrogin Regional and District offices and building developments at Como and Woodvale.

Negotiations continued towards the transfer of Departmental houses to the Government Employees' Housing Authority. It is anticipated that, with a few exceptions, the transfer will be completed by July 1989.

Stores

The Stores Management System was maintained throughout the financial year.

Transactions comprising 15 994 issues, 843 receipts and 120 credits went through the Stores Section during the year.

At the close of the year there were 1 341 stock lines which consisted of 557 publications, 373 stationery items and 411 forms.

An information and coordination service was maintained in relation to product source and supply, disposal matters, transport, materials handling and inventory control.

Consulting Services

A mechanical engineering consulting service continued for the softwood and hardwood planting scheme and nursery operations.

Consultant work on buildings, telephones, accommodation and properties continued.

Environmental Protection

Dieback Disease

In addition to the interpretation of areas for dieback disease reported earlier, monitoring of logging trials, road construction, the SECWA gas pipeline, conveyor belt construction and walk trails continued. Hygiene measures which have been put in place are successful at reducing spread of the disease.

The review of Dieback Policy and the hygiene practices continued. Liaison and training of Departmental, industry and other personnel on dieback disease management, was maintained.

Mining

Government policy on exploration and mining in national parks and nature reserves is being implemented:

- Permits containing agreed operating conditions for geoscientific surveys have been issued to industry and Geological Survey of W.A.
- An application to "open" the D'Entrecasteaux National Park to exploration for minerals under the new policy is being processed.
- A training manual "Guidelines for Mining Operations on CALM Lands" has been prepared and distributed throughout the Department.

Several applications for mining tenements referred to CALM have been approved with appropriate environmental conditions. Successful negotiation of financial guarantees has facilitated this process in the Goldfields. Inspections ensure compliance with conditions.

Mining Tenements Referred Under Section 24 of Mining Act

	Opposed		Recommended		Pending	
	Exploration Prospecting	Mining	Exploration Prospecting	Mining	Exploration Prospecting	Mining
National Parks and Nature Reserve	0	0	0	0	154	11
State Forest and other Land Tenures	1	3	114	33	45	32

Departmental representatives were heavily involved with the Petroleum Branch of the Mines Department and industry, inspecting operations (Barrow, Thevenard, Varanus Islands), evaluating reports (Thevenard, Airlie, Varanus Islands) and assessing exploration proposals (Cape Range, Mt Lesueur). In addition staff were involved with committees reporting on guidelines for seismic operations recommending policies on the exploration and production of petroleum in national parks and nature reserves.

There is close liaison with the Mines Department, Department of Resources Development and the Environmental Protection Authority. The Department is represented on a number of committees and working groups associated with mining.

Other

Liaison was maintained with the Agricultural Protection Board, its regional advisory committees and zone control authorities in implementing the Department's weed control policy.

District registers for recording the location and extent of rare flora populations were updated and the results of new surveys incorporated. Registers were prepared to assist Shires with their operations.

The Department is also represented on the State's Soil and Land Conservation Advisory Committee.

Fire Protection

Plans

Information was provided for the development of draft fire management plans and interim guidelines for necessary operations for thirteen national parks, and six nature reserves. Nine of these plans have been approved and ten are in various stages of preparation and approval. Fire control working plans for fire emergency preparedness have been reviewed and approved for all forest districts and South-western regions.

Services

The following services have been provided to districts and regions:

- *Detection* - nine aircraft were employed on fire surveillance duties at six bases in the South West. 6 940 hours of aerial surveillance were flown at a cost of \$82.97 a flying hour. Four lookout towers in key pine forest areas were manned and a further twenty towers were maintained in readiness to provide emergency backup to the aircraft.
- *Weather forecasts* - a comprehensive forecasting service was provided by a private meteorological company during the fire season at a cost of \$42 929. This service included regular daily forecasts for eleven nominated locations in the South West plus spot forecasts for other areas throughout the State.
- *Aerial prescribed burning* - two fixed wing aircraft were contracted for aerial ignition of prescribed burns. 460 hours were flown and 67 burns covering 205 939 hectares were undertaken. Further details are in Appendix 9.
- *Computer services* - daily weather and fire behaviour forecasts were entered into the Department's computer to assist district staff during the fire season.

- *Information system* - statistics and other reference material on fire control topics were compiled and micro-filmed. These are in demand by Departmental users and the public. Fire reports received from all centres over the past year have been entered onto a computer file.

Training and Accreditation

A series of management related courses and workshops for Departmental staff as well as for representatives of other fire combat and support organisations was conducted. The courses conducted included:

1 level 2 Fire Management Course	August 1988	29 Participants
1 Navigators/Incendiary Machine Operators Course	Sept 1988	12 Participants
1 Level 3 Fire Management Course	Sept 1988	32 Participants
1 District Managers Fire Course	Nov '88 & Jan '89	24 Participants

The Level 3 Course was attended by interstate fire managers from South Australia and Tasmania. Accreditation of senior staff engaged in fire suppression operations continues at departmental, regional and district level. The accreditation system is based on past training, experience and performance, and is designed to ensure that the appropriate staff are allocated to the key fire control roles, and to ensure that weaknesses and training needs are identified and resolved.

Research and Development

Design, development, testing and implementation has been undertaken for a range of fire systems, facilities, equipment and publications. Of particular interest are:

- Following operational experience with the control centre vehicle several modifications have been made and staff have been trained in its use.
- Development work has commenced on an aerial drip torch capable of working from a helicopter. When completed this unit will be of great value in igniting slash and certain shrubland fuels which presently cannot be successfully lit using the conventional fixed wing aircraft system.
- A system of displaying resources disposition at large fires has been developed. The new system give fire controllers a rapid appreciation of a fire situation and enables better planning of shift changes.
- Further development work has taken place in the Fire Resources Recording System particularly in the application of computers.

Equipment

A summary of the Department's fire fighting equipment and its locations is given in Appendix 10. During the year, a program of testing, purchase and manufacture of fire equipment was maintained.

Suppression of Wildfires

418 wildfires were attended by the Department during 1988/89. Of these 312 were in the south west forests while 106 were outside the forest regions.

Weather conditions were quite wet in early spring but the length of the fire season was average.

125 wildfires in State hardwood forests burned 1 750 ha, which is much lower than the ten-year average of 120 fires with over 6 245 ha burnt.

In a 17 day period in early January the Department attended 58 fires caused by lightning strikes. The total area burned was 1 088 ha and suppression costs totalled \$58 600. Just over half the fires occurred in fuel accumulations of less than six years which undoubtedly contributed to the low cost of suppression and the small area burned. The cooperation and assistance received from volunteer bush fire brigades was excellent.

In addition there were 33 fires in Departmental pine forests covering 16 ha.

152 fires were deliberately lit which represents about 36 percent of all causes.

Details of wildfires are given in Appendix 11.

Liaison

The Department is represented on the Bush Fires Board and the State Counter Disaster Advisory Committee. Training sessions have been provided at courses held by the Bush Fires Board, State Emergency Service and the Australian Counter Disaster College.

The Department hosted a number of international and interstate groups of fire controllers, researchers and senior administrators. These included three Kenyan foresters and their Japanese leader studying arid area forestry and three interstate fire managers in September 1988.

Human Resource Management

Staff

The staff establishment figure for the Department, expressed in full time equivalents, was 1 452.9 as at June 1989.

A summary of personnel employed by division, branch, region and district is provided in Appendix 12.

During the year there were:

- 129 new appointments
- 11 appointments made permanent
- 13 retirements
- 46 resignations
- 34 cessations
- 57 reclassifications
- 53 promotions

Industrial Relations

A major industrial thrust in the Department has resulted from the restructuring and efficiency principle of the National Wage Case decision. Initiatives being discussed and developed include job analysis, improved performance appraisal, multiskilling, training, career paths, restructuring of awards and productivity.

For wages personnel covered by the Australian Workers' Union, conversion of a number of individual margins into a broadbanded wage structure is being examined in conjunction with other

Government employers. This final structure will establish an improved career path and participation in more job areas for this group.

Discussions are underway with regard to occupational groups covered by the Miscellaneous Workers Union and the Civil Service Association to develop an agreed package of issues that can be related to the restructuring and efficiency principle.

The Commuted Overtime Award for Wildlife Officers has been renegotiated but a commencement date has yet to be determined.

Training and Development

Training to meet performance requirements and for career development continues to be a high priority within the Department.

The performance management system has been further developed and aims to allow all personnel to have access to training and development activities enabling them to achieve maximum performance and personal career goals.

This system relies heavily on the results of a new personal performance appraisal process which is linked with the annual Training and Development Manual and the career development models developed for each job family within CALM. The revised personal performance appraisal process was introduced as a pilot scheme during the first half of 1989.

Development of the Certificate in National Park Management was completed in late 1988 and the course is now accredited with the Western Australian Council for Tertiary Awards (WACTA), and registered in Canberra with the Australian Council for Tertiary Awards (ACTA).

Training courses conducted by Departmental officers and selected external training agencies continue to be offered in outlying regions to service training needs in remote areas. Where convenient, two training programs have been conducted together, improving efficiency and access to training.

A new approach to financing the training programs which personnel attend has been introduced. The responsibility for the payment of training costs has now been placed within regions, districts and branches where training to improve an individual's performance is required. Training courses which are attended for career development, or the purpose of acquiring new knowledge as a result of departmental changes to equipment or procedure, will be financed from the Central Training Budget.

Field Cadets

Fourteen cadets who successfully completed their two years of training in December 1988 received their Certificate of Conservation and Land Management at a graduation ceremony held on 26 May 1989. The ceremony was held at the Lord Forrest Hotel in Bunbury and the Certificates were presented by the Hon David Smith, Minister for the South West. Of the fourteen graduates;

- ten were appointed as Forest Rangers on 12 January 1989. Four of these were posted to the Northern Forest Region, three to the Central Forest Region and one each to the Metropolitan, Wheatbelt and Southern Forest Regions;
- two were appointed as Trainee Wildlife Officers on 12 January 1989 and posted to the Wildlife Protection Branch in the metropolitan area;

- one was appointed as a Park Ranger on 12 January 1989 and posted to the Northern Forest Region;
- one was appointed as a Forest Ranger on 6 June 1989 and posted to the Central Forest Region.

The Keynes Memorial Prize was awarded to William Evans and the Executive Director's prize to Andrew Van Der Watch.

Nine cadets successfully completed the first year of their training at the South West College of TAFE, Bunbury, in November 1988. They and one other commenced the second year of the course at the Dwellingup Cadet School in January 1989. The additional person is a cadet whose training is being financed by WA Chip and Pulp Pty Ltd. He will be eligible for appointment to the company on successful completion of the course in December 1989.

The second year syllabus is under continuous review. Traditional working periods at pine districts continue to provide opportunities for cadets to witness and participate in activities necessary for their development, as do the opportunities provided by the work experience with wildlife officers and the 'camps' in the Southern Forest Region.

A new group of fourteen first year cadets selected from 181 applicants in December 1988 commenced the course at the South West College of TAFE, Bunbury in February 1989.

Traineeships

Developed as a joint Commonwealth/State initiative, the Australian Traineeship System (ATS) provides eligible young people with 12 months structured training, both on and off-the-job. Generally available to 16 to 18 year olds, who have left school without completing year 12, ATS traineeships incorporate both job-specific and job-transferrable work skills, aimed at making participants more competitive in the labour market.

Of the 51 trainees who were trained during the year, 38 graduated at the beginning of 1989, a further 7 obtained full-time work during the year and at least 15 had full-time work after the conclusion of their traineeship.

The Department is currently training two timber processing trainees who commenced in Harvey in May 1989.

Graduate trainees receive a certificate issued by the State Training Authority, a detailed certified record book and TAFE recognition of academic progress made during the off-the-job component of the traineeship.

Occupational Health Safety and Welfare

Prior to the proclamation of the new Occupational Health Safety and Welfare Act in October, 1988, 90% of Departmental personnel were trained in its implications. Training has now been offered throughout the Department. Approximately 98% of all personnel have participated.

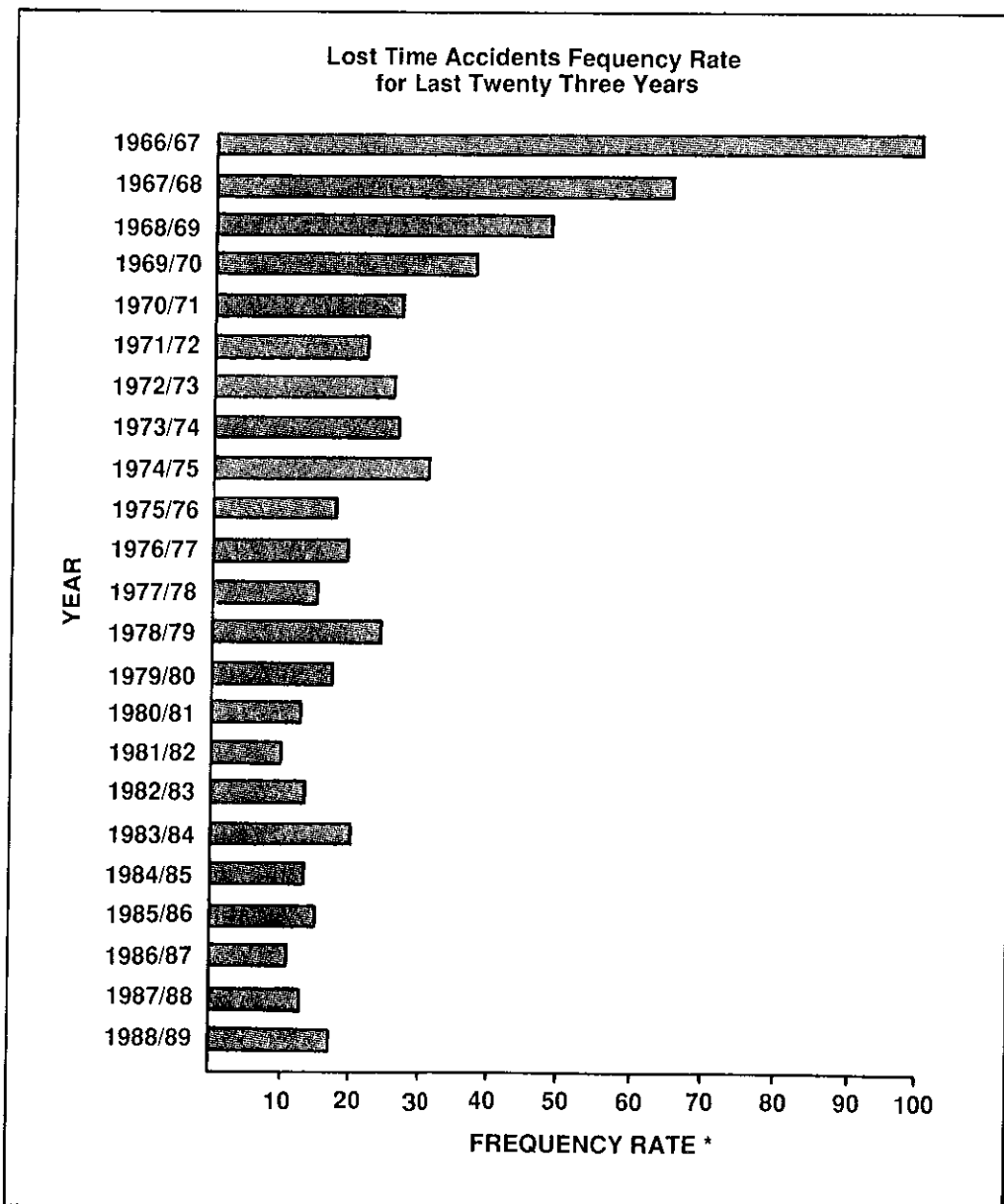
The all injury frequency rate for the Department has increased slightly from 60 to 69. Although the increase was regrettable, 69 remains an excellent rate being the third lowest ever recorded by the Department. Details are shown in Appendix 14.

A new Health and Safety training module, designated Worksafe, has been developed to form part of the training and accreditation for Park Rangers. This course and first aid classes were conducted under the Aboriginal training scheme for Community Rangers at One Arm Point.

Health and safety activities during the year included:

- 5 two day health and safety management schools for 92 personnel
- 14 three day schools for 168 St John's First Aid Attendants
- 71 personnel were trained at two day Worksafe Schools
- 111 personnel were audiometrically tested
- 115 personnel were inducted into the correct methods in manual handling and lifting of heavy objects.
- 1 person was awarded membership of the Alligator Club through being saved from serious injury by wearing safety trousers when an incident occurred during chainsaw operations.

A large number of district representatives and other groups of personnel participated in the Industrial Foundation for Accident Prevention/FAI Insurance Safeway Awards. One hundred and twelve groups were successful in achieving their nominated targets. The Department achieved the outstanding result of having the second highest number of successful groups of all statewide participants.



Land/Geographic Information

Spatially related land and geographic information is extensively used in CALM in strategic and operational planning and in monitoring operations.

Information Systems

Significant progress was made during the year on consolidation of the Forest Management Information System (FMIS) of computer-based land information into the departmental Vax Computer and in linking the data with the ESRI and Intergraph geographic systems.

The first regionally-based geographic information system was established at Kelmscott and the improved efficiency with which it is allowing the capture and manipulation of data is already evident.

Development of a Digital Mapping System, in association with other participating members of the Western Australian Land Information System, is being pursued to provide a framework for referencing CALM's spatially related data together with automating the production of CALM's cartographic map series.

System development to provide intelligent graphical information on tenure of the CALM estate, existing and proposed, is being undertaken and will extend the database established for the Forest Regional Management Plans to cover all CALM Regions.

Mapping requirements associated with sharefarming operations have also been computerized, where possible, to facilitate the collation, communication and integrity of the information. This resource data will be linked to a corporate Hardwood Sharefarming System being developed and will also be a component of the Plantation Management Information System.

Development to provide map based output from a Wildfire Threat Model using GIS techniques was undertaken for Fire Protection Branch. Analysis and output for the Ludlow and Denbarker areas was generated to demonstrate the methodology.

Development of a GIS and associated computer software to support the Jarrah Inventory Project has continued.

Cartography

Mapping, cartography and geographically related information services and advice have been provided throughout CALM's organization.

The following summarizes these activities.

- Maps in publications including "A Guide to the Bibbulmun Track" and "Wild Places, Quiet Places".

- Display material and Information brochures.

- Provision of Dieback, Hygiene and Impact maps.

- Environmental planning mapping.

- Mining compensation calculations and mapping.

- Aerial Surveillance and Prescribed Aerial Burn Maps

- Supply Area Contract Maps and area statements.

- Sharefarming Lease Agreement diagrams and associated soil, management and plantation maps.

- Maintenance of plantation resource mapping.

- Digitization of National Estate areas.
- Slope generation for specified hardwood operations.
- Tenure Map maintenance.
- Revised editions of several 1:50000 Management Maps.
- Operational planning maps at regional and district offices.
- Administrative plans and maps.
- Mapping and processing of Flora distributions.
- Provision of maps for associated Management Plans.
- Validation and collation of individual Nature Reserve Maps.
- Detailed mapping to assist reef infestation monitoring.
- Miscellaneous mapping and drafting tasks.

Remote Sensing

In a collaborative project with CSIRO, departmental staff are developing an operational methodology for monitoring vegetation damage utilizing airborne and satellite remote sensing technologies. One officer has been assigned to undertake detailed image analysis using "state of the art" image processing systems to determine the spectral and spatial properties of damaged vegetation.

Other

A significant contribution to other agencies and organizations involved in land related activities has been provided through the sharing and exchange of digital information. The other organisations included: Water Authority of WA, State Planning Commission, Environmental Protection Authority, Departments of Mines, Resource Development and Agriculture, and Alcoa of Australia.

Library

The 1988/89 year has not been a progressive period of library services. Book loans and inter-library loans have declined compared with 1987/88, as have the number of journal articles photocopied.

With reduced staff, concentration has been on maintaining essential services (photocopying of journal articles, book loans, inter-library loans) while recataloguing of established stock into a computer database has had top priority. This restraint has also resulted in a reduced library service throughout CALM especially outside the Metropolitan Area.

The only location where library service has been able to develop is the Herbarium, where additional shelving has been installed, but further expansion is still urgently required. The Herbarium's library is disadvantaged by lack of space and its reliance on a card catalogue and manual systems.

Integration of the Herbarium and main library catalogues onto a new automated system is planned for 1989/90. Implementation of this system will enable the library to offer a much improved information service to the Department.

Landscape Planning and Management

Primary responsibilities in this supporting activity are:

- Broadscale recreation planning, site design and preparation of guidelines and standards.
- Landscape inventory, assessment and project planning.

During the year, the Department's land management planning was assisted by the preparation of recreation development and management proposals for several area management plans during the year. These included Bungle Bungle National Park, Fitzgerald River National Park, Hamersley Range National Park, West Cape Howe National Park and Two Peoples Bay Nature Reserve. Recreation master plans were also completed for Cape Range, John Forrest, Serpentine and Walyunga National Parks. In addition, assistance was provided to operations staff with the assessment and detailed design of nearly 60 recreation site development and rehabilitation projects in forests, parks and reserves throughout the State. (Details of the principal sites are recorded earlier). The CALM Sign Manual was rewritten and copies circulated to all Regions, Districts and Park offices.

As in previous years, operations staff have been assisted with advice and assistance on a variety of other landscape management issues including plantation establishment, timber harvesting, road location and the placement and design of buildings and other structures. Assistance was also provided to the Southern Forest Region in the development of the Visual Resource Management System. The landscape inventory and assessment work commenced in late 1987 was completed and a number of field trials have been initiated to evaluate the effectiveness of various landscape management techniques relating to thinning, harvesting and prescribed burning operations.

Management Plans for Lands and Waters

The following management plans have been prepared during the year :

Final Management plans Approved	Date Approved by Minister
Leeuwin Naturaliste National Park	21 March 1989

Final Management Plans Being Prepared

Lane Poole Reserve
Logue brook Catchment
Marmion Marine Park
Ningaloo Marine Park
Waroona Catchment
Yanchep National Park

Draft Management Plans Released for Public Comment

Fitzgerald River National Park
Hamersley Range National Park
Purnululu (Bungle Bungle) National Park
South Coast Region Regional Management Plan

Draft Management Plans Being Prepared

Alfred Cove Nature Reserve
Boyagin, Tutanning Nature Reserves
Dampier Archipelago
Dryandra State Forest
Ningaloo Coastal Reserve

Rudall River (Karlamilyi) National Park
Shoalwater Bay Islands National Park
Two Peoples Bay Nature Reserve
Walpole-Nornalup National Park

Interdepartmental Planning Studies

The Department was represented on the project teams of several other planning studies throughout the State in 1988/89. These included:

- the State Planning Commission's Peel Region Study. This has involved planning group meetings, public workshops and discussions with the four shires concerned.
- the Kemerton Model Industrial Garden Estate Planning Study with Harvey Shire Council and other Government agencies participating.
- the Burrup Peninsula Planning Study. The committee consisted of CALM, Environmental Protection Authority, Department of Regional Development and the North West, the Western Australian Museum, the local shire and local industry.
- the Abrolhos Islands Planning Strategy was prepared for the Abrolhos Island Consultative Committee. The draft was released for public submissions in September 1988. The final plan was approved by Cabinet and then released in January 1989.
- the final planning study for recreational use of Wellington Dam was completed by consultants. It has a recommendation for a concept plan for recreational development on the edge of Wellington Dam.
- the draft plan for Leeuwin-Naturaliste Region Stage 2 Study with State Planning Commission as the lead agency was printed in November 1988.
- the Swan River Management Strategy was approved by Cabinet and released in December 1988.

Planning Advice and Liaison

The Department was represented at meetings of the Country Planning Council and the Water Resources Council and a 5 day meeting with the Western Desert Aboriginal people in Rudall River National Park. Staff have continued to liaise with and give advice to other Government departments and local authorities.

Radio Communications

The Department has an extensive radio communications network (1,100 radios) providing communication throughout the State between base stations, vehicles, marine craft and aircraft.

New Developments

VHF radio repeater stations were installed to improve radio communications in the Avon Valley, Murray Valley, Denbarker area, and at Cape Range. A second repeater was installed at the multi-user Government site at Canning Mills to provide an additional channel for use in the Metropolitan Area and as a backup channel in fire operations. The repeater at Gngangara was relocated to a new tower at Pinjar. These new installations are carried out in conjunction with other Government or semi-Government organisations where possible.

During the year, repeater sites in the Hamersley Ranges and the Bungle Bungle National Park were successfully located and tested. Equipment will be installed permanently when funds are available.

Following installation of the VHF repeater at Mt Burdett in the Esperance District last financial year, the ranger offices at Cape Arid, Cape Le Grand and Stokes National Parks have joined the radio network.

The first stage of a radio replacement program was commenced during the year with the purchase of 168 transceivers. These are currently being installed.

A long range HF frequency was also tested with good results for communications between the State Operations Headquarters and the Pilbara and Kimberley Regions. Improved multi-frequency HF vehicle whip aerials have been introduced and are proving to be reliable.

New installations of 235 VHF and 68 HF radios were completed on a range of vehicles caravans and marine craft.

The radio equipment in 750 vehicles was checked.

Training

Radio communications refresher courses were conducted throughout the Department with staff receiving training in radio procedure and operation. The training was extended to include the use of data equipment used in large fire operations.

Publications

For a detailed list of the Department's publications over the year, see Appendix 15.

There were four editions of Landscape, WA's conservation, forests and wildlife magazine. This magazine is available by subscription and through newsagencies.

Six other saleable publications were produced. Essentially these are guides to significant places and the natural environment.

Twenty seven new brochures and six reprints for recreation areas and trail guides were prepared as well as 17 publications dealing with community education.

As well over 50 technical/research oriented publications were produced.

One video, Restoring Nature's Balance, was produced to demonstrate environmental aspects and encourage support for large scale tree planting under the hardwood sharefarming scheme.

The interactive video disc project, produced under contract for the Milyering Visitor Centre, is a technical innovation in community education. A "spin-off" video, available for sale, titled Discovering the Coral Coast, has been developed from the video disc project.

Public Relations

A planned and coordinated public relations programme covering employee, community, media and government relations is being implemented.

This includes involvement by regional and district employees.

Regular meetings are held between senior regional officers and staff to advise them of Department activities and issues in which the Department is involved.

There is regular contact with the media and employees are encouraged to talk to service groups, shire councils and schools about CALM's activities.

Senior staff were also available to talk to the print and electronic media on a wide range of topics.

Press releases were issued on topics of community interest.

COMMONWEALTH GOVERNMENT ASSISTANCE

The Department cooperated with Commonwealth agencies on a range of matters and received considerable assistance under various funding programs.

In September 1988, the Milyering Bicentennial Visitor Centre near the spectacular Ningaloo Reef and in the Cape Range National Park was opened. The centre was jointly funded by the Australian Bicentennial Authority and the State Government. Funds were also supplied to CALM for other bicentennial projects.

Early in 1987 the Western Australian and Commonwealth Governments entered into an agreement to proceed with a number of projects as part of the National Rainforest Conservation Program. In 1988/89 joint State and Commonwealth funding continued for a comprehensive ecological survey of Kimberley rainforest patches, location and mapping of rainforest patches using satellite imagery, and several projects aimed at informing people of the values of rainforests. Commonwealth assistance was provided through the Department of the Arts, Sport, the Environment, Tourism and Territories.

The Australian National Parks and Wildlife Service continued to provide funding under its States Cooperative Assistance Program and its Contract Employment Program for Aboriginals in Nature and Cultural Resource Management. Funding was received for an endangered eucalypt survey, the Western Swamp Turtle captive breeding program, a biological survey of Bungle Bungle National Park, tagging of marine turtles, research at Ningaloo Marine Park, walk trails, fencing and place names in the Hamersley Ranges, palm trails at Millstream, and a consultancy in the Great Victoria Desert Nature Reserve.

Funding assistance was also provided as a contribution to the National Afforestation Program from the Department of Primary Industries and Energy and for plant taxonomic research from the Australian Biological Resources Study administered by the Department of the Arts, Sport, the Environment, Tourism and Territories.

PERFORMANCE EVALUATION

This Report contains general statistics, tables and appendices which convey the Department's performance for the year and provide a comparison against previous years. Development of performance indicators to comply with the Financial Administration and Audit Act is proceeding.

A scheme for reclassifying Departmental activities into five primary programs has been developed and will be implemented in due course.

The five primary programs are Wildlife Management, Recreation Management, Timber Management, Timber Supply and External Services.

A new range of performance indicators are being developed to allow achievements and efficiency in the primary programs to be assessed and reported upon. These indicators will be developed for application in the coming financial year.

Last year's Annual Report contained a summary of the primary programs and performance indicators in use at that time. Although largely rendered obsolete by adoption of the new system, progress towards last year's goals is reviewed as far as possible.

Difficulty has been experienced in developing indicators which are clear, meaningful and readily quantifiable. Most activities which it is intended to assess are field based and contain many variables. In many instances it has been necessary to qualify the current assessment with an explanation. In others the achievements for the year are listed.

Wildlife Management

OBJECTIVE

TO CONSERVE THE STATE'S BIOTA.

Effectiveness Indicators:

The extent to which the biology of different species of native flora and fauna is understood and management requirements for habitat are known.

Note: It has not yet been found possible to quantify this indicator. However, the Department has 12 internal research programs working towards achievement of the objective. It also has good liaison with external research organisations engaged in the same fields.

- Emphasis is placed on converting research findings into management techniques, ensuring that current research is relevant to conservation and land management priorities, and that research knowledge is disseminated. To this end, the programs are regularly reviewed and prioritised, a series of seminars and workshops for operational staff are maintained and findings are published in a variety of documents. Research Scientists contribute to all land management plans.

The extent to which the State's major ecosystems and their fauna and flora are represented in appropriately protected and managed CALM estate.

- Measure - 444 B or C class reserves approved to be given higher legal protection by reclassification to A class, 286 actually reclassified. A total of 15 new nature reserves, totalling 411,501 ha have been added to the Department's reserve system. An additional 15,566 ha was added to existing nature reserves and national parks, and a total of 1,884 ha

of freehold or leasehold land purchased, also for addition to the reserve system.

Almost all of the additions above are in the south west agricultural area, from Northampton to Denmark, and therefore representative of ecosystems largely destroyed by clearing and poorly represented in conservation reserves.

The extent to which the survival of rare or threatened flora and fauna is assured.

- Measure - Flora - Some 2,000 species of rare or threatened plants have been listed by various authorities as needing research on their conservation status.

The State has unique legislation protecting declared rare flora. The revised Declared Rare Flora Schedule for 1989 has been gazetted.

A comprehensive CALM policy is in place.

The State Herbarium, comprising 14 botanists has been incorporated into CALM.

The flora conservation research team in CALM has achieved an excellent level of protection of the State's rarest and most endangered plants. This has occurred through the researchers seeking the cooperation of many interested groups in locating populations, and then ensuring the development of an efficient administrative system for notifying landowners and liaison with them. In addition, many authorities and landowners have become enthused about conserving their rare and endangered plants, and undertaken positive management at their own expense.

A strong focus on communicating scientific information (taxonomy, biogeography, ecology) to CALM operations staff and to the landowners they deal with has achieved effective conservation of a greater proportion of the State's plants most at risk.

- Measure - Fauna - 43 mammals, 5 marine mammals, 40 birds, 19 land dwelling reptiles, one marine turtle and one frog species have been declared as threatened fauna.

A comprehensive policy on Conservation of Endangered and Specially Protected Fauna in the Wild is in preparation.

A fauna conservation research program is in place. Consequential active management programs are ensuring the survival of the Numbat, Noisy Scrub Bird, Black-footed Rock Wallaby and Western Swamp Tortoise. Control programs for the European Red Fox are in place to protect a variety of endangered species in key conservation areas.

Note: The State's fauna occur on a range of land tenures. Few of the threatened species are confined solely to CALM land. Departmental responsibility for conservation of the State's fauna thus implies a responsibility for conservation of species at large throughout the State. Fauna conservation research therefore spans the whole range, from management of abundant species such as the larger kangaroos on rangelands, to protection and restoration of populations of endangered species such as the Noisy Scrub-bird. Requirements for fauna conservation research data are thus correspondingly broad.

The extent to which the protection of native species and ecosystems on the CALM estate is complemented by conservation and management programs on other lands.

- Measure - About 8,000 hectares of privately owned remnant vegetation with conservation value (largely in the Wheatbelt) was fenced off, and made the subject of 30 year agreements, under the new Remnant Vegetation Protection Scheme. CALM remains

heavily involved in further development of schemes for private conservation, and for the development of linkages between reserves and other remnant vegetation via roadsides, rail reserves and other potential corridors.

The extent to which illegal exploitation of native flora and fauna is eliminated.

Note: The elimination of illegal exploitation is unlikely to ever be realised. It is also difficult to quantify the extent of effectiveness because of the number of variables which have to be considered. For example, statistics quoting fewer apprehensions of wrong-doers do not necessarily mean resources are being more effectively used. These resources may have been directed to perform functions in other areas less likely to produce apprehensions, and the level of illegal exploitation may be just as bad as it was previously. It may even have worsened in the absence of a visible deterrent.

Industry Control and Regulation

OBJECTIVE

WHERE GOVERNMENT DIRECTS THAT COMMERCIAL EXPLOITATION OF NATIVE SPECIES SHALL OCCUR, TO MANAGE THAT EXPLOITATION TO ENSURE EQUITABLE ALLOCATION OF THE RESOURCE, LONG-TERM SURVIVAL OF THE SPECIES, MINIMAL IMPACT ON OTHER CONSERVATION VALUES, AND A FINANCIAL RETURN FOR THE SERVICES PROVIDED.

Effectiveness Indicator:

The extent to which the status of the exploited resource is shown by monitoring to be within the desired parameters for conservation.

- Measures - The Kangaroo Management Program, which receives Commonwealth Government approval, sets quotas for the numbers that may be taken of the three species concerned. The commercial take in 1988 was -

216 000	Red Kangaroos
29 000	Western Grey Kangaroos
1 000	Euros

Monitoring ensured that the quotas were not exceeded.

Emu farming. Nine emu farm licences have now been issued. Monitoring of the industry last year ensured that emu farm stock originated only from captive sources, and that wild emus were not taken for this purpose.

Wildflower Industry. The activities of pickers were subject to frequent inspection, resulting in some 59 offences being reported. Inspections of flora wholesalers' premises were carried out both in the metropolitan area and major country centres, to inspect flora being consigned by pickers and to check wholesalers' records of flora purchased.

Crocodile Farming. This is a new industry which, to date, comprises only one licensed crocodile farm, too recently established to provide an opportunity for review.

Duck Shooting. Due to the 2 year moratorium on duck shooting, there was no season in 1989. Duck populations continued to be monitored by wildlife officers to detect instances of illegal shooting.

Timber cutting. See below.

Efficiency Indicators:

Not yet available.

Recreation Management

OBJECTIVE

TO PROVIDE APPROPRIATE RECREATION OPPORTUNITIES ON CALM LANDS AND WATERS AND THE MOST SATISFYING EXPERIENCE TO PARTICIPANTS.

Effectiveness Indicators:

The extent to which public expectations of opportunity and experience are satisfied.

- Measure - There is general public acceptance of recreation strategies adopted in approved management plans for lands and waters entrusted to CALM; and

A Visitor Survey program has been implemented throughout CALM to collect information on the satisfaction of the public.

A CALM policy on recreation has been in place since April 1987. There has been no demand to change it.

The extent to which recreation resource values are maintained and protected from inappropriate or excessive levels of use.

- Measure - Recreation facilities and sites are continually monitored and maintained;

As sites become degraded they are either closed for rehabilitation or redeveloped;

Nearly 60 recreation sites were planned and developed.

Efficiency Indicators:

Not yet available.

Timber Management

OBJECTIVE

TO MANAGE THE FOREST DESIGNATED FOR COMMERCIAL PRODUCTION ON A SUSTAINED YIELD BASIS AND TO INCREASE ITS PRODUCTIVITY.

Effectiveness Indicator:

The extent to which commercial exploitation of the forest is being managed on a sustained yield basis and its productivity is increased.

- Measures - Adherence to the quantities projected in the publicly endorsed Timber Strategy - the hardwood sawlog production from Crown land in 1988/89 was projected at 786,500 cubic metres. The actual cut was 819,233 cubic metres of which 40,000 cubic metres was 1st grade jarrah logs uncut in 1987/88 and carried forwarded into the reporting year.

There has been an increase in the proportion of timber that is produced from logs and a marked increase in the utilisation of logs that previously were left in the forest as waste. For example, 275,000 cubic metres of logs which previously were directed to the chipmill because it was uneconomic to saw them are now being processed through sawmills.

Research has proved that thinnings from the jarrah and karri forests (ie. small logs) can be satisfactorily sawn, kiln dried and jointed and glued to produce a high quality timber product.

Other achievements towards this objective were recorded during the year in the publication *Implementing the Timber Strategy*.

Efficiency Indicators:

Not yet available.

Timber Supply

OBJECTIVE

TO ENSURE A NEGOTIATED AND EVEN FLOW OF LOG PRODUCTS TO THE TIMBER INDUSTRY WHILE RECOVERING COSTS FOR THE SERVICE SUPPLIED, ESTABLISHMENT AND GROWTH OF THE REPLACEMENT RESOURCE, AND TO MAXIMISE PROFIT TO THE STATE.

Effectiveness Indicators:

The extent to which the supply of logs to the industry is equitable according to capacity and has kept pace in quantity and quality with commitments.

- Measures - Through the Timber Strategy and for the first time in the history of the industry, medium and small sawmillers have been given a secure source of sawmill logs. All sawmills have timber supply contracts.

Over 50 timber supply contracts and 10 logging contracts have been signed since the publication of the Timber Strategy.

The development of softwood plantations to ensure the self-sufficiency of Western Australian timber supplies has been an important policy of successive Governments in WA. However, shortfalls in the anticipated supply capacity of the softwood forest threatened the viability of the industry. These supply difficulties have been overcome by the provision of funds for fertilisation of softwood plantations and restructuring of the softwood supply contracts. This will result in an industry investment of \$40 million in the softwood sawmilling sector.

The extent to which the market has been tested for the maximum price payable for the product.

- Measure - Part of the timber resource is periodically placed, via auction and tender, on the free market, so that there is an equal opportunity for all segments of the industry to obtain additional resource at that price is determined by demand.

The extent to which revenue exceeds service, re-establishment and growing costs.

Note: This indicator has not yet been fully developed. However, the most comprehensive review of log pricing that has ever been undertaken in this State has been carried out.

- Timber royalties have been increased by more than 100 per cent and a new royalty structure which creates a significant price differential between first, second and third grade sawlogs has been established. This has been a major factor in improving utilisation because it improves the commercial viability of sawing degraded logs.

Other achievements towards this objective were recorded during the year in the publication, *Implementing the Timber Strategy*.

Efficiency Indicators:

Not yet available.

Community Education And Interpretation

OBJECTIVE

TO PROVIDE PUBLIC EDUCATION AND INFORMATION PROGRAMS DESIGNED TO INCREASE COMMUNITY UNDERSTANDING AND SUPPORT FOR NATURE CONSERVATION AND NATURAL LAND MANAGEMENT.

Effectiveness Indicator:

The extent to which the public is more understanding of and shows support for nature conservation and natural land management.

Note: With environmental issues achieving a high public profile and lobby groups prevalent and vocal, it is difficult to derive a balanced indication of effectiveness of CALM's educational programs. It is also difficult to gauge a balanced view of support/opposition to CALM's operations.

- Measures - There is strong evidence in support of proposed strategies received during the public submission phase to the draft management plans for lands and waters entrusted to CALM. There is also strong support for talks to schools, teacher organisations and for promotion of CALM educational materials within the Ministry of Education. In addition teachers and community group leaders have attended CALM sponsored training programs in Earth Education, Forest Ecology and Expedition Skills.

On the other hand there has been considerable opposition from one public sector to a proposed change to operational practice. A group in the Blackwood Valley received media prominence in its opposition to CALM's proposal to change from ground based spraying of herbicides to an airborne technique.

The number of subscriptions to *Landscape* continues to increase.

Efficiency Indicators:

Not yet developed.

Environmental Protection

OBJECTIVE

TO KEEP WILDLIFE, LANDS AND WATERS ENTRUSTED TO THE DEPARTMENT FREE FROM ADVERSE ENVIRONMENTAL IMPACTS AND WHERE THAT IS NOT POSSIBLE TO MINIMISE SUCH IMPACTS.

Effectiveness Indicator:

The extent to which the CALM estate is protected from adverse impacts from disease, noxious weeds, feral animals and mining.

Note : It has not yet been found possible to quantify this indicator. It would require a massive expenditure of resources (financial and human) to accurately determine the full extent of the problems across the whole State. Rather, as problems are systematically discovered in planning and field operations, appropriate remedial action is taken.

Thus:-

- an impact evaluation assessment for dieback disease is conducted wherever field operations are contemplated. Appropriate operational strategies are then used;
- strict hygiene conditions are imposed on operations in all dieback free forests;
- systematic programs for the destruction of noxious weeds and feral animals to the extent of available finance are in place;
- through legislative control, conditions, including requirements to rehabilitate land after operations, are placed on all exploration permits and mining leases affecting CALM lands;
- a research program is in place to discover more about the biology of the coral predator snail *Drupella cornus* and snail/coral interaction.
- research into the biology and control of defoliating insects in the jarrah forest has been expanded.

Efficiency Indicators:

Not yet available.

Fire Protection

OBJECTIVE

TO PROTECT THE COMMUNITY AND ENVIRONMENTAL VALUES ON AND NEAR CALM LANDS FROM DAMAGE OR DESTRUCTION FROM WILDFIRE; TO USE FIRE AS A MANAGEMENT TOOL TO ACHIEVE LAND MANAGEMENT OBJECTIVES, IN ACCORDANCE WITH DESIGNATED LAND USE PRIORITIES.

Effectiveness Indicators:

The extent to which community values are protected.

- 234 514 ha of prescribed burning on CALM and adjoining Crown lands took place during the year. Only two incidents involving neighbours' property occurred at a cost to the Department of \$5 160.

The extent to which the CALM estate is protected.

- Measure - 418 wildfires burnt 78,431 ha of CALM lands, other Crown Lands and private property.

Note : This is not an accurate indicator. There are so many variables involved, eg. location, weather conditions, type of terrain, type and weight of fuel, distance from base, number of ignition points, that the measure could vary widely without the Department's effectiveness having changed.

Efficiency Indicators:

- Within the constraints of weather, and available finance, the program of fuel reduction (prescribed) burning was achieved.

Human Resource Management

OBJECTIVES

TO RECRUIT AND MAINTAIN WELL MOTIVATED AND COMPETENT STAFF;

TO PROVIDE PROGRAMS FOR STAFF HEALTH, SAFETY, DEVELOPMENT AND TRAINING.

Effectiveness Indicators:

The extent to which CALM has a competent workforce.

- Measure - the number of satisfactory performance appraisals versus the number of unsatisfactory performance appraisals - 350:3.

The extent to which staff are retained.

- Measure - separation rate versus number of salaried positions - 95:839.

The extent to which industrial relations disputations are avoided.

- Measure - the number of industrial disputations - 1.

The extent to which CALM personnel sustain Medical Treatment or Lost Time Injury Accidents.

- Measure - Safety statistics

all injury frequency rate	69
duration rate	16

The extent to which:

appropriate training programs are developed to meet changing technology and procedures;

- Measure - Number of new courses developed or existing courses modified to meet changing needs - 15 new, 1 modified.

sufficient access to training programs is provided to all employees;

- Number of employees who have had their nomination to attend a training program refused - Information not yet available.

employees are prepared to meet ongoing and differing challenges in a competent and highly motivated way;

- Employee performance as reflected in performance appraisal - 3 unsatisfactory performance appraisals.

employees are able to fulfil their career goals as a result of training programs provided or resourced by the Department.

- Progressions and promotions - 545.

The extent to which graduates of the cadet training school are capable of carrying out the duties of junior field officers.

- Measure - Graduates are deemed capable on permanent appointment. A performance appraisal is conducted to determine permanency. 10 graduates were permanently appointed in 1988/89.

Efficiency Indicators:

- The salary budget for officers in the staff section (\$103,000) divided by the number of transactions dealing with:

higher duties	494
advertised vacancies	127
review of positions (creation, reclassification, abolition)	338
salary increments	492
leave entitlements	<u>4 527</u>
Total	5 978

= \$17.23 per transaction.

- The salary budget for officers in the Staff Section (\$103,000) divided by the number of staff (839) = \$123.00 per salaried staff member.
- The number of man hours worked (2,502,079) in relation to the number of man hours lost due to industrial stoppages (103) = 24,292 man hours worked per man hour lost.
- The Safety Section cost centre budget and salaries divided by the all injury frequency rate = \$3,058 per unit of all injury frequency rate.
- The Training and Development cost centre budget and salaries divided by the number of training programs = \$1,782 per program.

Workload Indicators:

Personnel

- The number of -
 - leave applications processed 4 527
 - salary variations initiated 1 129
 - advertised vacancies 127
 - positions reviewed 338

Industrial

- The number of -
 - compulsory conferences 11
 - hearings attended 3
 - field visits 4

Safety

- The number of personnel attending safety training courses for-
 - first aid 168
 - worksafe 71
 - chemical use 38
 - supervisors health and safety training 113

The number of field visits by departmental safety staff (113).

Training and Development

- The number of courses conducted and their duration - 110 courses totalling 236 days.
- The number of new courses developed - 15.
- Major projects relating to the achievement of the section's goals carried out by section staff -
 - Performance Management System
 - Training and Development Model
 - Training and Development Manual
 - Certificate in National Park Management
 - Cadet syllabus review.

**Accountability For 4% Productivity Agreement
Public Service Commission/Civil Service Association**

Schedule 1 - Global Savings	Expenditure Reduction	Productivity Increase
Payment of Direct Funds Transfer	1 820	950
Removal of pro-rata annual leave loading entitlement upon the resignation of officers.	5 878	
Total Estimated	\$7 698	\$1 950
Total Achieved	\$7 698	\$1 950

Schedule 2**Productivity
Increase*****Initiative***

Redeployment of existing staff and extension of responsibilities has allowed the appointment of a wildlife officer to the West Kimberley's to better service that particular population.

Estimate \$21,300

Implementation

Redeployment of one Wildlife Officer position from the Central Forest Region to more effectively cover the West Kimberley area has been completed. This area comprises 158,706 square kilometres and, in recent years, has experienced a significant increase in tourism and a moderate population increase.

Previously this area, centred on Broome, was the responsibility of the wildlife officer located in Kununurra but only intermittent patrols were able to be undertaken. Coverage in the Central Forest Region has been maintained through reorganisation and redistribution of schedules and workloads and an extension of the responsibilities of other officers of the Wildlife Protection Branch.

The extension of wildlife protection services to the West Kimberley includes patrols and reports on the Point Coulomb nature reserve (28,676 ha), island nature reserves and three licensed premises holding fauna that are subject to tourism pressures. In addition, there is a productivity increase in on-the-spot availability for crocodile management and advice.

Achieved \$21,300

Initiative

Private enterprise funding the operations of three operators including accommodation and vehicle usage under the direction of the Department has meant productivity benefits valued at \$95 000.

Estimate \$95,000

Implementation

CALM approached Alcoa for funding of positions because Alcoa was involved in mining in State forests.

This resulted in funding for 3 positions:

- Two dieback interpreters, trained by CALM and incorporated into the CALM workforce, but employed by an outside organisation.
- This allowed CALM to redeploy two officers to undertake work that would not otherwise have been done. Effectively it has resulted in an increase in inventory work done by CALM thereby providing improved timber resource knowledge.

Achieved \$55,000

- Land Use Planning Liaison Officer (ex W Tacey) Salary and on costs recouped from Alcoa. Undertakes work in environmental management associated with mining in forests. The occupant produced operational guidelines for bauxite mining in high quality forest and in high risk areas. This was required before mining could proceed in those areas. Result is an improved ability to manage. The officer resigned in February 1989. Negotiations between CALM and Alcoa agreed that the task had largely been completed and the position was no longer required.

Achieved	\$44,700
Total Achieved	\$99,700

Initiative

Retraining, reorganisation and restructuring within the timber production area has resulted in a saving of an anticipated 6 FTE (3 x Level 1, 1 x Level 2, 2 x Level 3) to meet the massive increase in sales of softwood and hardwood logs.

Estimate	\$123,000
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Implementation

Timber Production Branch has undertaken additional activity without an increase in staff numbers, whereas it was originally planned that additional staff would be required.

Evaluation is supported by:

- Volume figures for the financial years 1986/87, 1987/88 and 1988/89.
- Revenue figures for the financial years 1986/87, 1987/88 and 1988/89.

	1986/87	1987/88	1988/89
Log Production from Crown Land - cubic metres.	1,605,463	1,730,071	1,751,054
Hardwood Chiplog Production - cubic metres.	552,693	696,967	613,297
CRF - Revenue	\$31,280,370	\$38,420,878	\$52,706,715

Achieved	\$123,000
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Initiative

A reorganisation in the wood utilisation area has resulted in a reduction of labour costs in relation to a specific output of work, valued at \$42,000 (1 x Level 6 officer).

Estimate	\$42,000
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Implementation

The reorganisation and retraining undertaken freed up a CALM officer to manage the Public Interest Project without that officer being replaced.

The Public Interest Project within the Wood Utilisation Research Centre has had a significant influence on the sawmilling and furniture manufacturing sections of the forest industry for greater production and use of WA grown, value-added wood.

The same rate of CALM technical papers has been produced for publication while additional publications for the Public Interest Project have also been produced.

Specifically, the Project has:

- developed new kilns
- applied for 1 patent
- lodged an application for 1 provisional patent
- registered a new timber process.

Of the \$4.631m grant, \$1.2m has been spent on capital equipment at WURC in Harvey. This will allow for expanded research and development programs at significantly reduced costs to CALM into the future.

Achieved \$42,000

Initiative

Massive introduction of new technology has resulted in significant reorganisation of work systems and job design by existing staff. Of the total number of initiatives documented, 50% have been estimated as being suitable 2nd tier items.

Estimate \$150,538

Implementation

Project	Expected Benefits	Actual Benefits	Expected Benefits	Actual Completion
Wages	56 138	62 432	Jul 1988	Jul 1988
Licensing	14 000	14 000	Feb 1988	Mar 1988
Budgets	4 200	4 200	Apr 1987	Apr 1987
Commitments	13 200	-	Jul 1989	-
Word Processing	63 000	63 000	Nov 1987	Nov 1987
Total	\$150 538	\$143 632		

Achieved \$143 632

Explanation

Wages and Costing

The computer wages system was introduced on 1/7/88 as scheduled. Actual savings have been assessed in nine of the twenty-two districts and average 1.1 days per fortnight in each district. The expected head office savings were slightly less than expected. Total actual savings slightly exceed predicted savings.

22 x (1.1/10) x L2	57 591
.7 x L1	11 200
.2 x L3	<u>5 541</u>
	74 332
- Cost amortisation:	<u>-11 900</u>
	62 432

District time savings have been utilised on other tasks.

Licensing

The licensing system was introduced in March 1988, one month behind schedule. One position was redeployed elsewhere.

Budgets

The computer budget system was introduced on schedule in March 1987. Actual savings met expectations.

Commitments

A pilot system was introduced but was found to be inadequate. The project was deferred and is to be implemented in July 1989 as part of a full new General Ledger system.

Word Processing

All micro computers were installed on schedule. Improvements in productivity have been significant although quantifiable evaluation has not been undertaken. The productivity improvement is assumed to be 27%, in line with previous studies of improvements due to the installation of word processing.

Initiative

Reorganisation within the accounts payable section has resulted in a Level 1 officer being redeployed to accounts receivable. Productivity benefit costed at \$16,266.

Estimate	\$16,266
----------	----------

Implementation

Not yet achieved.

Achieved	NIL
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Schedule 2

Estimated productivity increase	\$448,104
Achieved productivity increase	\$429,632



office of the
AUDITOR GENERAL

REPORT OF THE AUDITOR GENERAL FOR WESTERN AUSTRALIA

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

The accounts of the Department of Conservation and Land Management have been audited for the period July 1, 1988 to June 30, 1989 under the provisions of the Financial Administration and Audit Act, 1985 and found to be in order.

In my opinion

- (i) the controls exercised by the Department of Conservation and Land Management were sufficiently adequate to provide reasonable assurance that the receipt and expenditure of moneys and the acquisition and disposal of property and the incurring of liabilities have been in accordance with legislative provisions; and
- (ii) the Statements of Receipts and Payments, including notes thereto are based on proper accounts and records and have been properly drawn up so as to present fairly the transactions for the period.

A D SMITH
AUDITOR GENERAL

October 27, 1989



office of the
AUDITOR GENERAL

REPORT OF THE AUDITOR GENERAL FOR WESTERN AUSTRALIA

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
PERFORMANCE INDICATORS 1988-89

I have formed the opinion that in the Western Australian public sector the development of criteria for establishing performance indicators for public sector agencies has yet to reach the stage where it is possible to conduct an audit as required by the legislation. The reason for forming this opinion is contained in my Report to Parliament dated August 31, 1989. I am therefore not in a position to, and do not, express an opinion on the performance indicators of the Department of Conservation and Land Management for the period July 1, 1988 to June 30, 1989.

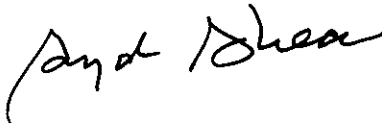
A D SMITH
AUDITOR GENERAL

October 27, 1989

FINANCIAL STATEMENTS

The accompanying financial statements 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 financial year ending 30 June 1989 and the state of affairs as at 30 June 1989.

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.



ACCOUNTABLE OFFICER



PRINCIPAL ACCOUNTING OFFICER

**Governmental Operating & Trust Account
Conservation and Land Management Trust Fund
Statement of Receipts and Payments
for the Year Ended 30 June 1989**

1987/88	DETAILS	1988/89	
\$	\$	\$	\$
5 483 009	Trust Fund Balance as at 1 July		3 640 195
	This is represented by:		
	3 118 063	Operating Funds (a)	138 760
	2 164 866	Capital Funds (b)	3 345 691
	<u>200 080</u>	Nature Cons. & Nat. Parks A/c (c)	<u>155 744</u>
	ADD Receipts		
	70 166 282	Operating Funds (a)	85 830 128
	17 611 473	Capital Funds (b)	19 119 480
	<u>31 547</u>	Nature Cons. & Nat. Parks A/c (c)	<u>31 908</u>
<u>87 809 302</u>			<u>104 981 516</u>
<u>93 292 311</u>			<u>108 621 711</u>
	LESS Payments		
	73 145 584	Operating Funds (a)	86 187 727
	16 430 648	Capital Funds (b)	20 768 338
	<u>75 884</u>	Nature Cons. & Nat. Parks A/c (c)	<u>52 400</u>
<u>89 652 116</u>			<u>107 008 465</u>
<u>3 640 195</u>	Trust Fund Balance as at 30 June		<u>1 613 246</u>
	This is represented by:		
	138 760	Operating Funds (a)	218 839 DR
	3 345 691	Capital Funds (b)	1 696 833
	<u>155 744</u>	Nature Cons. & Nat. Parks A/c (c)	<u>135 252</u>

The balance of this fund is held at and invested by Treasury with the interest from the investment being credited to the Government of WA.

NOTES TO THE FINANCIAL STATEMENTS

Financial statements of the Department are prepared on a cash basis in that only collections received and payments made are reflected therein. The disbursements include a net payment of \$184 000 to the Treasury Departmental Receipts in Suspense Account for accrued salaries.

The \$4 000 000 excess expenditure was met from the Treasurer's Advance Account during the year and has been charged against the Consolidated Revenue Fund under section 28 of the Financial Administration and Audit Act with the Consolidated Revenue Fund to be subsequently appropriated for this purpose.

The purpose of the Conservation and Land Management Trust Fund is to hold funds derived under Section 64 and 68 of the Conservation & Land Management Act 1984.

- (a) Details relating to Operating Funds appear in the Operating Funds Statement of Receipts & Payments.
- (b) Details relating to Capital Funds appear in the Capital Works Statement of Receipts & Payments.
- (c) Details relating to the Nature Conservation and National Parks Account appear in the Nature Conservation and National Parks Trust Account Statement of Receipts and Payments.

**Operating Funds Account
Statement Of Receipts & Payments
for the Financial Year Ended 30 June 1989**

1987/88		Estimate	1988/89 Actual	Variation
\$		\$	\$	\$
3 118 063	Opening Balance as at 1 July	138 000	138 760	760
RECEIPTS				
65 186 000	Consolidated Revenue Fund (10)	76 189 000	80 189 000	4 000 000
460 000	Refinancing Loans	-	-	-
1 353 784	Recoupable Projects	1 048 000	1 505 408	457 408
188 354	Saleable Publications (1)	250 000	304 584	54 584
125 486	Youth Trainee Scheme (2)	200 000	5 000	195 000-
235 298	Aboriginal Community Development	200 000	209 134	9 134
118 230	Other Wildlife Recoups (3)	30 000	102 728	72 728
66 913	Heritage Trails (4)	92 000	39 923	52 077-
863 766	Income from National Parks	879 000	1 066 809	187 809
654 889	MRD Road Grants (5)	1 137 000	917 375	219 625-
Commonwealth Recoups -				
510 000	Wood Utilization Res. Proj. (6)	341 000	349 759	8 759
320 486	Wildlife Special Projects (3)	406 000	516 529	110 529
83 076	National Employment Strategy for Aboriginals (7)	20 000	126 354	106 354
-	National Afforestation Prog. (8)	<u>540 000</u>	<u>497 525</u>	<u>42 475-</u>
<u>73 284 345</u>		<u>81 470 000</u>	<u>85 968 888</u>	<u>4 498 888</u>
PAYMENTS (9)				
25 416 410	Salaries & Allowances	28 074 000	28 469 503	395 503
12 889 516	Corporate Services	14 284 000	15 981 449	1 697 449
10 539 685	Debt Servicing Costs	12 521 000	11 879 639	641 361-
4 244 353	Environmental Protection	4 444 000	4 352 754	91 246-
1 850 597	Engineering Services	2 894 000	2 485 419	408 581-
3 251 266	Rec. & Tourism Services	2 594 000	2 419 501	174 499-
1 966 880	Research & Planning	1 907 000	1 987 447	80 447
11 219 396	Commercial Operations	13 933 000	16 839 754	2 906 754
441 646	Information Services	400 000	399 854	146-
1 325 836	Natural Disasters	93 000	1 081 792	988 792
-	W A Herbarium	<u>326 000</u>	<u>290 615</u>	<u>35 385-</u>
<u>73 145 585</u>		<u>81 470 000</u>	<u>86 187 727</u>	<u>4 717 727</u>
138 760	Balance as at 30 June	-	218 839DR	218 839-

- (1) During 1986/87 the Department successfully launched a marketing campaign for its saleable publications. The 1988/89 result reflects the continuing success of that campaign.
- (2) Costs incurred by the Department under this Scheme were to be reimbursed by the Department of Employment & Training. However, due to changes in funding this did not eventuate (see also Note 10 (e)).
- (3) Funding for Wildlife Special Projects is provided by the Commonwealth Government and other conservation organisations such as the World Wildlife Fund. Grants are for specific purposes and do not necessarily bear any comparison in dollar terms to previous years grants.
- (4) The Heritage Trails project was a Bicentennial project completed during 1988/89 financial year.

- (5) Increased maintenance of roads subject to MRD funding contributed to this increase.
- (6) This amount represents the Commonwealth Government contribution to the joint Commonwealth/State/Industry research project.
- (7) The 1988/89 figure represents a full years cost of the scheme recouped from the Commonwealth Government.
- (8) CALM is receiving funding from the Department of Primary Industries and Energy for 2 projects:-
- (a) Demonstration of the integration of short rotation eucalypts into the agricultural system in South West Western Australia and;
 - (b) Afforestation of farm land in the South West, using Karri.

This money represents recoups of \$486 155 for project (a) and \$11 400 for project (b).

- (9) Expenditure for 1988/89 was \$13 042 142 greater than in 1987/88. The increase in the level of activity in the building industry resulted in a rise of expenditure on Commercial Operations of \$5 620 358 or 43% of the total increase. CRF Revenue increased accordingly as a result of this increased expenditure.

Other significant increases were:

1. The transfer of responsibility for the WA Herbarium from the Agriculture Department - \$1 000 000 for Salaries and Contingencies.
2. Salaries & Allowances - \$2 361 000 (excluding WA Herbarium).

National Wage case increases of 3% in September 88 and \$10 per week in March 1989 were contributors to this increase. An increase in the number of salaried officers accounted for the balance.

3. Debt Servicing Costs - \$1 339 954.
4. Increased Superannuation Contributions - \$1 399 149.

The balance of the increase was mainly due to rises in statutory charges and increased levels of activity on works of a recoupable nature. Works of a recoupable nature are usually "one off" and do not necessarily bear any relationship to previous years expenditure. In many cases they are not budgeted, however, as costs are recouped in full this does not cause a problem with funds availability.

- (10) Factors contributing to the excess of \$4 000 000 were:

- (a) **Salaries and Allowances - \$395 000**

The major portion of the excess is represented by:

- Overtime for fire suppression	\$284 000
- Retiring Allowances	\$196 000
- Higher Duties Allowances	\$129 000
- Annual Leave Loading	\$ 44 000
- National Parks Rangers Allowances	<u>\$ 87 000</u>
	\$740 000

The overspending in Allowances was partly offset by a saving in Salaries of \$362 000

- (b) **Natural Disasters - \$ 989 000**

It has been Treasury policy to fund this expenditure by way of an excess on expenditure as it is impossible to predict the extent of wildfire activity or whale strandings during the year.

(c) Commercial Operations - \$2 900 000

The increased level of activity in the timber industry is reflected in the increased expenditure on this item. As a result of this expenditure, the State will gain extra revenue from Hardwood and Pine Sales, although some of the extra revenue will not be received until 1989/90.

The revenue collection from Hardwood & Pine Sales for 1988/89 exceeded the estimate by \$3 218 668.

(d) Superannuation - Excess \$582 000

This item relates to employer contributions to the new Government Employees Superannuation Scheme. At the time of framing the 1988/89 budget, difficulties were encountered in providing an estimate for this new charge. Treasury has acknowledged that this is an area where accurate estimating has been difficult.

(e) Youth Trainee Scheme - \$350 000

The costs incurred by the Department under this scheme were to be reimbursed by the Department of Employment & Training. However, due to changes in funding this did not eventuate (see also Note 2).

There were several minor savings and excesses which resulted in the Department requiring a net \$4 000 000 to fund the major areas of unbudgeted expenditure.

Capital Works For Financial Year 1 July 1988 to 30 June 1989 Statement of Payments & Receipts

1987/88		Estimate \$	1988/89 Actual \$	Variation \$
2 164 866	Balance as at 1 July	3 346 000	3 345 691	309-
RECEIPTS				
13 000 000	Borrowings (1)	14 726 000	14 726 000	-
670 155	Commonwealth Grant - Bicentennial Trust Fund (2)	75 000	83 855	8 855
-	Contribution Main Roads Dept	105 000	98 888	6 112-
1 327 507	Mining Compensation	1 114 000	1 247 219	133 219
1 899 634	Sales of Plant (3)	-	2 609 116	2 609 116
5 577	Other	-	10 120	10 120
677 329	Cash Order Balance	50 000 DR	232 355	282 355
31 271	Plant Workshop - Operating Costs	-	111 927	111 927
<u>19 776 339</u>		<u>19 316 000</u>	<u>22 465 171</u>	<u>3 149 171</u>
PAYMENTS				
	Establishment & Tending			
2 900 187	Hardwood Forests	3 369 000	3 111 238	257 762-
5 353 494	Softwood Forests	5 875 000	5 512 669	362 331-
1 116 419	Access Rds - Construction	1 268 000	1 349 764	81 764
1 304 587	Land Purchase (4)	3 000 000	637 180	2 362 820-
2 381 066	Plant & Equipment (5)	160 000	2 756 927	2 596 927
856 689	Buildings	304 000	225 360	78 640-
1 151 847	Ningaloo Marine Park (2)	342 000	378 710	36 710
759 287	Softwood Sharefarming	898 000	1 184 716	286 716
607 072	Hardwood Sharefarming (6)	1 300 000	2 866 996	1 566 996
-	Central Nursery Development	800 000	865 763	65 763
-	National Parks Development and Improvement	2 000 000	1 879 015	120 985-
<u>16 430 648</u>		<u>19 316 000</u>	<u>20 768 338</u>	<u>1 452 338</u>
3 345 691	Balance as at 30 June	-	1 696 833	1 696 833

Notes To Capital Statement

(1) Borrowings

The outstanding principal at 30 June 1988 was \$65 009 467.

During the year loans to the value of \$14 726 000 were raised.

Principal and interest payments during the year amounted to \$2 374 557 and \$8 624 626 respectively. In addition, proceeds from sinking fund investments with the Treasury amounting to \$99 241 were applied to the reduction of loans due to the W.A. Treasury Corporation. The outstanding principal at 30 June 1989 was \$77 261 669.

Sinking funds held at Treasury totalled \$226 000.

Softwood Forestry Agreement Loans.

Between the years 1966/67 and 1982/83 the Commonwealth Government provided loans amounting to \$10 078 510 for the purpose of establishing and tending softwood plantations. The outstanding principal at 30 June 1988 was \$8 858 626. During the year principal and interest payments amounted to \$241 954 and \$848 720 respectively. The outstanding principal at 30 June 1989 was \$8 616 672.

- (2) A grant from the Australian Bicentennial Authority was received to assist with the establishment of a visitors centre at Milyering. Work commenced on the project late in the 1986/87 financial year and was completed in early 1988/89.
- (3) Unusually high prices paid by the used car industry for traded vehicles contributed to the increased revenue.
- (4) Many planned land purchases were not proceeded with; some of the funds were held in reserve for the planned establishment of a central nursery, while some were diverted to cover the additional cost of Forestry Sharefarming.
- (5) Plant & Equipment

At the time the budget was framed it was intended to set up a Plant and Vehicle Replacement Account within the Conservation and Land Management Trust Fund. As a consequence, all costs relating to plant and vehicle replacement and proceeds from the sale of plant were excluded from the Capital Works budget.

Difficulties in establishing the proposal under the Financial Administration & Audit Act resulted in the creation of the proposed account being delayed. All costs and receipts have therefore been accounted for under the Capital Works Program.

- (6) The continued expansion of the sharefarming schemes required the diverting of funds from the Land Purchase item to cover the additional costs.
- (7) The General Loan & Capital Works Fund claims on hand but unpaid at 30 June 1989 amounted to \$38 690.

**Consolidated Revenue Fund
Revenue Collections
for the Financial Year Ended 30 June 1989**

1987/88		Estimate	1988/89 Actual	Variation
\$	Territorial Revenue (1)	\$	\$	\$
12 517 065	Saw Log Royalties	15 402 000	16 443 720	1 041 720
5 056 293	Sandalwood	4 900 000	6 620 531	1 720 531
5 385 929	Chip Logs	5 402 000	5 244 717	157 283-
<u>756 551</u>	Other	<u>323 000</u>	<u>375 079</u>	<u>52 079</u>
23 715 838		26 027 000	28 684 047	2 657 047
Departmental Revenue (2)				
1 275 609	Fees	1 449 000	1 409 671	39 329-
7 664 724	Pine Conversion Sales	8 887 000	9 656 138	769 138
7 040 316	H/Wood Conversion Sales	11 917 000	14 366 530	2 449 530
419 214	Recoupable Projects	250 000	265 428	15 428
122 289	Wildlife	128 000	129 275	1 275
<u>89 300</u>	Sales of Assets	<u>475 000</u>	<u>372 966</u>	<u>102 034-</u>
16 611 452		23 106 000	26 200 008	3 094 008
<u>40 327 290</u>	GRAND TOTAL	<u>49 133 000</u>	<u>54 884 055</u>	<u>5 751 055</u>

1. Territorial Revenue - Excess \$2 657 047

The increase in Royalties earned for 1988/89 was mainly because:

- (a) Sawlog production resulted in a higher level of activity than predicted; this contributed to revenue exceeding the estimate by \$1 041 720.
- (b) Sandalwood revenue earned exceeded the estimate by \$1 720 531 due to price increases effective from 1 January 1989. The prices negotiated are subject to market forces and are difficult to predict.

Sandalwood production for 1988/89 was greater than normal.

2. Departmental Revenue - Excess \$3 094 008

- (a) The fine weather plus the increased demand for timber generated by the housing industry contributed to the increased Hardwood & Pine Conversion Sales.
- (b) Sale of Assets did not generate the revenue expected due to delays in the disposal of Departmental houses.

Consolidated Revenue Fund Expenditure for the Financial Year Ended 30 June 1989

1987/88		Estimate	1988/89 Actual	Variation
<u>65 186 000</u>	Amount required for services for the year (paid to Conservation and Land Management Trust Fund)	<u>76 189 000</u>	<u>80 189 000</u>	<u>4 000 000</u>

Total CRF expenditure was \$15 003 000 more in 1988/89 than 1987/88. The main contributors to the increase were:

- (i) Salaries and Allowances of \$3 053 000 due to an increase in staff numbers and award increases. The Department also assumed responsibility for the W.A. Herbarium from 1 July 1988 and \$519 000 of the salaries expenditure is attributable to this.
- (ii) Debt Servicing Costs of \$1 340 000 - This is a matter of increasing concern. The Department's hardwood and softwood establishment costs are funded from borrowings yet when the crop is sold the outstanding debt is not extinguished from the proceeds.
- (iii) Commercial Operations increase of \$5 620 000.
- (iv) A decrease in carry-over funds of \$3 500 000 available from the previous years' allocation.
- (v) Superannuation contributions of \$1 399 000.

Special Acts Expenditure

81 647	Salary of Executive Director	85 000	96 821	11 821
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Supplementary Financial Information

CRF revenue due but not collected at 30 June 1989 was \$5 808 809 and it is expected that all but \$2 476 will be collected.

CRF expenditure claims on hand but unpaid at the end of the financial year amounted to \$81 362.

Losses of public moneys and public or other property:

	1987/88		1988/89	
Revenue	\$	\$	\$	\$
Apiary Rentals	26 500.00			
Irrecoverable amounts	374.99		9 607.49	
Other	<u>80.00</u>	26 954.99	<u>263 .13</u>	9 870.62
General (includes thefts reported to Police, lost property, Stocktaking deficiencies etc).		<u>13 192.64</u>		<u>110.76</u>
		40 147.63		9 981.38

Public and other property, revenue and debts to the State, written off in accordance with section 45 of the Financial Administration & Audit Act.

	1987/88	1988/89
	\$	\$
The Executive Director	13 647.63	1 153.80
The Hon. Minister for Conservation & Land Management	<u>26 500.00</u>	<u>8 827.58</u>
	40 147.63	9 981.38

**Nature Conservation & National Parks Trust Account
Statement of Receipts & Payments
for the Financial Year Ended 30 June 1989**

1987/88 \$		1988/89 \$
200 080	Opening Balance as at 1 July	155 744
RECEIPTS		
2 682	Game Licenses	886
7 856	Flora Licenses	8 869
307	Bequests & Gifts	2 658
20 702	Interest on Investments	19 495
<u>231 627</u>		<u>187 652</u>
PAYMENTS		
23 500	Waterfowl Monitoring '88/91	10 250
13 083	RAOU Waterbird Population Study	12 000
2 000	Flora Study - Boronia	4 000
19 000	Study of Relict Spring Fauna	
3 000	Aust Sealion Breeding Biology	
2 000	NZ Fur Seal Study	2 850
900	RAOU Hooded Plover Study	
2 600	Lake Clifton Stromatolites	
1 500	Lead in W.A. Wetlands Study	
4 800	Fitzgerald River National Park Flora/Fauna	
2 000	Biology of Little Penguin	
1 500	Dibbler Study	
	Other	5 500
	Duck Counting	
	S/W Waterbird	13 800
	Wetland/Waterfowl Plan	<u>4 000</u>
<u>75 883</u>		<u>52 400</u>
155 744	Balance as at 30 June	135 252

Section 68 of the Conservation and Land Management Act 1984 provides for the establishment of the Nature Conservation and National Parks Trust Account within the Conservation and Land Management Trust Fund. The Account is credited with money derived under the Wildlife Conservation Act 1950 and income from investments, gifts, devises, bequests and donations. The funds may be applied to research or any other purpose relating to the conservation of fauna and flora, or the management of national parks, nature reserves, marine nature reserves or marine parks, subject to compliance with any conditions imposed in connection with any gifts or bequests.

**Private Trust Account
C.E. Lane Poole Memorial Trust
Statement of Receipts & Payments
for the Year Ended 30th June 1989**

87/88		88/89
\$		\$
99	Balance Brought Forward	2 445
	RECEIPTS	
5 000	Donations	-
446	Interest on Investments	458
<u>5 545</u>		<u>2 903</u>
	PAYMENTS	
3 100	Travel Costs Associated with Award	288
<u>2 445</u>	Balance as at 30 June	<u>2 615</u>

The purpose of this fund is to assist with extending the knowledge and experience of awardees by study and for travel in Australia or overseas, on topics of value to the Department of Conservation and Land Management.

The balance of this trust fund is held at and invested by Treasury. Proceeds from the investments are credited to the trust fund as the investments mature.

**Private Trust Account
Research Co-ordinating Committee
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
3 734	Balance Brought Forward	9 284
	RECEIPTS	
5 550	Interest on Investments	904
<u>9 284</u>		<u>10 188</u>
	PAYMENTS	
<u>Nil</u>		<u>Nil</u>
9 284	Balance as at 30 June	10 188

The purpose of this fund is to hold funds for research projects as approved by the Research Co-ordinating Committee.

The balance of this trust fund is held at and invested by Treasury. Proceeds from the investments are credited to the trust fund as the investments mature.

**Private Trust Account
Dieback Research Trust Fund
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88		88/89
\$		\$
13 630	Balance Brought Forward	10 278
RECEIPTS		
50 000	Alcoa	-
20 000	Worsley Alumina	-
10 000	Forest Products Association	-
2 419	Interest on Investments	4 277
<u>96 049</u>		<u>14 555</u>
PAYMENTS		
10 958	Gilkes - University of WA	-
74 504	Dept of Conservation & Land Management	-
309	Sundries	-
<u>85 771</u>		<u>Nil</u>
10 278	Balance as at 30 June	14 555

The purpose of this fund is to hold funds for research projects as approved by the Dieback Research Fund Committee.

The balance of this trust fund is held at and invested by Treasury. Proceeds from the investments are credited to the trust fund as the investments mature.

**Private Trust Account
Keynes Forestry Prize
Statement of Receipts & Payments
for the Year Ended 30 June 1988**

87/88		88/89
\$		\$
302	Balance Brought Forward	354
	RECEIPTS	
<u>52</u>	Interest on Investments	<u>30</u>
354	PAYMENTS	<u>384</u>
<u>Nil</u>		<u>Nil</u>
354	Balance as at June 30	384

The purpose of this fund is to provide an award for the most outstanding achievement by a student at the Department's Cadet School.

The balance of this trust fund is held at and invested by Treasury. Proceeds from the investments are credited to the trust fund as the investments mature.

**Private Trust Account
CALM - Income Tax Deductions
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88		88/89
-	Opening Balance	\$ 846 808
	RECEIPTS	
<u>10 847 737</u>	Income Tax Deductions	<u>11 595 551</u>
10 847 737		12 442 359
	PAYMENTS	
<u>10 000 929</u>	Payments to Taxation Dept.	<u>11 624 033</u>
846 808	Balance as at 30 June	818 326

The purpose of this fund is to hold all Income Tax Deductions from Salaries and Wages until the end of the month in which the deductions were made. The deductions are paid to the Australian Taxation Office at the beginning of the following month.

The balance of this fund is held at and invested by Treasury with the interest from the investment being credited to the Government of WA.

**Private Trust Account
Sponsored Projects
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
-	Balance Brought Forward	316
	RECEIPTS	
<u>61 090</u>	World Wildlife Fund	<u>3 400</u>
61 090		3 716
	<u>PAYMENTS</u>	
<u>60 774</u>	Dept. of Conservation & Land Management	<u>3 716</u>
316	Balance as at 30 June	Nil

The purpose of this fund is to hold monies to establish a breeding colony of the numbat.

The balance of this fund is held at and invested by Treasury with the interest from the investment being credited to the Government of WA.

**Private Trust Account
Contractor's Deposits
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
150 976	Balance Brought Forward	212 379
	RECEIPTS	
54 378	Deposits Lodged During Year	406 741
16 318	Interest from Investments	16 690
<u>221 672</u>		<u>635 810</u>
	PAYMENTS	
<u>9 293</u>	Deposits Refunded During Year	<u>138 267</u>
212 379	Balance as at 30 June	497 543

The purpose of this fund is to hold deposits lodged by contractors to the Department of Conservation and Land Management.

The balance of this trust fund is held at and invested by Treasury. Proceeds from the investments are credited to the trust fund as the investments mature.

**Private Trust Account
Withholding Tax - Contractors Prescribed Payments
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

	88/89
	\$
Opening Balance	-
RECEIPTS	
Withholding Tax	<u>1 392</u>
PAYMENTS	
Payments to Taxation Department	<u>1 347</u>
Balance as at 30 June	45

The purpose of this fund is to hold funds deducted from contractors prescribed payments in accordance with the Income Tax Assessment Act 1936 (as amended).

The deductions are paid to the Australian Taxation Office at the beginning of the month following the month in which the deductions were made.

The balance of this fund is held at and invested by Treasury with the interest from the investment being credited to the Government of W.A.

This account was established during 1988/89. A copy of Trust Statement No. 12 follows.

**Private Trust Account
World Wildlife - Ground Parrots
Statement of Receipts and Payments
for the Year Ended 30 June 1989**

	88/89 \$
Opening Balance	-
RECEIPTS	
World Wildlife Fund	<u>22 198</u>
PAYMENTS	
Department of Conservation & Land Management	<u>20 894</u>
Balance as at 30 June	1 304

The purpose of this fund is to hold monies to establish a program for the conservation of the ground parrot species in W.A.

The balance of the fund is held at and invested by Treasury with the interest from the investment being credited to the Government of W.A.

This account was established during 1988/89. A copy of Trust Statement No. 13 follows.

**Treasurer's Advance
Suspended Debit Postings Account
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
-	Balance Brought Forward	-
	RECEIPTS	
<u>43 978</u>	Receipts for Financial Year	<u>466 887</u>
43 978		466 887
	PAYMENTS	
<u>43 978</u>	Payments for Financial Year	<u>466 887</u>
-	Balance as at 30 June	-

The purpose of this account is to hold the Department's debit postings which are not readily identifiable pending identification of and subsequent posting to the correct account.

**Suspense
Suspended Credit Posting Account
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
-	Balance Brought Forward	
	RECEIPTS	-
2 077 199	Receipts for Financial Year	<u>383 390</u>
<u>2 077 199</u>		<u>383 390</u>
	PAYMENTS	
2 077 199	Payments for Financial Year	<u>383 390</u>
-	Balance as at 30 June	-

The purpose of this account is to hold the Department's credit postings which are not readily identifiable pending identification of and subsequent posting to the correct account.

**Suspense
Receipts in Suspense
Statement of Receipts & Payments
for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
986 533	Balance Brought Forward	286 976
RECEIPTS		
23 798	Employees Group Deductions	678 945
704	Unclaimed Salaries & Wages	207
204	Stamp Duties	67
19 781	Pine Log Levy	23 702
176 182	Hardwood Log Levy	210 709
2 400	Declared Birds	2 253
6 501	Prescribed Payments	108
12 688	National Fire Management Course	-
30 041	Wildlife Special Projects	10 000
286 695	Payments in Advance	243 810
-	Ranger Training Program	101 995
-	Heritage Trails	6 817
-	Timber Production Rooding	17 160
430 027	Miscellaneous	865 981
1 975 554		2 448 730
PAYMENTS		
698 917	Employees Group Deductions	705 676
7 116	Pine Log Levy	19 843
74 674	Hardwood Log Levy	196 729
70	Declared Birds	8 670
274 595	Payments in Advance	243 117
16 176	National Fire Management Course	-
49 003	Wildlife Special Projects	-
-	Hardwood Rooding	12 086
-	Prescribed Payments	4 379
-	Heritage Trails	3 266
568 027	Miscellaneous	737 105
1 688 578		1 930 871
286 976	Balance as at 30 June	517 859

The purpose of the Receipts in Suspense Account is to hold funds pending identification of the purpose of which those monies were received pursuant to Section 9(2)(c)(iv) of the Financial Administration and Audit Act.

The balance of this fund is held at and invested by Treasury with the interest from the investment being credited to the Government of WA.

**Governmental Operating & Trust Account
 Conservation and Land Management Loan Sinking Fund
 Statement of Receipts & Payments
 for the Year Ended 30 June 1989**

87/88 \$		88/89 \$
329 578	Balance Brought Forward	288 000
	RECEIPTS	
4 098	Interest and Contributions	<u>37 241</u>
333 676		<u>325 241</u>
	PAYMENTS	
<u>45 676</u>	Matured Loans	<u>99 241</u>
288 000	Balance as at June 30	226 000

The purpose of this fund is to hold sinking fund contributions in order to service the repayment of loans negotiated by the Central Borrowing Authority.

Monies are no longer credited to this account as all loans negotiated by the Central Borrowing Authority were transferred to the W.A. Treasury Corporation at 1.7.86. All interest received and matured sinking funds are paid to the W.A. Treasury Corporation as they become due.

ROADSIDE CONSERVATION COMMITTEE

Terms of Reference

THE terms of reference of the Roadside Conservation Committee (RCC) are to co-ordinate and promote the conservation and effective management of rail and roadside vegetation for the benefit of the environment and the people of Western Australia.

Committee Membership

Mr J Blyth (Chairman)
Mr P Hewett (Deputy Chairman)
Mr K Lindbeck (resigned September 1988)
Cr I Purse (August 1988 -)
Cr J North
Mr J Riches (February 1989 -)
Mr J Robley
Mrs J Seabrook
Mr R Shaw
Mr B Williams (October 1988 -)

Staff

Miss P Hussey (Executive Officer).

Change of Committee Title

The Committee has, with Ministerial agreement, changed its name from "Roadside Vegetation Conservation Committee" to "Roadside Conservation Committee".

Meetings

Six meetings were held during the year, on 8 August 1988, 11 October 1988, 12 December 1988, 13 February 1989, 10 April 1989 and 26 June 1989.

Sub-Committees

Several standing Sub-committees have been appointed which meet as and when necessary.

Research and Technical Investigations Sub-Committee

(To consider priorities for the allocation of research and technical investigations funds)

Chairman:

Mr J Blyth

Date of Meetings:

15 July 1988, 19 January 1989.

During 1988/89 the following research projects were funded:-

- to evaluate the growth requirements of *Banksia cuneata*.
- to continue a survey of the conservation value of roadsides and place the information gathered onto computerised database.
- to update the roadside bibliography.
- to investigate the condition of roadside vegetation with regard to nutrient status and insect attack.
- to monitor the effect of fire on a roadside in Denmark Shire.
- to investigate the effect of fertiliser on non-structural carbohydrate partitioning and resprouting ability of selected *Banksia* woodland understorey species.
- to publish the "Roadside Manual" and the "Roadside Vegetation Clearance Guidelines".

Standards Sub-Committee

(To develop a policy concerning clearance standards along country roads)

Chairman:

Mr. R Shaw

Date of Meeting:

19 September 1988

Corridor Ecology Workshop**Chairman:**

Mr J Blyth

This workshop, to which experts were invited, was held to develop a policy and define appropriate research projects.

Date of Meeting:

19 September 1988

This workshop led to the delineation of a number of areas of research need.

Publications

A second edition of the "Roadside Vegetation Bibliography" has been printed and widely distributed.

Together with the Department of Conservation and Land Management's Research Division, a synopsis of research entitled "Tree Decline and Revegetation Newsletter" has been produced.

Together with the Department of Conservation and Land Management's Information Branch, an educational poster entitled "Bush Corridors" has been produced.

Two new brochures have been printed:

"Kukerin and Wheatbelt Wildflowers"
"Moora Wildflower Drive"

Two brochures have been reprinted:

"Dieback Kills Wildflowers"
"Flora Roads"

In press are the documents

"Roadside Manual"
"Roadside Vegetation Clearance Guidelines".

International Conference/Workshop on Ecological Corridors

The Committee undertook to be co-ordinator for a major scientific conference, "Nature Conservation - the Role of Corridors", to be held in September 1989. This follows the successful conference held at Busselton, in August 1985, on the role of remnants in nature conservation. The Conference has generated considerable interest and should stimulate advances in both research and management.

General Activities

The Committee had extensive liaison with the Country Shire Council's Association, individual local government authorities, Government departments and conservation groups.

The Executive Officer has given a number of talks outlining the importance of roadside conservation and the role of the Committee.

Together with Greening Australia (W.A.), a "Roadside Certificate of Merit" was awarded as part of the John Tonkin Tree Awards. The winner for 1988 was the "Men of the Trees".

Displays were mounted at various public events including the Kings Park Wildflower Exhibition, the Wildlife Show and agricultural shows at Carnamah, Dowerin, Mingenew, Quairading and Wagin.

Finance

Funds for servicing the Committee were provided from the budget of the Department of Conservation and Land Management, the Main Roads Department and Westrail.

During the financial year 1988/89 the funds expended were:-

	CALM	MRD	WESTRAIL	TOTAL
Salary	15 000	15 000	nil	30 000
Members fees, travel	8 178	nil	nil	8 178
Publications	4 244	nil	nil	4 244
Research	<u>9 781</u>	<u>10 000</u>	<u>3 000</u>	<u>22 781</u>
	37 203	25 000	3 000	65 203

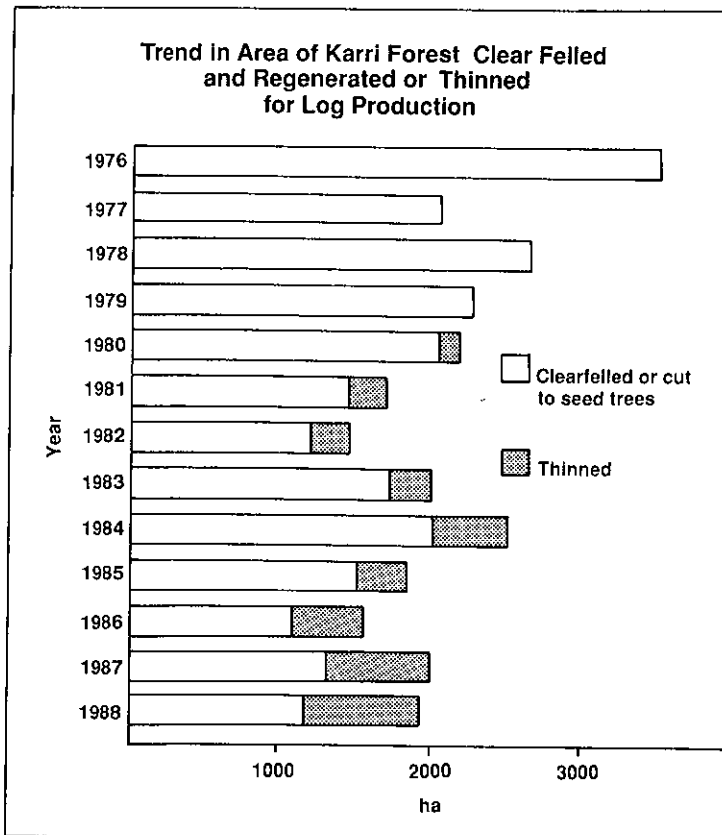
An additional amount of \$1 000 was received from the Victorian Roadsides Conservation Committee to assist with the updating of the "Roadside Vegetation Bibliography".

Appendices

**Appendix 1
Trend in Area of Karri Forest Cut Over and Regenerated**

Years (calendar year)	Clear felled or cut to seed trees (ha)	Removal of seed trees (ha)	Thinning regrowth forest (ha)
1976	3 521	832	-
1977	2 053	2 460	-
1978	2 656	863	-
1979	2 281	400	-
1980	2 045	743	140
1981	1 455	1 463	256
1982	1 221	1 348	262
1983	1 735	617	267
1984	2 120	945	393
1985	1 530	802	324
1986	1 094	1 203	491
1987	1 311	827	702
1988	1 180	990	750

NOTE: The areas from which seed trees are removed are the same areas accounted for under 'Cut to Seed Trees', either in this or a previous reporting period. They are not additional areas of cutting.



Appendix 2 (a)
Trend in Areas of Even Aged Karri Regeneration

Year of Regeneration	Multiple-Use forest * Area	Cumulative Total	Conservation forest * Area	Cumulative Total	Total forest * Area	Cumulative Total
before 1966	7 450	7 450	1 310	1 310	8 760	8 760
1966	160	7 610	-	1 310	160	8 920
1967	220	7 830	80	1 390	300	9 220
1968	690	8 520	140	1 530	830	10 050
1969	1 300	9 820	300	1 830	1 600	11 650
1970	80	9 900	-	1 830	80	11 730
1971	80	9 980	10	1 840	90	11 820
1972	1 110	11 090	710	2 550	1 820	13 640
1973	190	11 280	-	2 550	190	13 830
1974	140	11 420	30	2 580	170	14 000
1975	630	12 050	430	3 010	1 060	15 060
1976	1 760	13 810	60	3 070	1 820	16 880
1977	1 630	15 440	250	3 320	1 880	18 760
1978	1 630	17 070	310	3 620	1 940	20 700
1979	1 930	19 000	300	3 930	2 230	22 930
1980	2 090	21 090	130	4 060	2 220	25 150
1981	2 980	24 070	310	4 370	3 290	28 440
1982	2 260	26 330	150	4 520	2 410	30 850
1983	1 930	28 260	370	4 890	2 300	33 150
1984	1 750	30 010	480	5 370	2 230	35 380
1985	2 330	32 340	-	5 370	2 330	37 710
1986	1 950	34 290	-	5 370	1 950	39 660
1987	1 180	35 470	-	5 370	1 180	40 840
1988	1 440	36 910	-	5 370	1 440	42 280

NOTE: The comparable figures shown in the 1987/88 Report vary slightly from these, due to recent enhancements to the computer data base.

* As proposed in the Regional Management plans published December 1987.

Appendix 2(b)
Trends in *Eucalyptus Globulus*
and *Eucalyptus Muellerana* Plantings

Year	Karri and Muellerana mixed ha	Muellerana ha	Globulus ha
1966	7		
1974	13		
1975	26		
1979	123		
1980	17	10	
1981	30	25	
1982	80	10	
1983	109		
1984	88		
1985	42		
1986	22	64	
1987	56		
1988			1 991
Total	613	140	1 991

NOTE: Various small trial plots, gravel pit replantings and arboreta are not included in this table.

Appendix 3

The Age of State Owned Pine Plantations at 31/12/1988

Planting Year	P. Radiata			P. Pinaster & Other Species			All Species
	New-Planting	Re-Planting	Cumulative Total	New-Planting	Re-Planting	Cumulative Total	Cumulative Total
< 1959	1 583		1 583	4 885		4 885	6 468
1959	407		1 990	360		5 245	7 235
1960	618		2 608	333		5 578	8 186
1961	384		2 992	515		6 093	9 085
1962	385		3 377	416		6 509	9 886
1963	600		3 977	304		6 813	10 790
1964	576		4 553	601	9	7 423	11 976
1965	506		5 059	574		7 997	13 056
1966	652		5 711	876		8 873	14 584
1967	805		6 516	1 313		10 186	16 702
1968	762		7 278	1431		11 617	18 895
1969	977		8 255	1 786		13 403	21 658
1970	1 043		9 298	1 396		14 799	24 097
1971	1 096		10 394	1 300		16 099	26 493
1972	1 117		11 511	1 126		17 225	28 736
1973	1 272	32	12 815	968		18 193	31 008
1974	1 405		14 220	602		18 795	33 015
1975	1 285		15 505	1 283		20 078	35 583
1976	1 647		17 152	1 106		21 184	38 336
1977	1 573		18 725	865		22 049	40 774
1978	2 032	13	20 770	557		22 606	43 376
1979	1 869	14	22 653	562		23 168	45 821
1980	1 604		24 257	1 008		24 176	48 433
1981	1 597		25 854	994	13	25 183	51 037
1982	1 704		27 558	711	6	25 900	53 458
1983	1 338	43	28 939	815		26 715	55 654
1984	1 946	38	30 923	515	8	27 238	58 161
1985	1 939		32 862	517	2	27 757	60 619
1986	1 253		34 115	610		28 367	62 482
1987	1 566	218	35 899	810	78	29 255	65 154
1988	2 212	161	38 272	183		29 438	67 710

Appendix 4

Trend in Log Production

Year	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)
1986	1 331 831	127 006	1 458 837	247 637	29 121	276 758	1 579 468	156 127	1 735 595
1987	1 338 697	158 858	1 497 555	266 766	24 831	291 597	1 605 463	183 689	1 789 152
1988	1 427 624	174 519	1 602 143	302 447	31 161	333 068	1 730 071	205 630	1 935 751
1989	1 432 530	135 381	1 567 911	318 524	56 752	375 276	1 751 054	192 133	1 943 187

Appendix 5

Trends in the Production and Use of Sawn Timber

Year Ended 30 June	Sawn Production			Export (m ³)	Local Use (m ³)
	Hardwood (m ³)	Softwood (m ³)	Total (m ³)		
1970	425 295	16 893	442 188	96 275	345 914
1971	420 777	21 595	442 372	79 437	362 935
1972	379 006	21 733	400 739	101 191	299 548
1973	375 135	23 283	398 418	111 547	286 871
1974	374 899	26 534	410 433	98 200	303 233
1975	368 844	27 086	395 930	100 127	295 803
1976	383 010	16 258	399 268	94 136	305 132
1977	369 151	16 685	385 836	77 352	308 484
1978	347 111	18 669	365 780	58 833	306 947
1979	331 135	18 145	349 280	66 420	282 860
1980	331 411	21 400	352 811	71 955	280 856
1981	330 863	22 954	353 817	65 109	288 708
1982	320 915	22 190	343 105	48 448	294 657
1983	252 124	13 216	265 340	41 789	223 551
1984	258 861	14 723	273 333	19 318*	254 015
1985	291 683	21 632	313 315	22 112*	291 203
1986	295 160	33 816	328 976	21 497*	307 479
1987	280 146	36 512	316 658	9 547*	307 111
1988	270 723	47 929	318 652	N/A	N/A
1989	287 357	47 834	335 191	N/A	N/A

* Figures for interstate export of jarrah and karri timber, sawn lengthwise, sliced or peeled, but not further prepared, or a thickness exceeding 5 mm, are excluded because of confidentiality restrictions applied by the Australian Bureau of Statistics.

Appendix 6

Trend in Woodchip Production

Year	Crown Land										Private Property Chiplogs (m ³)	Total C.L. & P.P. Chiplogs (m ³)	Percentage Private Property to Total (%)	
	Chips from Residue			Chiplogs from Thinning Regrowth Forest			Chiplogs from Old Growth Forest Operations							Total C.L. (Regrowth and Oldgrowth)
	Sawmill (t)	Forest (t)	Subtotal (t)	Marri (m ³)	Karri (m ³)	Subtotal (m ³)	Marri (m ³)	Karri (m ³)	Other (m ³)	Subtotal (m ³)				
1975/76							77655	20712	3	98370	98370		98370	
1976/77	32007		32007				241207	135814		377021	377021		377021	
1977/78	89390		89390				329190	105187		434377	434377		434377	
1978/79	114766		114766				353928	100168		454096	454096	18865	472961	4.0
1979/80	137503		137503	292	3882	4174	439666	116975	1476	558117	562291	53197	615488	8.6
1980/81	187501		187501	1794	17565	19359	386664	105604	3448	495716	515075	58983	574058	10.3
1981/82	74561		74561	1728	21676	23404	255069	90734		345803	369207	16116	385323	4.2
1982/83	77486		77486	3137	23702	26839	284670	100608		385278	412117	21835	433952	5.0
1983/84	87833		87833	2961	24293	27254	339389	78371		417760	445014	57598	502612	11.5
1984/85	88297		88297	2263	22176	24439	400828	71613		472441	496880	91702	588582	15.6
1985/86	110494		110494	555	30918	31473	428514	54448		482962	514435	64914	579349	11.2
1986/87	88111		88111	500	55753	56253	444076	52364		496440	552693	99923	652616	15.3
1987/88	104750	2200	106950	764	72040	72804	551673	72490		624163	696967	112884	809851	13.9
1988/89	102321	5270	107591	4214	77911	82125	459775	71397		531172	*613297	91865	705162	13.0
Cum. Tot.	1295020	7470	1302490	18208	349916	368124	4992304	1176485	4927	6173716	6541840	687882	7229722	9.5

* Includes Forest Residue.

Appendix 7

Summary of Exports of Forest Produce

Year	Timber		Wood Manufacture Value (\$)	Essential Oils and Tanning Materials (\$)
	(m ³)	Value (\$)		
Brought Forward	13 081 830	177 786 912	8 536 935	17 386 964
1968	84 569	4 947 595	3 016 850	280 806
1969	86 455	4 984 098	3 802 927	267 565
1970	96 275	5 661 547	3 906 699	317 553
1971	79 362	4 803 842	2 110 802	343 512
1972	101 191	6 439 732	2 369 541	348 762
1973	111 547	7 036 637	2 604 116	337 736
1974	98 200	7 366 709	3 769 461	433 627
1975	100 127	9 080 092	132 278	479 019
1976	94 136	9 823 037	993 199	214 918
1977	77 352	10 150 025	205 173	45 767
1978	58 833	8 809 324	4 625 089	41 422
1979	66 420	10 560 052	8 122 584	61 525
1980	71 955	12 265 737	591 670	255
1981	65 109	12 331 467	1 414 745	2 361
1982	48 448	9 599 222	1 671 328	—
1983	41 798	8 295 949	1 634 839	300
1984	19 318	5 284 658	¹ *9 910 609	3 138
1985	22 112	7 172 934	² * 351 837	2 099
1986	21 497	7 328 350	² * 547 344	318
1987	9 547	4 199 069	² * 965 344	—
1988	9 356	4 757 117	² *1 629 591	N/A

¹* Includes interstate cork and wood not elsewhere included. This incorporates interstate jarrah and karri timber sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm, previously included in "Timber" in the years prior to and including 1982/83.

²* Does not include interstate cork and wood (which is not elsewhere included either) because of confidentiality restrictions applied by the Australian Bureau of Statistics.

Source: Australian Bureau of Statistics.

Appendix 8

Summary of Imports of Forest Produce

Year	Timber Woodware (\$)	Tanning Materials (\$)	Essential Oils (\$)
Brought Forward	69 937 163	1 344 397	4 600 226
1968	8 135 532	75 657	143 696
1969	8 731 114	109 905	206 309
1970	10 968 170	153 169	293 845
1971	6 761 806	103 857	175 331
1972	5 578 819	144 219	227 530
1973	8 326 939	225 463	366 786
1974	11 738 861	420 010	271 713
1975	14 053 751	465 884	641 859
1976	19 960 421	373 331	131 515
1977	24 857 792	603 819	39 143
1978	24 039 952	912 669	620
1979	18 200 508	614 628	48
1980	26 801 716	641 927	1 118
1981	28 691 997	512 128	126
1982	26 068 548	571 183	1 446
1983	23 738 070	341 138	1 138
1984	26 480 449	610 625	6 257
1985	37 871 360	450 477	9 587
1986	37 858 904	402 564	958
1987	47 950 173	521 401	37 684
1988	52 762 401	N/A	N/A

Source: Australian Bureau of Statistics

Appendix 9

Area of Prescribed Burning 1988/89

Indigenous Vegetation — hand burning (a)	1988/89	1987/88
State forests		
Handburns	13 698	23 591
Slash and regeneration	6 700	6 346
Indigenous areas within pine plantation zones	40	172
Clearing burns for pine establishment	1 165	325
National Parks	6 763*	13 584
Nature Reserves	1 822**	2 397
Other Crown Lands and private property	465	3 587
Total	30 653	50 002
Indigenous Vegetation — aerial ignitions (ha)		
State forest hardwood	178 656	203 723
National Parks	12 285	12 890
Nature Reserves	13 208	3 884
Other Crown Lands and private property	1 790	2 250
Total	205 939	222 747
State Forest Softwoods (ha)		
Winter burning under pines	5 787	4 534
Total	5 787	4 534

88/9 * Plus 141 km buffer strips

** Plus 104 km buffer strips.

Appendix 10

Fire Fighting Equipment by Regions — 30 June 1989

Region	Heavy Duties	Gang Trucks	Light Patrol	Portable Units
Metropolitan	1	0	6	4
Northern Forest	16	12	22	12
Central Forest	27	18	12	21
Southern Forest	16	12	8	9
South Coast	4	1	15	3
Wheatbelt	2	1	6	3
Greenough	3	0	8	0
Goldfields	1	0	1	0
Pilbara	1	0	5	0
Kimberley	0	0	3	0
Total	71	44	86	52

Heavy Duty = 5 tonne truck with 2700 to 3600 litre tank and 11kW pump.

Gang Truck = Personnel carrier with 900 to 1900 litre tank and 4kW pump.

Light Patrol = Up to 1 tonne 4WD vehicle with 400 to 700 litre tank and 4kW pump.

Portable Units = Either 11kW pump for relay pumping or standard 4kW pump.

Delivery hoses are up to 4cm in diameter.

Hygiene Washdown Units by Regions — 30 June 1989

Region	Mobile HP/LV Trailer or Vehicle	FIXED HP/LV DHQ Electric or Petrol	WASHDOWN Pad/Ramp
Metropolitan	1	0	1
Northern Forest	3*	1	3
Central Forest	3	3	6
Southern Forest	4*	3	3
South Coast	4	1	5
Wheatbelt	1	0	2
Greenough	2	0	1
Goldfields	0	0	0
Pilbara	0	0	0
Kimberley	0	0	0
Total	18	8	21

* Includes (1) air compressor type.

Appendix 11

Number of Wildfires and Areas by Land Categories

	Number 1988/89	Area Burnt (ha) 1988/89
State forest hardwood	125	1 750
State forest softwood	33	16
National Parks	39	39 412
Nature Reserves	23	6 547
Other Crown Lands	82	24 494
Private Property	116	6 212
Total	418	78 431

Causes

	Number 1988/89	Percent 1988/89
Deliberately and illegally lit	152	36
Escaped from Departmental prescribed burns	22	5
Escaped from other burning off	56	13
Accidental by timber industry	2	0.5
Accidental by other industry	36	9
Accidental by recreational visitors	19	5
Lightning	87	21
Unknown	38	9
Other causes	6	1.5
Total	418	100

Appendix 12
Summary of Personnel Employed at 30 June 1989
in Divisions, Regions, Districts and Branches
(expressed in full-time equivalents)

Division/Branch Region/District	Public Service Act	CALM Act Field Staff	National Park Rangers	Forest, Reserve Workshop and other Wages	Total
Policy Directorate	19	-	-	2.06	21.06
Economics	6	0	0	0	6
Public Affairs	8	4	-	-	12
Operations Directorate	7.53	2	-	-	9.53
Internal Audit	2	-	-	-	2
Research	91.01	53.57	-	13.12	157.70
Administration & Finance	1	-	-	-	1
Wildlife & Land Admin.	20	-	-	-	20
Human Resources	15	6	-	-	21
Field Cadets	-	11.10	-	-	11.10
Finance	37	-	-	-	37
Records	15	-	-	-	15
Engineering	12	3	-	29.31	44.31
Services	1	-	-	-	1
Library	4	1	-	-	5
Planning	12	-	-	-	12
Recreation, Landscape & Community Education	6	3	-	-	9
Fire Protection	5	10	-	-	15
Communications	-	11	-	-	11
Environmental Protection	3	2	-	-	5
Information Resources	9	1	-	-	10
Land Information	35	3	-	-	38
Forest Resources	3	-	-	-	3
Timber Production	12	12	-	-	24
Inventory	10	34.27	-	-	44.27
Silviculture	5	3	-	-	8
Operations	3	-	-	-	3
Wildlife Protection	34	-	-	-	34
Metropolitan	11	1	6	10	28
Northern Forest	4	3	29	1.59	37.59
Dwellingup	3	16.00	-	23.11	42.11
Jarrahdale	2	11	-	21.48	34.48
Mundaring	2	9	-	22.07	33.07
Wanneroo	2	12	-	52.89	66.89
Central Forest	6	8	9	1.66	24.66
Busseton	2	14	-	38.94	54.94
Harvey	3	18	-	37.83	58.83
Collie	1	14	-	22	37
Kinup	1	12	-	32.14	45.14
Nannup	1	14.50	-	40.34	55.84
Southern Forest	5	5	4	-	14
Manjimup	4	23	-	45.50	72.50
Pemberton	2	15	-	37	54
Walpole	2	11	-	20.84	33.84
South Coast	7	4	16	4.46	31.46
Esperance	1	2	-	1.40	4.40
Goldfields	5	3	-	2	10
Kimberley	4	1	9	1	15
Broome	2	1	-	4.23	7.23
Pilbara	5	4	7	1.50	17.50
Greenough/Gascoyne	3	3	12	2.65	20.65
Exmouth	2	-	-	-	2
Moora	1	-	-	-	1
Shark Bay	1	-	-	-	1
Wheatbelt	5	3	-	2	10
Narrogin	3	4	-	8.16	15.16
Merredin	2.40	-	-	-	2.40
	467.94	371.44	92	479.28	1 410.66
Education Officer seconded from Ministry of Education					1.00
					1 411.66

Appendix 13

Changes in Senior Departmental Staff Level 6 and above

Public Service Act

Armstrong J A	Curator	Appointed
Bowen P J	Manager	Promoted
Briggs A D	Senior District Forestry Officer	Reclassified
Burbidge A H	Senior Research Scientist	Reclassified
Chevis H W	Regional Manager	Promoted
Clarke J D	Senior Procurement Officer	Promoted
Goss K F	Manager	Transferred
Hill A R	Manager	Retired
Hopkins E R	Chief Liaison Officer	Retired
McKenzie N L	Principal Research Officer	Reclassified
Nebel B	Project Manager	Appointed
Peet G B	Regional Manager	Retired
Scott C F	Computer Modeller	Resigned
Stoddart J A	Senior Research Scientist	Appointed
Tippett E J	Senior Research Scientist	Resigned
Ward D K	Senior Research Scientist	Reclassified

Conservation and Land Management Act

Tacey W H	Planning Officer	Resigned
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**Appendix 14
Department's Safety Record Since 1960/61**

Year	Hours Worked	No. of Accidents			Frequency Rate *			Days Lost
		Lost Time Accid.	Medical Treat. Accid.	Total	Lost Time Accid.	Medical Treat. Accid.	Both	
1960/61]		188			140			3 015
1961/62]		188			142			2 516
1962/63]		200			154			2 763
1963/64]	x)	172	x)		135	x)		2 498
1964/65]		181			153			3 700
1965/66]		179			144			2 455
1966/67]		185			100			3 244
1967/68	1 895 600	124	312	436	65	164	230	1 701
1968/69	2 019 568	96	155	251	48	76	124	1 738
1969/70	1 901 020	70	129	199	37	67	104	721
1970/71	1 808 406	48	158	206	27	76	110	458
1971/72	1 759 888	40	128	168	23	72	95	275
1972/73	1 728 577	45	112	157	26	64	90	414
1973/74	1 651 621	45	119	164	27	72	99	359
1974/75	1 748 219	55	127	182	31	72	104	634
1975/76	1 762 693	31	113	144	17.5	64	82	383
1976/77	1 707 635	32	157	189	19	92	111	620
1977/78	1 764 519	26	151	177	15	86	100	731
1978/79	1 835 917	44	143	187	24	76	100	810
1979/80	1 826 452	32	125	157	17.5	68	86	983
1980/81	1 897 463	24	135	159	13	71	84	490
1981/82	1 915 684	19	141	160	10	74	84	450
1982/83	1 931 192	27	134	161	14	69	83	849
1983/84	2 144 995	43	198	241	20	92	112	819
1984/85	2 093 453	30	189	219	14	90	105	776
1985/86	2 649 390	41	204	245	15	77	92	1 477
1986/87	2 505 789	28	127	155	11	50	61	1 382
1987/88	2 500 935	34	118	152	13	47	60	590
1988/89	2 502 079	43	132	175	17	52	69	939xx

x) Data not available.

xx) Of the 939 days lost, 204 were carried over from 2 accidents sustained during the previous year.

Appendix 15 Publications Produced in 1988/89

Annual Report

Department of Conservation and Land Management 1987/88.

Landscape

Volume 4 No. 1

Spring 1988

"Hills Belles"
Right on Track
Bush Telegraph
Troubled Waters
Urban Antics: Marron Glace
Pines - The Soft Option
Wall of Mouths
Book Review; Wild Places, Quiet Places
More Boring Insects
Prince Regent: Jewel of the Kimberley
Gather No Moss
Rebuilding the Cathedral
Endangered: Golden Bandicoot

Volume 4 No. 2

Summer 1989

The Last of the Wild Marron
Out of the Mouths
Outfoxing the Fox
Of Whale and Friend
Urban Antics
Creative with Natives
Portfolio - Susan Tingay
Bush Telegraph
Conservation Reserves in the Karri Forest
A Sight to Behold
What's in a Name
Buying Back the Farm
Endangered: Purdie's Donkey Orchid
Desert Gem
Snakes and Adders

Volume 4 No. 3

Autumn 1989

Firewood - The Burning Issue
Karri for Keeps
Portfolio - Kim Perrier
Out on a Limb
Autumn Colours
Urban Antics
Diver's Diary
Jewel of the South
Bush Telegraph
The Price of Popularity
In Search of...
It's a Dolphin!
Sweet Retreat
Piecing Together the Remnants

Volume 4 No. 4
Winter 1989

Endangered

In Perspective

Bush Telegraph

The Great Escape

Fatal Attraction

Friends for Life

Valwood, New Wood

Mt Lesueur - Jurien Jewel

Fragrant Harvest

Walk on the Wild Side

If you go Down to the Woods Today

Ancient Dreams, New Directions

Marri for Money

Urban Antics

Photo Competition

Calm News

12 monthly editions

Saleable Books

Wild Places, Quite Places

Guide to the Bibbulmun Track

Range to Reef

Rugged Mountains, Jewelled Sea

Shark Bay

Voices of the Bush

Recreation

Badgingarra Nature Trail

Baie des Deux Peoples Heritage Trail

Boyinaboat Reef Nature Trail

Birds of Rowles Lagoon Nature Reserve

Blackwood Valley - Forest to Farmland

Bolganup Heritage Trail

Bungle Bungle National Park (reprint)

Cape Arid Heritage Trail

Devonian Reef National Parks (reprint)

Dryandra State Forest

Esperance National Park

Golden Valley Tree Park Balingup

Hamersley Drive Heritage Trail

Kalbarri National Park Coastal Guide

Kalbarri National Park List of Plants

Kalbarri National Park - Mushroom Rock Nature Trail (reprint)

Kukerin and Wheatbelt Wildflowers R.V.C.C.

Cape Le Grand Heritage Trail

Lesley Nature Trail

Marmion Marine Park

Moore Wildflower Drive R.V.C.C.

Mundaring Bushwalks

Ningaloo Presentation folders

Penguin Island (reprint)

Recreation Sites of the Goldfields Region

Recreation Sites of the Goldfields Region
Stirling Range Heritage Trail
Stirling Range National Park
Walpole- Nomalup National Park
Walpole-Nomalup National Park (Interim reprint)
Walyunga & Avon Valley National Park
Warren Bicentennial Tree Official Opening
Yanchep National Park (reprint)

Education

Before you meet the Dolphins of Monkey Mia
Calling all Squirrels - Firewood collection
Career Information
Code of Ethics for the Bush
Conservation of the Karri Forest (reprint from Landscape)
Crocodile Awareness
Crocodile Warning Drink Coasters
Dieback Bumper Sticker
Exploring Coastal Wetlands
Geology of the Gorges
Greenhouse Australia
Icy Creek Bush Camp - Visitor Guide
Outback Safety and Bushcraft Course Certificate
Perup a Living Forest
Warren Bicentennial Tree Certificate
Yanchep National Park Activities Sheet
Your Heritage in CALM Hands

Resource Notes

No. 20

Genetic Diversity and Conservation of the Grass Wattle

Advisory

Bushfires and Safety (reprint)
CALM in the Metropolitan Area
CALM in the Wheatbelt
Dieback Kills Wildflowers R.V.C.C.
Dieback on the South Coast (reprint)
Fitzgerald River National Park Draft Management Plan Key Issues
Marine Turtle Identification and Tagging
Restoring Nature's Balance
Tree Planters Warning
Trees for shade and shelter - Broome Nursery List
West Cape Howe National Park Management Plan Flyer
Winter Firewood

Information Sheets

No. 2-88

Broadscale Direct Seeding of Trees on Farms

No. 1-89

Plants Resistant to Dieback

Industry

Australian Forestry Council Meeting No. 24
Hardwood Sharefarming Expression of Interest
Jarrah Inventory Project News Brief
Jarrah, The Beauty and elegance of WA Mahogany
The Future outlook for Western Australia Timber Industry
Treated Timber is it safe?
Tree Trust

Posters

Arbor Day
Bush Corridors

Management Plans

Abrolhos Islands Planning Strategy
Cape Range National Park Summary of Public Submissions
Dampier Archipelago Nature Reserves Draft
Fitzgerald River National Park Draft
Hamersley Range National Park Draft
Leeuwin-Naturalist National Park Summary of Public Submissions
Leeuwin Naturaliste National Park 1989-1999
Ningaloo Summary of Public Submissions
Pumulu (Bungle Bungle) National Park and Conservation Reserve Draft
South Coast Region Draft

Research Bulletin

No. 2 Site Classification in the Southern Jarrah Forest of W.A.

Technical Reports

No. 20 Prescribed Burning Slash Fuels in Pinus radiata Plantation in WA
No. 21 Effects of Various Site Treatments on 2R Establishment of Pinus radiata D. Don in the Blackwood Valley of WA.
No. 22 A Spring Reconnaissance Survey of the Flora and Fauna of the Southern Beekeepers Reserve

CALM Briefing Paper

1-89 Use of Timber in Buildings
2-89 CALM News
3-89 CALM's Nursery and Seed Centre Operations

Other Technical Papers

Walpole-Nornalup National Park Management plan Information sheet
Declared Rare flora Management Workshop Abstracts of Papers Presented
Field Officers Guide to Hardwood Logging Computer System
Midge Notes No. 2
Steering Committee for Research on Land Use and Water Supply Annual Report
Abrolhos Islands Consultative Committee - Guidelines for making a submission
5 Year Research Plan
District Clerical Officers Guide to the Hardwood Logging Computer system
Implementing the Timber Strategy
Code of Logging Practice
Roadside Vegetation Bibliography R.V.C.C.
Tree Decline and Revegetation Newsletter
Field Officers Guide to the Logging Operations Information System
Internal Directory, Manuals etc
Typing style Handbook
Equal Opportunity Management Plan
Fire Management and prescribed burning on CALM lands
Phase 1 Submission to the WA Government Functional Review Committee May 1988
Management Seminar in Industrial Relations Sept 1988
Milyering Official Opening
Training and Development Manual 1989
Sign Manual
C. E. Lane Poole Memorial Trust - Report to Trustees
Regional and District Office (reprint)

CALM Alert - Monthly
Guide to Authors
Vegetation Clearance Guidelines
Field Cadet Graduation Ceremony
CALM Accomplishments 1988

Wood Utilization Research Centre Reports

No. 3 Moisture Content of Jarrah Logging Residues.
No.4 Small Jarrah Sawlog and Residue Log Harvesting trials near Harvey WA.
No. 5 Splitting of WA Sheoak (*Allocasuarina fraseriana*) Logs, Stored Under Water Spray and Dry stock piled.
No. 6 Penetration of Copper-Chrome-Arsenic Preservative into Regrowth Jarrah Posts.
No. 7 Using Pine Timber
No. 8 Sawmilling Trial of Agroforestry and Conventionally-Grown Radiata pine.
WURC News - Looking to the Future
WURC - Folder
No. 9 Survey of Solid Wood.
No. 2 Sawing (Reprint).
No. 1 Economic Utilisation of Thinnings from the Jarrah Forest (reprint).

Occasional Paper

1-89 Fire Management on Nature Conservation Lands.

Landnote

1-88 Efficient Pitfall trap designs for surveying small Vertebrates.
2-88 Aspects of fire behaviour and fire suppression in a *Pinus pinaster* Plantation.
3-88 Intense fire behaviour in 16 year-old stand of Karri and Yellow stringy bark.
1-89 A Brief Review of the Park Management Planning Processes in Australia.

Advertising Briefs

Captured - Letter Drop Leaflet
Book Bonanza folder
Landscape subscription folder
Landscape advertising rate card
CALM Publications Xmas Catalogue
Gift subscriptions cards - Landscape
Photography rate card - Landscape
Coffee Table competition - Landscape

APPENDIX 16 LICENCES ISSUED IN 1988/89

Fauna Licences	Licences Issued	Fauna Licences	Number
<u>SCIENTIFIC</u>	111	Chestnut-breasted	2
<u>EDUCATION & PUBLIC (to take) (Reg 15)</u>		Gouldian	2
Purpose:		Red-eared	6
Care of derelict fauna	1	Masked	23
Collection and study	8	Plum-headed	9
Display and study	6	<u>Parrots:</u>	
Education	6	Ringneck (Twenty Eight)	1 361
Photography	10	Red-capped (WA King)	669
Miscellaneous	57	Elegant	62
<u>EDUCATION & PUBLIC (to hold) (Reg 16)</u>	53	Mulga	26
<u>AVIAN FAUNA</u>		Regent	104
Purpose:		Weero (Cockatiel)	65
Keep and breed in captivity (Reg 12)	6 330	Galah	32
Deal (Reg 13)	74	Bourke	2
Trap (Reg 11)	3	Hooded	10
Breed for Commercial Purposes (Reg 14)	3	Major Mitchell	7
Species Trapped: No.		Eclectus	3
Western Rosella	919	Superb	2
Western King Parrot	738	Scarlet-chested	11
Twenty Eight Parrot	1 426	Golden-shouldered	3
Galah	15	Alexandra's (Princess)	14
<u>FAUNA</u>		Red-winged	2
Purpose:		Little Corella	10
Keep in captivity (Reg 12A)	64	Long-billed Corella	5
<u>EMUS</u>		Red-tailed Black Cockatoo	21
Purpose:		White-tailed Black Cockatoo	35
Emu farming (Reg 14)	9	Yellow-tailed Black Cockatoo	1
Dealing (Emu eggshells Reg 13)	18	Sulphur-crested Cockatoo	9
<u>GAME</u>		Western Rosella	771
Duck	0	Northern Rosella	2
Quail	33	Green Rosella	2
<u>KANGAROOS</u>		Eastern Rosella	1
Purpose:		Pale-headed Rosella	2
Take kangaroos for sale	131	Adelaide Rosella	8
Deal in carcasses	20	Rainbow Lorikeet	3
Deal in skins	11	Musk Lorikeet	4
Process	19	Purple-crowned Lorikeet	10
<u>EXPORTS - Interstate</u>	Number	Red-collared Lorikeet	10
<u>BIRDS</u>		<u>Other Species:</u>	
Finches:		Red Plumed Pigeon	21
Crimson (Blood)	21	King Quail	4
Painted Firetail	6	Great Egret	2
Long-tailed (Blackheart)	68	Splendid Wren	3
Pictorella	23	Striated Grass-wren	1
Star	12	Chestnut Quail-thrush	3
Banded (Double-bar)	32	Brown Quail	6
		Diamond Dove	3
		Bush Thick-knee	2
		Wonga Pigeon	12
		Orange Chat	2
		White-winged Wren	5
		Common Bronzewing	5
		Painted Button-quail	6
		Laughing Kookaburra	1

Fauna Licences	Number	Fauna Licences	Number
<u>Mammals:</u>		Tiligua branchialis (specimen)	1
Euro	1	Common Sheathtail-bat (specimen)	4
Western Grey Kangaroo	1	Orange Horseshoe-bat (specimen)	1
Red Kangaroo	2	Northern Mastiff bat (specimen)	1
Common Planigale	2	Water Rat (specimen)	1
Tammar Wallaby	20	Black Flying-fox (specimen)	1
Black-footed Rock-wallaby	2	Sminthopsis dolichura (Tissue)	1
Pale Field Rat	2	Sminthopsis gilberti (specimen)	1
Bush Rat	13	Grey-bellied Dunnart (specimen)	1
Grey-bellied Dunnart	1	Common Dunnart (specimen)	1
White-tailed Dunnart	1	Golden Dunnart (specimen)	1
Fat-tailed Dunnart	1	Golden Bandicoot (specimen)	1
Yellow-footed Antechinus	2	Little Red Flying-fox (specimen)	1
		Gould's Wattled Bat (specimen)	7
		Hoary Bat (specimen)	10
		Little Cave Eptesicus (specimen)	5
		Common Bent-wing Bat (specimen)	4
		Amham Land Long-eared Bat (specimen)	1
		North Queensland Long-eared Bat (specimen)	2
		Western Broad-nosed Bat (specimen)	10
		Dunnart sp. (specimen)	2
		Western Barred Bandicoot (specimen)	4
		Grey-bellied Dunnart (specimen)	56
		Osprey (eggs)	10
		Green Turtle (shell)	1
		Common Brushtail Possum (tissue)	1
		<u>Invertebrates:</u>	
		Woodlice	50
		<u>EXPORTS - Overseas</u>	
		<u>Birds:</u>	
		New Holland Honeyeater	4
		Galah	21
		Major Mitchell Cockatoo	4
		Sulphur-Crested Cockatoo	2
		Musk Lorikeet	10
		Red-collared Lorikeet	12
		<u>Mammals:</u>	
		Tasmanian Devil	1
		Short-beaked Echidna	2
		Common Wombat	1
		Dibbler (specimen)	100
		Grey-bellied Dunnart (specimen)	100
		Honey Possum (specimen)	2
		Western Pigmy-possum	1
		Brush-tailed Phascogale (specimen)	1
		Brown Antechinus (specimen)	2
		Yellow-footed Antechinus	1
		Northern Brown Bandicoot (specimen)	1
		Southern Brown Bandicoot	1
		Southern Brown Bandicoot (skin)	1
		Common Brushtail Possum	2
		Northern Quoll (specimen)	1
		Grassland Melomys (specimen)	1
		Sandy Inland Mouse (specimen)	1
		Bush Rat (specimen)	2
		Long-haired Rat (specimen)	1
		Plains Rat (specimen)	2
		Black Rat (specimen)	1
		Pale Field-rat (specimen)	1
<u>Other:</u>			
Red Kangaroo (skins)	90 182		
Western Grey Kangaroo (skins)	19 542		
Euro (skins)	1 413		
Emu (eggs)	14		
Estuarine (Saltwater) Crocodile (skins)	28		
Torresian Imperial Pigeon (specimen & tissue)	4		
Bar-shouldered Dove (specimen & tissue)	2		
White-quilled Rock Pigeon (specimen & tissue)	2		
Ring-tailed Dragon (specimen)	20		
Spotted Dragon (specimen)	2		
Western Netted Dragon (specimen)	12		
Diplodactylus savagei (specimen)	1		
Nephrurus wheeleri (specimen)	3		
Delma sp. (specimen)	1		
Burton's Snake-lizard (specimen)	1		
Hooded Scaly-foot (specimen)	1		
Carlia triacantha (specimen)	1		
Ctenotus nelenae (specimen)	2		
Ctenotus mimetes (specimen)	3		
Ctenotus pantherinus (specimen)	1		
Ctenotus saxatilis (specimen)	9		
Pygmy Spiny-tailed Skink (specimen)	3		
Broad-banded Sand Swimmer (specimen)	3		
Morethia ruficauda (specimen)	1		

Fauna Licences	Number	Fauna Licences	Number
Common Rock-rat (specimen)	1	Regent	14
Large Rock-rat (specimen)	1	Ringneck	61
Golden-backed Tree-rat (specimen)	1	Red-rumped	41
Northern blossom-bat (specimen)	1	Turquoise	64
Arnhem Land Long-eared Bat (specimen)	1	Gang Gang	8
North Queensland Long-eared Bat (specimen)	1	Scarlet-chested	167
Common Sheath-tail-bat (specimen)	2	Superb	39
False Killer Whale (teeth)	17	Bourke	252
<u>Reptiles:</u>		Major Mitchell	59
Bobtail Skink (specimen)	23	Golden-shouldered	13
Lerista connivens (specimen)	30	Red-winged	75
Lerista elegans (specimen)	30	Eclectus	15
Lerista gerrardii (specimen)	30	Long-billed Corella	39
Lerista lineopunctulata (specimen)	30	Little Corella	352
Lerista macropistopus (specimen)	30	Sulphur-crested Cockatoo	34
Ctenotus lesuerii (specimen)	30	White-tailed Black Cockatoo	1
Ctenotis fallens (specimen)	30	Yellow-tailed Black Cockatoo	3
Underwoodisaurus milii (specimen)	1	Red-tailed Black Cockatoo	2
Ring-tailed Dragon (specimen)	6	Western Rosella	2
Central Netted Dragon (specimen)	6	Adelaide Rosella	36
		Crimson Rosella	150
		Yellow Rosella	38
		Eastern Rosella	128
		Northern Rosella	3
		Pale-headed Rosella	87
		Green Rosella	7
		Scaly-breasted Lorikeet	13
		Rainbow Lorikeet	104
		Varied Lorikeet	20
		Little Lorikeet	41
		Musk Lorikeet	27
		Red-collared Lorikeet	26
		<u>Other Species:</u>	
		Wonga Pigeon	4
		White-headed Pigeon	6
		Flock Pigeon	4
		Squatter Pigeon	9
		Brush Bronzewing	4
		Imperial Pigeon	4
		Green-winged Pigeon	1
		Black-breasted Button-quail	4
		Red-backed Button-quail	6
		Brown Quail	2
		Whistling Kite	4
		Grey Goshawk	1
		Wedge-tailed Eagle	2
		Pacific Baza	2
		Black-shouldered Kite	1
		White-bellied Sea-Eagle	1
		Brown Falcon	1
		Australian Kestrel	1
		Australian Hobby	1
		Australian Magpie	1
		Australasian Shoveler	4
		<u>Exotics:</u>	
		Peach-faced Lovebird	165
		Fischer's Lovebird	24
		Masked Lovebird	166
		Rose-ringed Parakeet	42
		Red-fronted Parakeet	25
		Yellow-fronted Parakeet	26
		Blossom-headed Parakeet	2
<u>IMPORTS - Interstate:</u>			
<u>Birds:</u>			
<u>Finches:</u>			
Star	287		
Gouldian	538		
Blue-faced	10		
Masked	14		
Long-tailed (Blackheart)	8		
Banded (Double-bar)	159		
Plum-headed	10		
Black-throated	14		
Crimson (Blood)	23		
Chestnut-breasted	23		
Painted Firetail	258		
<u>Parrots:</u>			
Galah	1 043		
Mulga	14		
Port Lincoln	1		
Red-capped (WA King)	2		
Hooded	5		
Elegant	6		
Blue-winged	12		
Alexandra's (Princess)	46		
Blue-bonnet	84		
Weero (Cockatiel)	41		
Australian King	157		

Fauna Licences	Number	Fauna Licences	Number
Quaker Parrot	12	Estuarine (Saltwater) Crocodile (carcasse)	1
Jandava Conure	2	Estuarine (Saltwater) Crocodile (skins)	6
Red-faced Parrot-finch	4	Acalyptophis peronii (skins)	20
trawberry Finch	36	Aipysurus eydouxii (skins)	54
Cutthroat Finch	15	Aipysurus laevis (skins)	36
Cuban Finch	46	Astrotia stokesii (skins)	17
Melba Finch	194	Hydrophiidae hydrophis (skins)	6
Jacarini Finch	44	Hydrophis elegans (skins)	356
Aurora Finch	62	Hydrophis macdowellii (skins)	17
Red-headed Finch	51	Hydrophis melanoceanalus (skins)	3
African Firefinch	60	Hydrophis ornatus (skins)	109
Cordon Bleu	121	Lapemis hardwilkii (skins)	136
White-headed Munia	16	Black-browed Albatross (mounted)	1
Waxbill	79	Silver Gull (mounted)	1
Orange-cheeked Waxbill	102	Platypus (mounted)	1
Golden-breasted Waxbill	117	Common Diving Petrel (mounted)	1
Green Peafowl	1	Southern Brown Bandicoot (mounted)	1
Ruddy Ground Dove	16	Sugar Glider (mounted)	1
White-breasted Ground Dove	6	Slender Billed Prion (mounted)	1
Namaqua Dove	8	Little Penguin (mounted)	1
Bleeding Heart Pigeon	2		
Feral Pigeon	10	<u>Exotic:</u>	
Lady Amherst Pheasant	2	Cus Cus	1
Kalij Pheasant	3	Hog Deer	1
Swinhoe Pheasant	3	Cheetah	2
Ringneck Pheasant	2	Black & White Ruffed Lemur	1
Reeve's Pheasant	20	Alligator	2
Golden Pheasant	2	Brown Caiman	4
Fire-backed Pheasant	2		
Ruddy Shelduck	2	<u>FLORA</u>	
<u>Mammals:</u>		During the twelve months ending 30 June 1989 the following licences were issued.	
Australian Fur-seal	5	<u>Commercial Purposes Licence:</u>	
Red Kangaroo	1	• 1 333 licences were issued authorising the taking of protected flora for sale from Crown land.	
Western Grey Kangaroo	1		
Euro	1	<u>Commercial Producers Licence:</u>	
Agile Wallaby	1	• 87 licences were issued authorising the taking of protected flora for sale from private land.	
<u>Reptiles:</u>		<u>Scientific or Other Prescribed Purposes Licences:</u>	
Freshwater (Johnston) Crocodile	36	• 849 licences were issued authorising the taking of protected flora from Crown land for the following purposes:	
Estuarine (Saltwater) Crocodile	182	• Scientific, educational, hobby, propagation, personal enjoyment.	
Black-headed Python	3	• Holders of this licence are not permitted to sell flora taken.	
Children's Python	4		
Olive Python	2		
Brown Tree Snake	2		
Common Tree Snake	2		
Common Death Adder	7		
Northern Death Adder	3		
Western Tiger Snake	4		
Taipan	5		
Mulga Snake	2		
Dugite	3		
Gwardar	4		
<u>Others:</u>			
Western Grey Kangaroo (meat tonnes)	21		
Red Kangaroo (meat tonnes)	53		
Eastern Grey Kangaroo (meat tonnes)	10		
Eastern Grey Kangaroo (carcasses)	1 400		
Red Kangaroo (carcasses)	1 700		
Western Grey kangaroo (skins)	1 000		
Red Kangaroo (skins)	3 000		
Koala (specimen)	1		

Appendix 17
Open Seasons Declared in 1988/89

**Government
Gazette**

Waterfowl Population Management
(South West and Eucla Land Divisions)
(Mountain Duck)
1 January 1989 to 31 December 1989

20/1/89

Appendix 18

Offences Under the Wildlife Conservation Act 1988/89

NO. OFFENCES X SECTION OF ACT	OFFENCE																				
51 x S16(1)	<p style="text-align: center;">Illegal taking of protected fauna</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">40 Galahs</td> <td style="width: 50%;">3 Crowned Snakes</td> </tr> <tr> <td>50 Red Wattle Birds</td> <td>Several Frazer's</td> </tr> <tr> <td>1 Little Eagle</td> <td>legless lizards</td> </tr> <tr> <td>15 Twentyeight Parrots</td> <td>1 Rosenberg's Monitor</td> </tr> <tr> <td>21 Red Capped Parrots</td> <td>1 Gwardar</td> </tr> <tr> <td>1 Silver Gull</td> <td>11 Bynoes Geckos</td> </tr> <tr> <td>1 Black Duck</td> <td>1 Variegated Gecko</td> </tr> <tr> <td>4 Euros</td> <td>1 Merrilla Skink</td> </tr> <tr> <td>2 Red Kangaroos</td> <td>1 Moretha Skink</td> </tr> <tr> <td>4 Grey Kangaroos</td> <td>1 Johnstons Crocodile</td> </tr> </table>	40 Galahs	3 Crowned Snakes	50 Red Wattle Birds	Several Frazer's	1 Little Eagle	legless lizards	15 Twentyeight Parrots	1 Rosenberg's Monitor	21 Red Capped Parrots	1 Gwardar	1 Silver Gull	11 Bynoes Geckos	1 Black Duck	1 Variegated Gecko	4 Euros	1 Merrilla Skink	2 Red Kangaroos	1 Moretha Skink	4 Grey Kangaroos	1 Johnstons Crocodile
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4 Grey Kangaroos	1 Johnstons Crocodile																				
1 x S16(2)	<p style="text-align: center;">Taking fauna contrary to the provisions of a Notice</p> <p>53 Grey Kangaroos</p>																				
20 x S16A(1)	<p style="text-align: center;">Unlawful possession of protected fauna</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1 Emu</td> <td style="width: 50%;">1 Carpet Python</td> </tr> <tr> <td>10 Emu eggs</td> <td>1 Yellowfaced Whip-</td> </tr> <tr> <td>3 Red-tailed Black</td> <td>snake</td> </tr> <tr> <td>Cockatoo eggs</td> <td>1 Gwarder</td> </tr> <tr> <td>3 Galah eggs</td> <td>1 Dugite</td> </tr> <tr> <td>2 Short-billed Corella</td> <td>1 Murray Turtle</td> </tr> <tr> <td>eggs</td> <td>2 Johnston crocodile</td> </tr> <tr> <td>2 Pied Cormorants</td> <td>skins</td> </tr> <tr> <td>1 Grey Kangaroos</td> <td></td> </tr> </table>	1 Emu	1 Carpet Python	10 Emu eggs	1 Yellowfaced Whip-	3 Red-tailed Black	snake	Cockatoo eggs	1 Gwarder	3 Galah eggs	1 Dugite	2 Short-billed Corella	1 Murray Turtle	eggs	2 Johnston crocodile	2 Pied Cormorants	skins	1 Grey Kangaroos			
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2 Pied Cormorants	skins																				
1 Grey Kangaroos																					
1 x S16A(2)	<p style="text-align: center;">Possession of untagged fauna</p> <p>1 Grey Kangaroo</p>																				
1 x 17(2) (c)	<p style="text-align: center;">Illegal importation of fauna</p> <p>125 Red Kangaroo skins 1134 Grey Kangaroo skins</p>																				
4 x S17(2) (e)	<p style="text-align: center;">Selling fauna, or taking fauna for the purpose of sale without authority of a licence</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">10 Emu eggs</td> <td style="width: 50%;">20 Grey Kangaroos</td> </tr> <tr> <td>2 Western Rosellas</td> <td></td> </tr> </table>	10 Emu eggs	20 Grey Kangaroos	2 Western Rosellas																	
10 Emu eggs	20 Grey Kangaroos																				
2 Western Rosellas																					
2 x S17(3) (a)	<p style="text-align: center;">Use of illegal means or device in the taking of fauna</p> <p>1 Little Eagle</p>																				

**NO. OFFENCES X
SECTION OF ACT**

OFFENCE

49 x S23B(1)	Illegal taking of protected flora from Crown land																
	<table border="0"> <tbody> <tr> <td><i>Agonis parviceps</i></td> <td><i>Banksia baxteri</i></td> </tr> <tr> <td><i>Banksia coccinea</i></td> <td><i>Banksia grandis</i></td> </tr> <tr> <td><i>Banksia hookeriana</i></td> <td><i>Boronia megastigma</i></td> </tr> <tr> <td><i>Daviesia cordata</i></td> <td><i>Eucalyptus marginata</i></td> </tr> <tr> <td><i>Hypocalymma robustum</i></td> <td><i>Kunzea ericifolia</i></td> </tr> <tr> <td><i>Hardenbergia comptoniana</i></td> <td><i>Livistona eastonii</i></td> </tr> <tr> <td><i>Podocarpus drouynianus</i></td> <td><i>Verticordia</i> Aff.</td> </tr> <tr> <td><i>Xylomelum occidentale</i></td> <td><i>brownii</i></td> </tr> </tbody> </table>	<i>Agonis parviceps</i>	<i>Banksia baxteri</i>	<i>Banksia coccinea</i>	<i>Banksia grandis</i>	<i>Banksia hookeriana</i>	<i>Boronia megastigma</i>	<i>Daviesia cordata</i>	<i>Eucalyptus marginata</i>	<i>Hypocalymma robustum</i>	<i>Kunzea ericifolia</i>	<i>Hardenbergia comptoniana</i>	<i>Livistona eastonii</i>	<i>Podocarpus drouynianus</i>	<i>Verticordia</i> Aff.	<i>Xylomelum occidentale</i>	<i>brownii</i>
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<i>Xylomelum occidentale</i>	<i>brownii</i>																
2 x S23D(1)	Taking protected flora on private property without authority																
	<i>Hardenbergia comptoniana</i> <i>Hypocalymma robustum</i>																
3 x S23D(2)	Selling flora taken on private property without authority of a licence																
	<i>Melaleuca</i> sp. <i>Agonis linearifolia</i> <i>Beaufortia sparsa</i>																
2 x 23E(1) (a)	Sale of protected flora, not lawfully obtained																
	<i>Hypocalymma robustum</i> <i>Eucalyptus loxophleba</i> <i>Eucalyptus salmonophloia</i>																
7 x S23F(6)	Unlawful taking of Declared Rare Flora																
	<i>Banksia brownii</i> <i>Chamalaucium</i> sp. <i>Banksia tricuspis</i> (coastal plain) <i>Eucalyptus</i> sp. (Cape Naturaliste)																
9 x S25(1) (a)	Wilfully misleading, assaulting or resisting a Wildlife Officer																
1 x S25(1) (f)	Using abusive language to a Wildlife Officer																
4 x S25(1) (g)	Failed to observe the conditions of a licence issued pursuant to the provisions of this Act.																
1 x R13(4) (a)	Failure by licenced bird dealer to keep records																
1 x R13(5)	Failure to submit returns																
3 x R13(6)	Possession of illegally purchased fauna by a bird dealer																
1 x R19	Illegal importation of fauna																
1 x R44	Dumping rubbish on a Nature Reserve																
1 x R46(f)	Driving a vehicle on a Nature Reserve, other than on a track set aside for that purpose																
1 x R46(i)	Disturbing fauna on a Nature Reserve																

**NO. OFFENCES X
SECTION OF ACT**

OFFENCE

1 x R50(1) (a)	Consigning fauna for sale, without authority of a current licence
1 x R51(4)	Unauthorised use of royalty tags
1 x R52	Offering for sale immature avian fauna, not fully fledged or able to feed unaided
1 x R56D	Failure to produce flora picking licence upon request to do so
1 x S134(1) CALM Act	Damaging a Departmental sign on a Nature Reserve

NOTE: Of the 103 charges pending as at 30 June last year, 30 resulted in letters of warning, and those prosecuted resulted in fines totalling \$14 070.

Appendix 19

Trust Statements

DEPARTMENT OF CONSERVATION & LAND MANAGEMENT

TRUST STATEMENT NO. 12

NAME	An account called Withholding Tax from Contractors' Prescribed Payments Account shall be maintained as a Private Trust Account at the Treasury.
PURPOSE	To hold funds deducted from Contractors' prescribed payments in accordance with the Income Tax Assessment Act 1936 (as amended).
RECEIPTS	Such moneys as are received by the Department of Conservation and Land Management being amounts withheld from contractors' prescribed payments pursuant to the Income Tax Assessment Act 1936, shall be paid into and placed to the credit of the Account.
PAYMENTS	The funds standing to the credit of the Account shall be paid to the Australian Taxation Office by the due dates specified by the Commonwealth Commissioner of Taxation.
ADMINISTRATION OF ACCOUNT	The Account shall be administered by the Executive Director, Department of Conservation and Land Management in accordance with the Financial Administration and Audit Act, Financial Administration Regulations and the Treasurer's Instructions.
ACCOUNTING RECORDS	There shall be maintained by the Executive Director a detailed record of transactions processed through the Account, together with such other accounting records and procedures as are prescribed in the Accounting Manual.
FINANCIAL STATEMENT	The Executive Director shall cause to be prepared such financial statements, together with supplementary information, that are required to be prepared by The Department of Conservation and Land Management in accordance with the Financial Administration and Audit Act and Treasurer's Instructions.

INVESTMENT OF FUNDS

Moneys standing to the credit of the Account may be invested in accordance with section 40 (a) of the Financial Administration and Audit Act.

I/We have examined and agree to the provisions of this Trust Statement.

Approved



EXECUTIVE DIRECTOR



ASSISTANT UNDER TREASURER
(ACCOUNTING)

DATE _____

DATE 25 JUL 1988

DEPARTMENT OF CONSERVATION & LAND MANAGEMENT

TRUST STATEMENT NO. 13

NAME	An account called the "World Wildlife - Ground Parrots" shall be maintained as a Trust Private Account at the Treasury.
PURPOSE	To hold moneys for the purpose of funding the establishment of a program for the conservation of the Ground Parrot species in WA.
RECEIPTS	Such moneys as are received by the Department of Conservation and Land Management being funds granted by the World Wildlife Fund Australia shall be paid into and placed to the credit of the account.
PAYMENTS	The funds in the Account shall be applied to meet amounts expended, in the establishment of a conservation program for the species of the Ground Parrot, from the Consolidation Revenue Fund.
ADMINISTRATION OF ACCOUNT	The Account shall be administered by the Executive Director, Department of Conservation and Land Management on the advice of the Minister and in accordance with the "Conditions of Grant" and the Financial Administration and Audit Act, Financial Administration Regulations and the Treasurer's Instructions.
ACCOUNTING RECORDS	There shall be maintained by the Executive Director a detailed record of transactions processed through the Account, together with such other accounting records and procedures as are prescribed in the Accounting Manual.
FINANCIAL STATEMENT	The Executive Director shall cause to be prepared a statement of cash receipts and payments and such other supplementary information in accordance with the requirements of Treasurer's Instructions.

INVESTMENT OF FUNDS

Moneys standing to the credit of the Account may be invested in accordance with section 40 (a) of the Financial Administration and Audit Act.

DISPOSAL
OF FUNDS
ON CESSATION

Any balance standing to the credit of the Account upon cessation of the operations for which the Account was created shall be returned to the World Wildlife of Australia.


I/We have examined and agree to the provisions of this Trust Statement.

Approved



EXECUTIVE DIRECTOR

DATE 28/10/88



ASSISTANT UNDER TREASURER
(ACCOUNTING)

DATE _____