FLORA OF AUSTRALIA

Volume 1 Introduction

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Section 4: Management

Conserving Australia's Flora

I.D.Cresswell

CONSERVING AUSTRALIA'S FLORA

Ian D. Cresswell[1]

Introduction

European settlement has seen a range of changes to the landscape of the Australian continent over the past 200 years, with major reductions in the area of native vegetation types, particularly through clearing in the eastern and southern agricultural areas. The effects of non-Aboriginal settlement on Australia's flora are apparent throughout the continent, but differ markedly regionally, mostly depending on the dominant land uses that settlers have imposed on the landscape. Those changes, and their flow-on effects, are still happening, and the loss of species and decline in habitat diversity have not been halted. While the last twenty years has seen the recognition of this as a major environmental problem, the actual trend in species decline flowing from many decades of poor management will be with us for some time to come.

The history of conservation of Australia's flora (and fauna) is of course linked to the history of each of the major colonies, which are now the States of Australia. While the federation of these colonies into the Commonwealth of Australia has been in effect for nearly 100 years, the major changes to how we viewed, and then conserved, our natural resources, has only happened since the 1970s. The last 25 years have seen the development of truly national efforts for the conservation of biological diversity, and indeed it is only in the last five years that all governments have signed agreements to put into effect real changes in how we protect native species nationally.

The federal system of government places the vast majority of terrestrial land and coastal sea management responsibilities with the six States (New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia), and the two self-governing Territories (Australian Capital Territory and Northern Territory). Land management responsibilities, of course, include the protection of flora and fauna, which has traditionally been seen as the establishment of protected areas, although in recent years off-reserve conservation, such as the halting or slowing of vegetation clearance, has been a very significant mechanism to combat the loss of native species.

The Commonwealth consistent with the Constitution, has responsibility for certain areas of land, including lands in the Northern Territory and the Australian Capital Territory, which were retained by the Commonwealth at the time that those territories attained self-government. In addition, the Commonwealth has jurisdiction over the land and territorial seas of the Territory of Jervis Bay, the Great Barrier Reef Marine Park, the Australian External Territories, and the Australian territorial sea between a distance of three nautical miles and 200 nautical miles from the coasts of the States and the Northern Territory, known as the Economic Exclusion Zone (EEZ).

The proportion of terrestrial mainland Australia that the Commonwealth directly manages is small, about 0.5% of mainland Australia, the States and Territories directly manage 22.5%, and private owners manage 77% of the total area of mainland Australia, including 14% managed by indigenous Australians (AUSLIG 1993 Public Lands dataset). The Commonwealth is responsible for approximately 95% of the marine estate while the States are responsible for approximately 5%. Despite the differing land tenures, governments (especially the States and Territories) still have responsibilities for conservation on land they don't directly 'own', e.g. endangered plants on private land.

The conservation of flora and fauna in Australia is not restricted to protected areas and other public land tenures. Many private landholdings, including Aboriginal lands, are managed in sympathy with their nature conservation values. However, the amount and diversity of land

[1] National Land and Water Resources Audit, GPO Box 2182, Canberra, Australian Capital Territory 2601.

formally dedicated to nature conservation is one important indicator of our success at protecting our natural heritage. Altogether approximately 7.6% of mainland Australia and 3.5% of the Australian marine environment are protected in statutory protected areas (Cresswell & Thomas, 1997). The Commonwealth manages approximately 3.3 million hectares of terrestrial nature conservation reserves and 36.8 million hectares of marine protected areas. The States and Territories manage approximately 56.4 million hectares of terrestrial nature conservation reserves and 2.2 million hectares of marine protected areas.

Another key measure of flora conservation has been the adoption of controls on vegetation clearance. Constitutionally, and customarily, land management is largely a matter for the States and Territories and the land use controls associated with each tenure type are set by their legislatures. Consequently there is marked variation in land use controls between the States and Territories.

Controls on vegetation clearance in the States and Territories have been introduced for a range of reasons, including the protection of soil and water resources, biodiversity conservation, Aboriginal heritage and aesthetics. The controls that have been introduced in different areas over the past 50 years have had markedly different results in slowing down the rate of biodiversity loss.

The Commonwealth Government also has an important role in the sustainable use and management of land resources. *The National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia, 1996) states in chapter 7 (implementation):

> '*By the year 2000 Australia will have.....*
>
> *(l) arrested and reversed the decline of remnant native vegetation;*
>
> *(m) avoided or limited any further broadscale clearance of native vegetation, consistent with ecologically sustainable management and bioregional planning, to those instances in which regional biological diversity objectives are not compromised;...*'

These actions, signed by the Commonwealth and all the States and Territories, have been addressed through the Natural Heritage Trust (NHT).

The Bushcare program of the NHT aims to influence the States/Territories and local governments (vested with responsibilities by State and Territory legislative frameworks) to achieve ecologically sustainable management of Australia's native vegetation. This will require some change to the current State and Territory legislative and institutional frameworks if it is to be truly effective in halting the decline in the extent and diversity of our natural ecosystems.

The *Intergovernmental Agreement on the Environment* (IGAE, Commonwealth of Australia, 1992a) and the *National Strategy for Ecologically Sustainable Development* (NSESD, Commonwealth of Australia, 1992b) also recognise the importance of the conservation and sustainable use of our natural resources. Both the IGAE and the NSESD provide important benchmarks for the conservation of flora and fauna within the entire landscape matrix. Importantly, both also note the need for the protection and maintenance of native species and habitats outside of strict protected areas.

An important mechanism for providing truly national approaches to the conservation and sustainable use of natural resources has been the Australian and New Zealand Environment and Conservation Council (ANZECC), which is the official council of Ministers of the Environment (previously known as the Council of Nature Conservation Ministers, CONCOM). ANZECC provides a forum for coordinating nature conservation effort. In 1997 ANZECC joined with other natural resource management Ministerial councils in the formation of a Coordinated Working Group on Vegetation.

Local governments also play an important role in flora and fauna conservation. New and innovative schemes are being developed in many shires across Australia, to provide incentives for landowners to conserve flora and fauna on their properties. Such schemes include rate subsidies for involvement of landholders in regional conservation plans and

deeds of agreement for assistance in environmental management activities on their land. Many shires are also requiring the retention of native vegetation in particular parts of the landscape, such as along waterways.

The Commonwealth and the States and Territories in concert have also made a number of intra-national commitments to advance the conservation of flora and fauna, including the *National Conservation Strategy* (McMichael, 1982), *Conservation of Species and Ecological Communities Threatened with Extinction* (Australian & New Zealand Environment & Conservation Council, 1997), the *National Strategy for Ecologically Sustainable Development* (Commonwealth of Australia, 1992b), the *National Forest Policy Statement* (Commonwealth of Australia, 1992c), the *Intergovernmental Agreement on the Environment* (Commonwealth of Australia, 1992a), and the *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia, 1996).

Over the past twenty years, and particularly in the last 5 years, the Commonwealth Government has made commitments to a number of international treaties which influence how Australia as a nation deals with protected areas and the conservation of flora. These commitments include the *Apia Convention*, ratified by Australia in 1990; the *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region*, ratified in 1980 (entry into force 1990); the *Convention on the Conservation of Migratory Species of Wild Animals*, ratified by Australia in 1991; the *Convention on Biological Diversity*, ratified by Australia in 1993, the *Framework Convention on Climate Change*, ratified by Australia in 1993, and the *United Nations Commission on Sustainable Development* which meets annually.

While it may seem difficult to link these many and varied commitments to actual advances in flora conservation, there is a very real linkage between government commitments at this highest policy level, and how new protected areas and broader measures for conservation are established. This raft of policies and conventions is the platform on which an integrated effort in protected area establishment is being developed in the nine separate government administrations that have responsibility for both statutory reserves and off-reserve conservation.

A very brief history of conservation reserves in Australia

Over the past one hundred years a great variety of parks and reserves have been declared, gazetted, ungazetted, moved, had bits excised for other purposes, as well as established as important recreational and conservation areas in each State and Territory. It is true to say that while there were many concerned individuals documenting the flora and fauna, there was little government support for conserving land for its own sake between 1788 and the end of the nineteenth century. Generally the white settlers saw Australia as under-populated and under-developed, and the push was for opening areas up for development. Some parks were established within the colonies for recreational purposes, such as Perth Park in the colony of Western Australia (now Kings Park), which was established in 1872 for the purpose of 'public park and recreation' (Rundle, 1996).

The national park movement in the United States in the second half of the nineteenth century saw the establishment of key natural areas (Yellowstone 1872, Adirondacks 1885, Yosemite 1890), for both utilitarian purposes such as water and game supply and for 'people's pleasure' (Nash, 1990). The concept of national parks was taken up within the Australian colonies, and significant parks were set aside in most of the colonies. It is generally conceded that the first Australian national park was Royal National Park just outside of Sydney, gazetted in 1879, and that this park can be regarded as the genesis of our current protected area estate. Thereafter different parks and reserves, mostly selected for scenic value, were gazetted in each colony.

In marked contrast to scenic value as the over-riding criterion for reserve selection, the Australasian Association for the Advancement of Science at its Adelaide meeting in 1893

formalised the concept of establishing reserves for the protection of flora and fauna (Ride, 1975). This followed the passing of the *National Park Act* in South Australia in December 1891, and establishment of that State's first flora and fauna reserve, Belair National Park (Cleland, 1964). In Western Australia the Association put to the government the concept of flora and fauna reserves in diverse areas such as the Abrolhos archipelago and Rottnest Island. While these suggestions were not taken up, a formal reserve for 'Flora and Fauna' was established in South Dandalup, in south-west Western Australia in 1894. The formal *Parks and Reserves Act 1895* was not yet in force in Western Australia, and although concerned scientists and citizens fought for the reserve it was eventually converted to 'Timber-Government Requirements' in 1911 (Rundle, 1996).

Over the past one hundred years there have been numerous government and non-government reports that have called for concerted action to conserve Australia's flora and fauna and, in more recent years, total biological diversity. Several key reports are notable for having influenced informed opinion and hence government action. The Australian Academy of Science (AAS) prepared a series of reports from the AAS State sub-committees on the status of National Parks, culminating in the publication of a report for the whole of Australia, 'National Parks and Reserves in Australia, 1968' (Australian Academy of Science, 1968).

In its 1968 report the Academy provided details of the existing National Parks and Reserves, commented on the adequacy of the current systems of national parks (and reserves), and expressed the need to

> '*ensure that representative environments are available as flora and fauna reserves, that areas of special geological or anthropological interest are not despoiled, and that features of unique scientific interest will still be available for study by future generations*'.

That report highlighted the problems of having separate systems of terrestrial protected areas, not only in terms of the confusion between the varied terminology employed to categorise parks and reserves, but also in the disparity existing in the management of national parks and all other reserves for the protection of flora and fauna. The report identified the need for parks and reserves to provide adequate coverage of fauna and flora habitats and for nature conservation generally. In 1968 the percentage of land in each State devoted to parks and reserves ranged from 0.5% in Western Australia (the largest State in terms of total area) and 0.6% in Queensland (the second largest State in terms of total area) to 4.2% in Tasmania (the smallest State). The Australia-wide average was 1.2%.

In the late 1960s two separate series of conferences of government Ministers responsible for national parks and wildlife conservation was begun. In 1974 the two groups were merged and the Council of Nature Conservation Ministers was established to report annually on developments in national parks and/or wildlife conservation. Concurrently public interest in the issue of nature conservation was rapidly evolving. Protected Area management and wildlife management became a significant government activity and most jurisdictions updated their legislation to reflect the increase in activities.

The 1960s and 1970s saw the establishment of dedicated parks/wildlife agencies in each State and Territory, building on fauna protection bodies and parks bodies which dated from the turn of the century. Over the last 30 years these agencies have grown to encompass more and more nature conservation issues, including the conservation of all biological diversity.

The Australian Academy of Science instigated several projects during the 1960s that themselves had significant influence on, and indeed continue to influence, our understanding of the need for a national system of protected areas. One such study (Specht *et al*., 1974) can be considered the first national evaluation of the conservation status of the major plant communities of Australia. In that report Specht noted that:

> '*if effective action is to be taken with the conservation of the primitive, rare or endangered plants in Australia the following steps appear to be necessary:*
>
> *(1) to record the present distribution of all plant species; to record their presence in existing parks and reserves; if these reserves are placed in categories lower than providing the best conditions for their conservation, there will be a strong argument in*

favour of upgrading the reserve to provide maximum protection; to monitor the protected populations to ensure their continued survival. Very little is known of the biology and ecology of most of the plants and steps should be taken to fill the gaps in our knowledge. Some should be brought into cultivation in Botanical gardens.'

Also in 1974 the Academy held a conference under the auspices of the International Biological Programme which recommended that at least one reasonably large sample of each major ecosystem in each biogeographical division of each State should be incorporated into an 'ecological reserve', either by designating the whole or part of existing national parks and other nature conservation reserves as ecological reserves, or, where necessary, by acquisition of land (Fenner, 1975).

The growth in public interest and activity in nature conservation matters was perhaps greatest in the 1970s. Hydroelectric dams, timber harvesting, mining, and general concern over inadequate protection for flora and fauna became national issues. The Commonwealth Parliament appointed an Inquiry into Wildlife Conservation in 1972 to investigate the commercial exploitation of native wildlife (particularly kangaroos), nature conservation survey methods, the adequacy of reserve systems, and mechanisms to ensure better conservation management (House of Representatives Select Committee, 1972). Flowing from the recommendations of that Inquiry was the establishment of the Australian National Parks and Wildlife Service (ANPWS) in 1975 and the Great Barrier Reef Marine Park Authority (GBRMPA) in 1976.

Another Commonwealth Government initiative of that time was the Committee of Inquiry into the National Estate to investigate the identification and conservation of Australia's cultural and natural heritage of national and international significance (Committee of Inquiry into the National Estate, 1974). The Commonwealth passed the *States Grants (Nature Conservation) Act 1974* to provide financial assistance to the States for nature conservation programs, which was used for a short period in the late 1970s to assist the States with the acquisition of new parks and reserves.

An important initiative of the 1970s was the establishment of the Australian Man and the Biosphere Committee, which helped in the setting up of Australia's first Biosphere Reserves. Between 1976 and 1982 twelve Biosphere Reserves were designated (they were already protected areas under State or Commonwealth legislation) recognising the international significance of these areas from the perspective of their characteristic plants, animals and human usage. More recently biosphere reserves are being viewed as containing a gradation of human usage and modification, from core conservation zones, to buffer zones allowing human activities compatible with the conservation activities, and finally to outer transition zones which allow the practice of sustainable development. Australian biosphere reserves will inevitably change in accordance with these new developments in bioregional planning.

In the 1980s and 1990s many jurisdictions have chosen to merge parks/wildlife services into larger government departments dealing with natural resource management. The growth in the complexity of our government structures dealing with nature conservation reflects the growth in public concern over environmental issues.

In the 1970s some States began systematic evaluation of the protected area estate, and programs to acquire additional land for parks were initiated. The Land Conservation Council in Victoria and the Conservation through Reserves Committee in Western Australia are two examples of government appointed bodies set up to make recommendations for the establishment of a representative reserve system in those States.

Between 1968 and 1978 the area of terrestrial parks and reserves in Australia almost doubled. Western Australia exhibited the largest increase from 0.5% in 1968 to 5.0% in 1978. Overall Tasmania continued to have the largest percentage of its area in protected areas increasing from 4.2% in 1968 to 10% of the State in 1978 (Bridgewater & Shaughnessy, 1994).

Australia became a party to the *World Heritage Convention* in 1974, but the first Australian sites were not accepted for inscription on the World Heritage List until 1981. (Currently there are 11 properties listed for their natural heritage values and some are also listed for their cultural heritage values, and one is a cultural landscape. While most world heritage sites

have been declared over existing protected areas, several world heritage areas are made up of a mix of tenures, e.g. Willandra Lakes and the Wet Tropics).

The concept of World Heritage had a marked effect in the 1980s on public reaction to development proposals, and subsequently in government action. The issue which generated the greatest public concern was the plan of the Tasmanian Government to build a major hydroelectric dam within the Tasmanian World Heritage Area. Effective campaigns by non-government conservation organisations placed intense pressure on the Commonwealth to take action to prevent the dam from being built, on the premise that although the site was under Tasmanian jurisdiction, the Commonwealth was obliged to intervene because of its ultimate responsibility for implementation of international treaties (Bridgewater & Shaughnessy, 1994). The issue became nationally important in the run-up to the 1983 federal election, with the then Labor Opposition promising action to halt the dam if elected, in what was for Australia the first time a conservation issue was a major election issue. The Labor Opposition won office and was held to its promises by vocal conservation groups. The Tasmanian Government, however, was adamant the dam should go ahead.

The result of this impasse saw the Commonwealth Parliament enact the *World Heritage Properties Conservation Act 1983* which provided the Commonwealth with the power to prohibit actions which might damage or destroy a World Heritage site, and it used that power to prohibit construction of the dam (Bridgewater & Shaughnessy, 1994). The use of this new Commonwealth power in relation to the *World Heritage Convention* encouraged non-government conservation organisations subsequently to seek World Heritage Listing as a protective mechanism for significant sites which were considered inadequately protected by State governments. This approach resulted in the listing of the wet tropical rainforests of Queensland in 1988 and a major expansion of the Tasmanian World Heritage Area in 1989, with concomitant cessation of forestry activities in both areas (Bridgewater & Shaughnessy, 1994).

During the 1970s and 1980s the significance of marine protected areas for conservation became a prominent issue, taken up by non-government groups and governments. The largest marine park in the world, the Great Barrier Reef Marine Park (GBRMP), covering 34.5 million ha, was established in 1975. The GBRMP was drawn up with management zones to allow multiple-use of certain areas while still ensuring the protection of the Reef. Zoning plans were created to allow for uses such as diving, reef-walking, recreational and commercial fishing and for general tourist activities.

Other marine areas were also established in other parts of Australia though not on the scale of the Great Barrier Reef Marine Park. A report prepared by the State and Commonwealth Environment Ministers in 1979 concluded that there was strong justification for the establishment of a system of marine parks and reserves in Australia (Ivanovici, 1984).

In the 1980s a new term was coined to encompass all known living organisms: 'biodiversity'. Biodiversity has become part of the political lexicon, and its conservation has gained far greater recognition as a fundamental component of maintaining the ecological processes upon which we depend. In Australia we have seen a massive increase in effort in both on and off reserve conservation. The rate of discovery (publication) of new species has also increased markedly, and yet the estimates of the number of unknown species continues to grow, particularly for invertebrates and fungi. Orchard (*pers. comm.*) has shown that for vascular plants the average rate of description of new taxa has averaged 90 species a year from 1788 until 1990, and that the rate has been fairly constant. However, in recent years the rate has increased, and in the period 1990–1996 has been estimated at an average of about 140–150 species per year (range 86–316 per year) (Orchard & Briggs, *pers. comm.*). For the same period about 30 mosses, lichens and algae were described per year. Orchard (1998, this volume) has suggested that the total known vascular flora for Australia at the time of completion of the first edition of *Flora of Australia* (c. 2015) will probably stand at just over 20 000 species, including naturalised taxa.

The need for a representative system of protected areas in Australia was recognised in two inquiries by a bipartisan Commonwealth parliamentary committee, the House of Representatives Standing Committee on Environment, Recreation and the Arts (HoRSCERA)

in 1992. The reports from that committee recommended that a bioregional approach be developed and adopted as a key element of a unified methodology for identifying and prioritising establishment of new reserves in areas currently under-represented (HoRSCERA, 1992; Brunckhorst, 1992, 1993). The then Prime Minister, Paul Keating, announced a new federal program to coordinate the development of a national reserve system (NRS) using such an approach (Keating, 1992). The NRS program was established with the aim of developing and implementing the national system of protected areas in Australia in cooperation with the States and Territories.

The current system of protected areas

Each of the nine jurisdictions (the Commonwealth, six States and two self-governing Territories) has its own government agency with responsibility for management of that jurisdiction's protected areas and, indeed, nature conservation more broadly. Apart from those lead agencies (often the National Parks and Wildlife Service) there are a range of other agencies, responsible for forestry, fisheries, and/or regional management, that have legislative responsibilities for protected areas which help conserve biodiversity.

While in the past the acquisition of protected areas has not been carried out on a systematic basis to optimally conserve biodiversity, all nature conservation agencies in Australia now have a formal commitment to the establishment of a protected area system which represents all major ecosystems within their area of jurisdiction. *The National Strategy for the Conservation of Australia's Biological Diversity*, signed by all governments has as an explicit objective to

> '*Establish and manage a comprehensive, adequate and representative system of protected areas covering Australia's biological diversity*' (Commonwealth of Australia, 1996).

The Australian Government instigated the largest ever Australian environment program, the Natural Heritage Trust (NHT) in 1996, to implement a wide range of conservation programs to foster the long term protection of all biodiversity, including flora. The NHT has a major protected area extablishment program which will help redress inadequacies in the current protected area system.

A detailed listing of each jurisdiction's legislation and protection measures for the conservation of flora, particularly in relation to protected areas

Commonwealth

The *National Parks and Wildlife Conservation Act 1975* provides for the establishment of parks and reserves over areas of land or sea where constitutionally there is a basis for Commonwealth interest. These areas may be named as a national park or other designation and may only be revoked by a resolution of each House of Parliament. Plans of management must be prepared and subjected to public comment and scrutiny by both Houses of Parliament. Parks and reserves have been declared under the Act in the Northern Territory, the Jervis Bay Territory, the Australian Capital Territory, in five external territories and in Commonwealth waters over the Australian continental shelf. The Norfolk Island National Park and Botanic Garden are declared under both the National Parks and Wildlife Conservation Act and under legislation of the Norfolk Island Legislative Assembly.

The *National Parks and Wildlife Conservation Act 1975* has been amended several times to include joint management provisions to apply to Uluṟu Kata-Tjuṯa, Kakadu and Booderee National Parks. These National Parks are on land fully or mostly owned by Aboriginal people and leased back to the Director of National Parks and Wildlife. Aboriginal people have a majority on the Boards of Management. Regulations under the *National Parks and Wildlife*

Conservation Act 1975 also protect certain species in areas under Commonwealth jurisdiction, including the Economic Exclusion Zone, outside of designated protected areas.

The *Great Barrier Reef Marine Park Act 1975* provides for the conservation of the Great Barrier Reef by the establishment, control, care, and development of the Great Barrier Reef Marine Park (GBRMP). Declaration of areas as part of the GBRMP may only be revoked by a resolution passed by each House of Parliament. The Act requires the preparation of zoning plans for the Marine Park which, after being subject to public comment and amendment, are considered by the responsible Minister and laid before both Houses of Parliament. Human use is controlled mainly by regulation and by the development of zoning plans. Mining and oil exploration are prohibited in the Marine Park.

Under the *Antarctic Treaty (Environment Protection) Act 1980* the Governor-General may proclaim an area in Antarctica to be a specially protected area or a site of special scientific interest, in accordance with designations made under the Antarctic Treaty. The Act provides for the Minister to grant permits authorising entry into, and conduct of certain activities within, those areas.

Article 2 of the Madrid Protocol on Environmental Protection to the Antarctic Treaty, which was adopted in October 1991, designates Antarctica as a natural reserve devoted to peace and science. Among other things, the protocol prohibits activity relating to mineral resources other than scientific research. Annex V of the Protocol rationalises the Antarctic protected area system, providing for two principal categories, Antarctic Specially Protected Areas and Antarctic Specially Managed Areas, and a third category of Historic Sites and Monuments. The Madrid Protocol came into force in February 1998, with the exception of Annexe V which several Treaty parties have yet to ratify. Newly designated protected areas will be consistent with the requirements of Annexe V.

The Territory of Heard Island and the McDonald Islands is established under the *Heard Island and McDonald Islands Act 1953*. The *Environment Protection and Management Ordinance 1987*, made under the Act, provides for the protection of the environment and indigenous wildlife of the Territory. Among other things, it provides for a permit system for all entry to, and activities within, the Territory, and it requires a management plan to be prepared. The Heard Island Wilderness Reserve Management Plan came into operation in February 1996, and the Islands were inscribed on the World Heritage list in 1996.

Australia's other subantarctic territory, Macquarie Island, however, comes under the jurisdiction of the Tasmanian State Government, and is administered by that State's Parks & Wildlife Service (*q.v.*). It was inscribed on the World Heritage list in 1997.

The *Environment Protection (Alligator Rivers Region) Act 1978* established the Office of the Supervising Scientist to ensure protection of the environment of the Alligator Rivers region from any adverse effects of uranium mining.

The *Endangered Species Protection Act 1992* provides for national action to promote the recovery of listed endangered or vulnerable species and listed endangered ecological communities, and controls the actions of Commonwealth agencies and activities on Commonwealth property that may impact on them. It also prescribes key threatening processes which impact on endangered species and requires their management through recovery plans and threat abatement plans. These activities are designed to ensure integrated conservation efforts across Australia, with the Commonwealth providing State and Territory agencies with additional funding to implement these recovery and threat abatement plans for threatened flora and fauna on both public and private lands.

The *Wet Tropics of Queensland World Heritage Area Conservation Act 1994* provides for the implementation of Australia's international obligations under the World Heritage Convention in relation to the Wet Tropics area of Queensland. It reflects an agreement made between the Queensland and Commonwealth governments in 1990 to protect, conserve, and rehabilitate the remaining rainforest areas in the 'wet tropics'.

Several historic shipwrecks in waters under Commonwealth jurisdiction have had 'protected zones' designated around them under the *Historic Shipwrecks Act 1976*. While these areas are

declared primarily to protect the enclosed shipwrecks, the legislation prohibits entry or mooring of ships, trawling, diving, or any other activity, effectively protecting all marine life in the designated area. A permit is required to enter the area for any purpose. Other shipwrecks have also been declared historic under the Act. Interference with these wreck sites or the removal of any parts or articles from these wrecks is prohibited without a permit. However, access which does not cause disturbance is unrestricted.

On 1 April 1993 all shipwrecks and associated relics 75 years old or older were declared historic under the Act in what is known as the Blanket Declaration and are now subject to the provisions of the Act. Younger shipwrecks of historic significance are still declared historic under Section 5 of the Act.

As this book was going to press a new Bill, the *Commonwealth Environment Protection and Biodiversity Conservation Bill*, was being considered by the Federal Parliament. This Bill, if passed, would amalgamate the *National Parks and Wildlife Conservation Act 1975*, parts of the *National Parks and Wildlife Regulations*, *Endangered Species Protection Act 1992*, *Whale Protection Act 1980*, *World Heritage Properties Conservation Act 1983*, and *Environment Protection (Impact of Proposals) Act 1974*, into one piece of legislation. The Bill would also provide legislative frameworks for identification and monitoring of components of biodiversity, protection for Ramsar wetlands and Biosphere reserves, conservation of listed migratory species, and access to biological resources.

Australian Capital Territory

The *Nature Conservation Act 1980* provides for the conservation of native flora and fauna and gives management authority for protected areas (nature reserves, national parks and wilderness zones). Native vegetation is protected on all unleased land.

Currently (as at September 1998) the Australian Capital Territory has one National Park covering an area of 105 800 ha (including a 28 900 ha wilderness zone), one Landscape Conservation Reserve (IUCN category V) of 1300 ha, and 33 Nature Reserves (IUCN Category II) ranging from less than 10 ha to 4500 ha and covering a total area of 16 800 ha.

A 1994 amendment to the Act established a process for identification, declaration and protection of threatened species and ecological communities. As of August 1998, five plant species and two ecological communities have been declared.

The *Land (Planning and Environment) Act* 1991 establishes the Territory Plan, which is the statutory vehicle for reserving public land and for determining land use constraints generally. Management objectives for protected areas are prescribed in terms of conservation and public use priorities. The Act also provides for the identification and protection of natural heritage places. Over 50% of the Australian Capital Territory is reserved for conservation of the natural environment.

The management of protected areas, and other public lands where conservation of natural and cultural heritage is a primary management objective, is undertaken by the ACT Parks and Conservation Service on behalf of Environment ACT, the Government's environmental conservation agency.

The Environment Advisory Committee is the primary forum for advice to the Government on environmental matters. The Flora and Fauna Committee has a statutory role in formal identification of species and communities at risk of extinction and the provision of associated expert advice.

Off reserve conservation of native flora on occupied (leased) land is primarily addressed through lease administration mechanisms. The development of Property Management Agreements as an attachment to a rural lease is a relatively new initiative that provides for the identification of nature conservation values on the land and implementation of appropriate management measures. A financial incentive mechanism for landholders is under development. Particular attention is being paid to the conservation requirements of remnant vegetation generally and threatened woodland and grassland communities in particular.

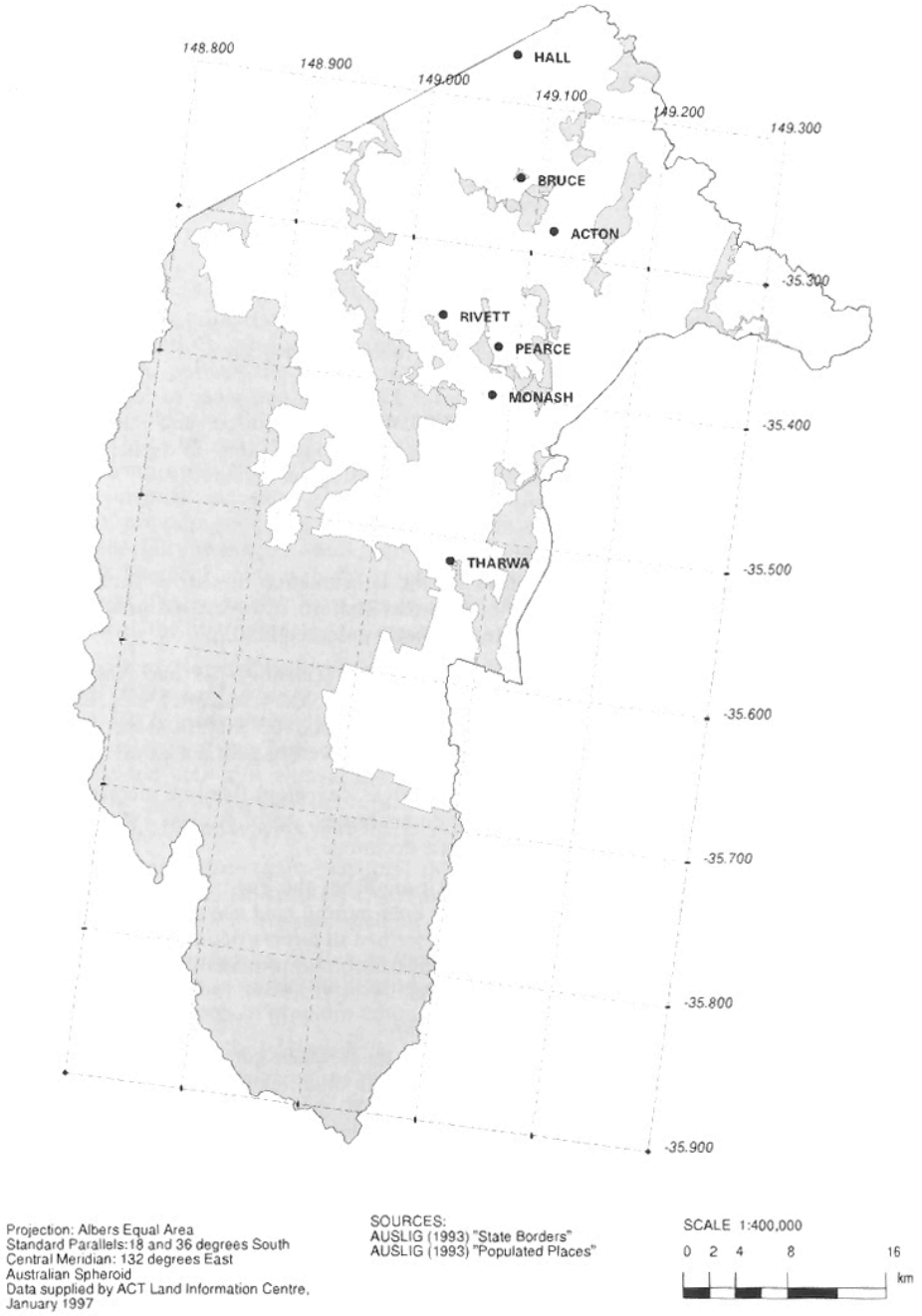

Figure 91. Terrestrial protected areas of the Australian Capital Territory. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

New South Wales

The *National Parks and Wildlife Act 1974* provides for the creation and management of National Parks, Historic Sites, Nature Reserves, Aboriginal Areas, State Game Reserves, Karst Conservation Reserves and State Recreation Areas. The *Wilderness Act 1987* provides for the investigation, identification, protection and management of wilderness in New South Wales.

Currently (as at 7 October 1998) New South Wales has 104 National Parks covering an area of 3 774 980 ha, 217 Nature Reserves covering an area of 643 456 ha, ten Aboriginal Areas covering an area of 11 521 ha, six Regional Parks covering an area of 4611 ha, 167 Flora Reserves covering an area of 47 656 ha, 18 State Recreation Areas covering an area of 122 113 ha, and 13 Historical Sites covering an area of 2615 ha.

Plans of management are prepared for all of these areas having regard to the objectives of conservation, study and appreciation of wildlife and natural and cultural features, and to promote appreciation and enjoyment of the natural and cultural values of the areas. They are subject to public comment before adoption by the Minister for the Environment.

The Act establishes a National Parks and Wildlife Advisory Council to advise the Minister on the control and management of national parks and nature reserves. Advisory committees may also be established for one or more national parks, nature reserves and historic sites or any combination thereof, to make recommendations to the Council, the Director of the National Parks and Wildlife Service, or the District Manager of the respective National Park.

'Conservation Agreements', a voluntary scheme set up under the *National Parks and Wildlife Act 1974*, commenced in 1986 and operates on Crown lease and freehold land to promote the conservation of natural and cultural heritage on land outside reserves. These Agreements are binding on successors to the title and may provide financial or other assistance to the landholder.

National Parks, Nature Reserves, State Recreation Areas, Historic Sites, Wilderness Areas and Aboriginal Areas are managed by the New South Wales National Parks and Wildlife Service, which was established under the *National Parks and Wildlife Act 1974*. The Service is responsible to the Minister for the Environment.

The *Forestry Act 1916*, provides that land within State Forest and certain Crown lands may be dedicated, by notice in the *Government Gazette*, as a Flora Reserve for the preservation of native flora. To date all such reserves have been located within State Forest (Flora Reserves are managed by New South Wales State Forests), and while the preservation of native flora remains the keystone for all Flora Reserves, establishment and management of the reserves have always been based on a broader objective of preserving samples of the natural environment. A Flora Reserve can only be revoked by Act of Parliament, and for each reserve New South Wales State Forests is required to prepare a working plan for approval by the Minister for Land and Water Conservation and Forests. For a number of Flora Reserves which receive appreciable public use, advisory committees have been set up under the working plans to assist in the care of the reserves.

The *Soil Conservation Act 1938* establishes the Soil Conservation Service to arrest land degradation, and allows for the declaration of 'protected land' where trees may not be destroyed without authority. Under the Act, environmentally sensitive land or land liable to be affected by degradation, land with a slope greater than 18º and land within 20 metres of a river or lake, are 'protected lands'. Environmentally sensitive land includes arid areas, landslip or saline areas and land containing rare or endangered wildlife, sites of archaeological or historic interest, bird breeding grounds, wetlands or areas of scenic beauty.

A clearing licence cannot be issued under the *Forestry Act 1916* in respect of protected land, without the consent of the Catchment Areas Protection Board. When authority has been given to destroy timber on protected lands, conditions may be imposed to prevent a wide range of activities that may cause degradation. Soil Conservation Orders may be issued which require land holders to carry out specific works on protected land or erosion hazard areas.

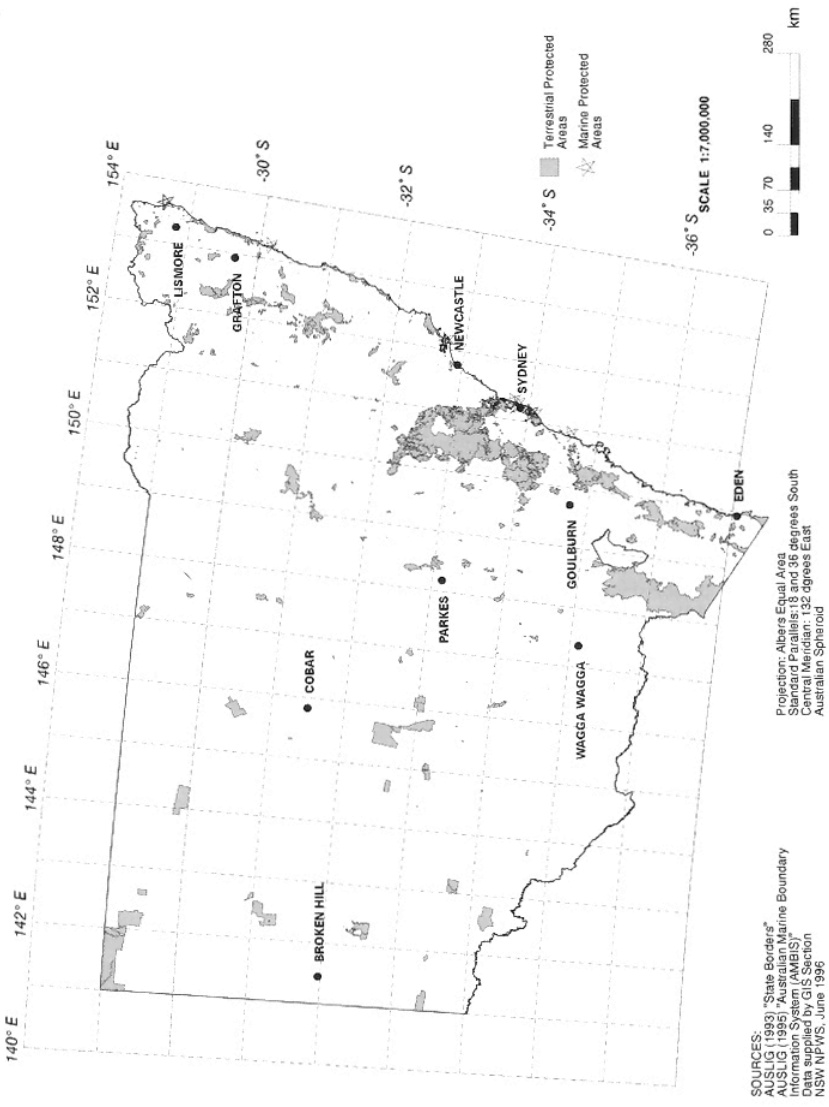

Figure 91. Terrestrial protected areas of the Australian Capital Territory.
Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia.* Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

The *Fisheries Management Act 1994*, and previously the *Fisheries and Oyster Farms (Amendment) Act 1979* provides for the creation and management of Aquatic Reserves in New South Wales. At present, the legislation specifies that Aquatic Reserves may only be declared over areas designated as 'Crown lands', and that the regulations may prohibit or regulate the taking of fish and other aquatic fauna as specified in the Act. In relation to the conservation of flora the regulations also provide for the management, protection and development of Aquatic Reserves. These are managed by New South Wales Fisheries, on behalf of the Minister for Mineral Resources and Fisheries.

Marine Parks are jointly gazetted by the Minister for Fisheries and the Minister for the Environment under the *Marine Parks Act 1997*. The first two marine parks established in New South Wales were Jervis Bay Marine Park and Solitary Island Marine Park, declared on 29 December 1997. Marine Parks are managed by the Marine Parks Authority, comprising the Director of New South Wales Fisheries, the Director General of the National Parks and Wildlife Service, and the Director General of the Premier's Department.

The *Lord Howe Island Act 1953* makes special provision for the management and protection of Lord Howe Island, applying the provisions of the *National Parks and Wildlife Act 1974*, and dedicates some 75% of the island and all the surrounding islands as the Lord Howe Island Permanent Park Preserve. Control of the Lord Howe Island Permanent Park Preserve is vested in the Lord Howe Island Board. Lord Howe Island was inscribed on the World Heritage list in 1982.

The *Environmental Planning and Assessment Act 1979* provides for the zoning of land under local and regional plans and State Environment Protection Policies to protect sensitive areas, particularly making provision for the protection and preservation of trees or vegetation, and requires a consent authority (for example a local government) to take into account the preservation of trees and vegetation in determining a development application (as well as many other environmental values such as air and water quality). If vegetation or trees are damaged or removed without authority, then the person who is guilty may have to plant new trees and maintain them to full growth. If a development does not need consent under the *Environmental Planning and Assessment Act 1979*, the *Local Government Act 1919* requires tree preservation to be considered where building or subdivision is to take place.

The *Coastal Protection Act 1979* established the Coastal Council of New South Wales which advises, and provides recommendations, on the protection and conservation of the coastal zone.

The *Crown Lands Act 1989* provides for the management of Crown Lands for the benefit of the people of New South Wales, particularly to ensure the conservation of the environment (water, soil, flora and fauna) and the scenic qualities of the land. While the Act does provide for controls on clearance of native vegetation on leasehold land, in effect it has been rarely enforced since the 1970s (University of Melbourne School of Forestry, 1994).

The *Protection of the Environment Administration Act 1991* established the Environment Protection Authority which acts to reduce pollution and degradation of the environment.

The *Threatened Species Conservation Act 1995* provides for the conservation of threatened species, populations and ecological communities, and prescribes key threatening processes which impact on endangered species and requires their management through the implementation of recovery plans, threat abatement plans and other conservation measures. The *Threatened Species Conservation Act 1995* sets up a statewide system to protect species (plant and animal), populations and ecological communities and to monitor key threatening processes. It incorporates regulation of these matters into the planning process and provides for the preparation by the National Parks and Wildlife Service of recovery plans for threatened species, populations and ecological communities.

The New South Wales Government *State Environmental Planning Policy No 46* 'Protection and Management of Native Vegetation' (known as SEPP 46) was established in 1995. In August 1995 the Native Vegetation Forum was set up to review the performance of SEPP 46, and to provide recommendations concerning the reform of vegetation management in the

State. As a result the New South Wales Government has put in place a new package of measures on native vegetation.

The New South Wales Native Vegetation Package consists of four main elements:

- Legislation. The New South Wales Government has enacted the *Native Vegetation Conservation Act 1998* to replace SEPP 46 in relation to land clearing approvals, the preparation of Regional Vegetation Management Plans, the operation of an incentives fund and the proposed State Vegetation Advisory Council;
- Regional Vegetation Management Plans. Regional vegetation committees will be set up to develop these plans. When plans are approved by the Minister the landholder can carry out native vegetation clearing within the limits of the plan without the need for additional site-specific approval;
- Native Vegetation Management Fund ($15 million over 5 years). Landholders who enter into a 'Property Agreement' with the New South Wales Government dealing with vegetation management will be eligible for support from the fund. The fund focuses on
    - protection of remnant native vegetation of high conservation value
    - maintenance and enhancement of existing native vegetation, and
    - revegetation.
- Native Vegetation Advisory Council. This Council will advise the New South Wales Government including
    - the development and review of strategic native vegetation policy
    - the review of Regional Vegetation Management Plans, and
    - a statewide audit, review and annual reporting of native vegetation conservation and identification of priorities for incentives.

Northern Territory

The *Parks and Wildlife Commission Act 1980,* as amended in 1995, established the Parks and Wildlife Commission of the Northern Territory (PWCNT) to promote the conservation and protection of the natural environment of the Northern Territory. The Commission achieves this objective by establishing and managing parks, reserves and sanctuaries, as well as managing Aboriginal and other privately owned land by agreement with the landholder. The Commission is a corporation of at least nine members, including the Director of the Commission, the Chief Executive Officer of the Northern Territory Tourist Commission, at least three Aboriginals (nominated by Land Councils or other Aboriginal organisations) and at least two members with scientific expertise.

The *Territory Parks and Wildlife Conservation Act 1977,* as amended 1992, provides for the declaration of Parks, Reserves, Sanctuaries and Protected Areas both on land and in the sea above any part of the seabed of the Territory. The Administrator of the Northern Territory may declare a park/reserve following the receipt of a report from the Parks and Wildlife Commission. Areas declared may range from small sites of specific interest to major national parks. Land is held by the Conservation Land Corporation constituted under the *Parks and Wildlife Commission Act 1995.* Revocation of a park/reserve may only be declared by the Administrator in accordance with a resolution passed by the Legislative Assembly.

Currently (as of October 1998) the Northern Territory has nine National Parks covering an area of 1 996 833 ha, four 'Aboriginal Lands managed as National Parks' covering an area of 582 649 ha, 15 Conservation Areas covering an area of 143 168 ha, 15 Conservation Reserves covering an area of 43 044 ha, 14 Nature Parks covering an area of 24 587 ha, 15 Historic Reserves covering an area of 11 293 ha, and 18 'Other Protected Areas' covering an area of 153 208 ha.

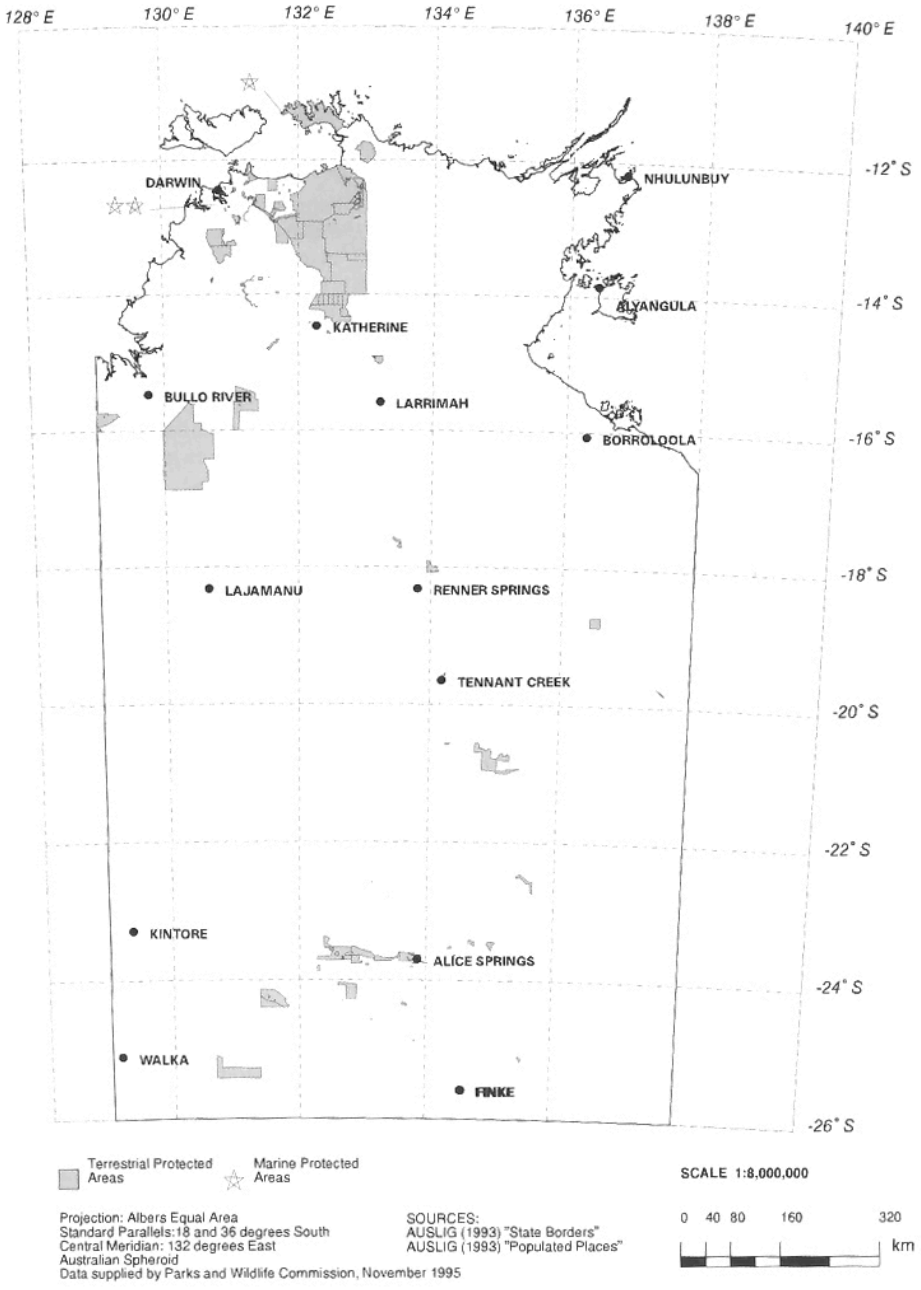

Figure 93. Terrestrial and marine protected areas of the Northern Territory. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

Management plans are prepared by the Parks and Wildlife Commission of the Northern Territory for areas under its control in accordance with the *Territory Parks and Wildlife Conservation Act 1977*.

The Gurig National Park, located on the Cobourg Peninsula, was established in 1981, and amended in 1996 by the *Cobourg Peninsula Aboriginal Land, Sanctuary and Marine Park Act 1996*. The land is owned by Aboriginal traditional owners and is leased to the Parks and Wildlife Commission of the Northern Territory. The park is managed by the Commission pursuant to direction of the Cobourg Peninsula Sanctuary and Marine Park Board. The Board consists of eight members, four of whom are Aboriginals nominated by the Land Councils.

The Nitmiluk (Katherine Gorge) National Park was established in a similar manner pursuant to the *Nitmiluk (Katherine Gorge) National Park Act 1989*. Again, the park is managed by the Commission on advice from a Board. Of the 13 members of the Board, eight are traditional Aboriginal owners of the Park nominated by the Jawoyn Association, four are members of the permanent staff of the Commission and one is a resident of the Katherine area nominated by the Mayor of Katherine.

Under the *Crown Lands Act 1992*, ownership of all flora on Crown land (10% of the Territory) and Crown leasehold land (50% of the Territory) is vested with the Northern Territory Government. Any commercial activity involving destruction of vegetation must be licensed by the Parks and Wildlife Commission. Also under the *Crown Lands Act 1992*, where an application has been received for a perpetual pastoral lease, it is inspected to determine whether any areas should be reserved for public interest including conservation values. Any subsequent lease issued may be subject to conditions.

The *Pastoral Land Act 1992* requires pastoral leases to obtain the written consent of the Northern Territory Pastoral Land Board prior to undertaking clearing, except where clearing is for roads/tracks, firebreaks, yards or watering points. It is understood that, in practice, this consent is rarely withheld.

Queensland

The *Nature Conservation Act 1992* provides for the dedication and declaration of eleven classes of protected area. These are:

- Protected areas that can be declared over State land; these include: National Park (Scientific), National Park, Conservation Park, and Resources Reserve.
- Protected areas that can be declared over Aboriginal or Torres Strait Islander land leased to the Crown, or over leasehold land subleased to the Crown; these include: National Park (Aboriginal Land), and National Park (Torres Strait Islander Land).
- Protected areas that can be declared over State land or private land: these include: Nature Refuge, Coordinated Conservation Area, Wilderness Area, World Heritage Management Area, and International Agreement Area.

The Department of Environment and Heritage is responsible for environmental management and conservation of Queensland's natural and cultural resources. The *Nature Conservation Act 1992* and the *Marine Parks Act 1982* are administered by the chief executive of the Department, subject to the Minister for Environment and Heritage.

Currently (as at 4 September 1998) Queensland has seven National Parks (Scientific) and 213 National Parks covering an area of 6 605 062 ha, 159 Conservation Parks covering an area of 29 066 ha, and 39 Resource Reserves covering an area of 344 645 ha.

A management plan must be prepared for each protected area or aggregation of protected areas, but a nature refuge may be exempted in the conservation agreement between the Minister and the landholder(s). A protected area must be managed in accordance with an approved management plan, and regulations may be made to give effect to, or enforce compliance with, an approved plan.

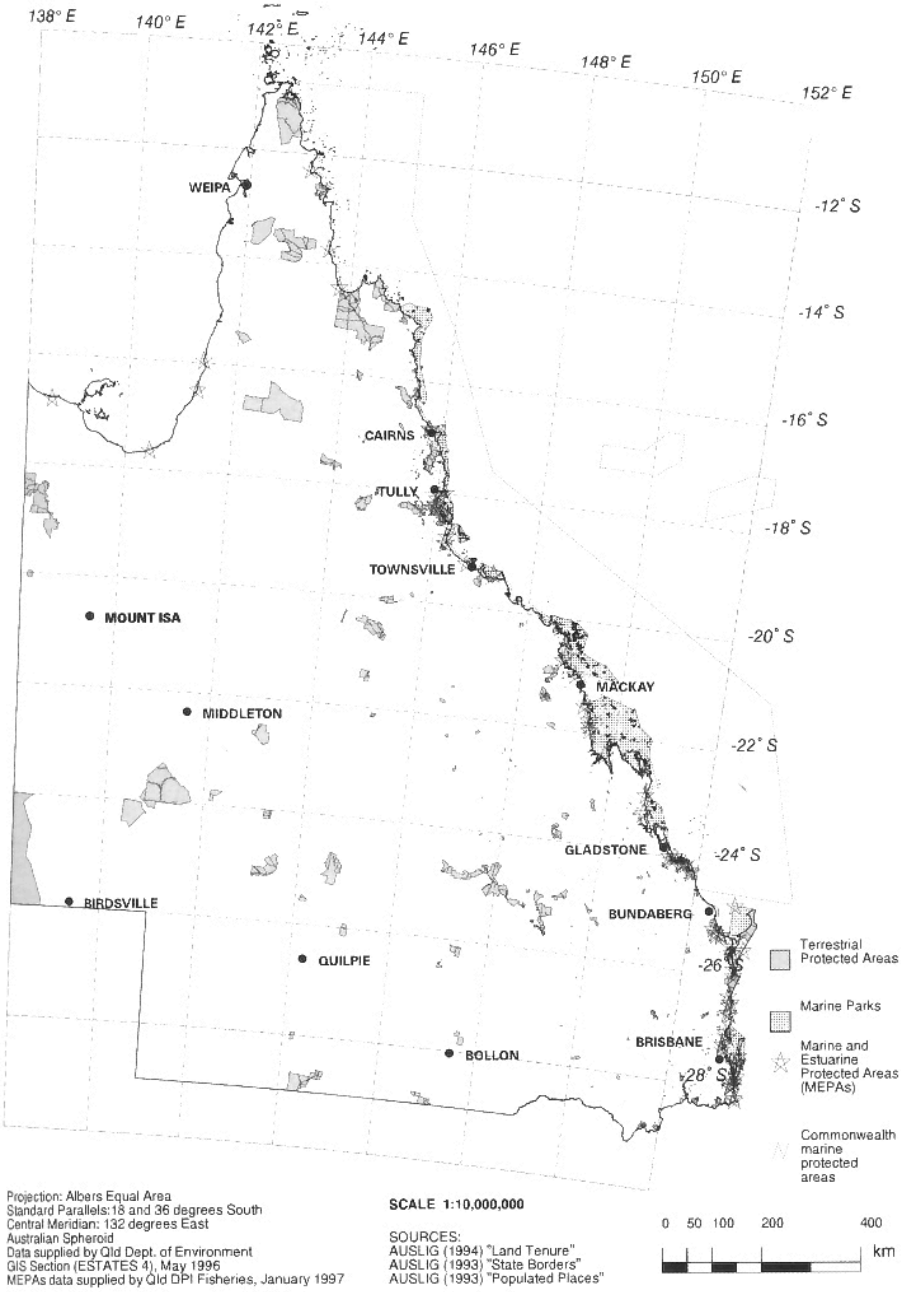

Figure 94. Terrestrial and marine protected areas of Queensland. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

The *Land Act 1994* provides for the establishment of a range of tenures for community purposes related to environmental, natural resource management and scientific purposes. Unallocated State land may either be granted in fee simple in trust for these purposes or dedicated as a reserve.

The Department of Natural Resources is responsible for the management of State Forests under the *Forestry Act 1959*, as amended 1987. Section 33 of the *Forestry Act 1959* sets out the cardinal principles of management of State Forests as

> '*permanent reservation, production of timber and associated products in perpetuity, and protection of watersheds, having due regard to: the benefits of permitting grazing, the desirability of conservation of soil and the environment and the protection of water quality, and the possibility of applying the area to recreational purposes*'.

The *Primary Industries Corporation Act 1992* establishes the Primary Industries Corporation to administer the *Forestry Act 1959* and *Forestry Regulations*. The Primary Industries Corporation may recommend to the Governor-in-Council that the whole or part of a State Forest be declared a scientific area or feature protection area so as to preserve it as a sample of the natural environment of the State Forest concerned.

The *Marine Parks Act 1982* provides for the establishment of Marine Parks over tidal lands and tidal waters. A Marine Park includes the airspace above, the subsoil below and all marine products within a specified boundary. The Act requires the Government to consider public submissions in relation to the area of interest for a Marine Park and also provides for the preparation of zoning plans for each Marine Park.

Zoning provides for spatial separation of conflicting uses and results in a balanced approach to resource use and protection. A zoning plan which defines the various zones and their uses is developed in conjunction with extensive public consultation. The zoning plan is then released as subordinate legislation. Mining and exploration are possible in some areas of Queensland marine parks. Revocation of all or part of a marine park may only occur through a resolution of Parliament.

In the Great Barrier Reef Region, complementary Queensland marine parks are established to ensure adequate protection of the intertidal areas adjacent to, and Queensland waters which overlap with, the Great Barrier Reef Marine Park established under Commonwealth legislation.

Fish Habitat Areas (previously Fish Habitat and Wetland Reserves) are declared under the *Fisheries Act 1994* as part of the ongoing management of fisheries resources within Queensland. Fish Habitat Areas protect critical wetland habitats which sustain the fish and invertebrate stocks upon which recreational, commercial and indigenous fishing sectors depend. Declared Fish Habitat Areas are currently managed as 'A' or 'B' in recognition of their respective values to fisheries productivity and the level of disturbance acceptable in each.

The *Wet Tropics World Heritage Protection and Management Act 1993* provides complementary legislation to the Commonwealth legislation, the *Wet Tropics of Queensland World Heritage Area Conservation Act 1994*. The Wet Tropics Management Authority implements the management of the Wet Tropics area in order to ensure Australia's international obligations under the World Heritage Convention are met.

The *Coastal Protection and Management Act 1995* established the Coastal Protection Advisory Council, and provides for the protection, conservation, rehabilitation and management of the coast, its resources and biological diversity, with respect to the principles of the National Strategy for Ecologically Sustainable Development. It provides for the preparation of coastal management plans to address these issues.

In March 1995 the Queensland Government introduced Draft State Guidelines for tree clearing and a Preliminary Tree Clearing Policy was released on 18 December 1995, to apply to leasehold and other State lands. The guidelines provide controls over clearing on slopes, riparian strips, and endangered regional ecosystems (<10% of original vegetation remaining). On lands with regional ecosystems classed as 'of concern', i.e. where only 10% to 30% of

original vegetation remains intact, clearing should be managed to ensure that at least 20% of the original vegetation remains. Further, no regional ecosystem is to be further cleared such that it moves from one class to another.

Local tree clearing guidelines are to be developed under the State Tree Clearing Policy, but are not yet completed. As of June 1997, 16 of 34 sets of guidelines had been approved regionally by the three Departments (Natural Resources, Primary Industries, and Environment & Heritage) with stakeholder inputs across Queensland. As of September 1998 34 sets of guidelines have been put in place to cover the leasehold and other Crown lands of queensland, and the development of guidelines for the remainder of the State are currently under consideration.

Vegetation management legislation is under review in Queensland for all lands (including freehold), and this includes a review of mechanisms to ensure protection of endangered ecosystems. Currently 105 (or 10%) of Queensland's regional ecosystems are classed as endangered (Sattler & Williams, in press).

Other measures for flora conservation in Queensland include: Vegetation Protection Orders administered by some local governments, the use of permits to clear the banks of watercourses under the *Water Resources Act 1989*, and the declaration of private properties as nature refuges managed by a conservation agreement under the *Nature Conservation Act 1992*. Currently there are 23 Nature Refuges and one Coordinated Conservation Area in place, covering an area of 11 173 hectares.

South Australia

The *National Parks and Wildlife Act 1972* provides for the establishment and management of reserves for public benefit and for the conservation of wildlife in a natural environment.

The reserves comprise national parks, conservation parks, game reserves, recreation parks and regional reserves. With the exception of recreation parks, reserves may only be abolished or their boundaries altered by a proclamation of the Governor, subject to a resolution passed by both Houses of Parliament.

Currently (as at 30 September 1998) South Australia has 18 National Parks covering an area of 4 337 431 ha, 216 Conservation Parks covering an area of 5 787 402 ha, five Wilderness Protection Areas covering an area of 70 074 ha, 45 Conservation Reserves covering an area of 273 965 ha, twelve Recreation Parks covering an area of 2994 ha, ten Game Reserves covering an area of 25 213 ha and seven Regional Reserves covering an area of 10 625 466 ha.

Management plans for each reserve are proposed and adopted by the Minister, after considering the comments and suggestions of the South Australian National Parks and Wildlife Council and representations from the public. Objectives prescribed in the Act for the management of reserves include: the preservation and management of wildlife, the preservation of features of geographical, natural or scenic interest, and the encouragement of public use and enjoyment of reserves. Management plans may also provide for the division of a reserve into zones which shall be kept and maintained under the conditions declared by the plan.

The South Australian National Parks and Wildlife Council, at the request of the Minister, can investigate and advise the Minister upon any matter referred to the Council for advice. The Council may also refer any matter affecting the administration of the Act to the Minister for consideration. Seven members are appointed to the committee by the Governor, and the Director is an *ex-officio* member.

The *Fisheries Act 1982* provides, *inter alia*, for the protection of aquatic habitat. Thirteen aquatic reserves have been proclaimed in South Australia pursuant to the Act. In addition, the *Fisheries Act (Aquatic Reserves) Regulations 1984* provides for limited access and/or limited fishing activities within the waters of most of the reserves. Other reserves are designated as non-entry, thereby affording complete protection to marine life within the reserve.

The *Forestry Act 1950* dedicates specific areas of Crown land as reserves to be managed exclusively for the purpose of forestry. Under the same Act, areas of indigenous forest habitat within forest reserves can be proclaimed and dedicated as Native Forest Reserves specifically for the conservation of flora and fauna. Native Forest Reserves are required to have a 'statement of purpose' for which they are established, and are protected under the Forestry Act from 'operations inconsistent with this purpose'. Proclamation occurs after approval from Parliament. Forest reserves are under the direct control of district managers and most occur in two major geographical regions of the State: South-East and Central. Flora and fauna on all forest reserves are protected under the *National Parks and Wildlife Act 1972*. Permits must be obtained from the Department of Environment, Heritage and Aboriginal Affairs and from the Department of Primary Industries and Resources before activities involving flora and fauna, other than observational activities, can be undertaken on forest reserves.

The *Historic Shipwrecks Act 1981* provides for the declaration of marine waters to protect historic shipwrecks. The legislation effectively gives protection to marine life in the designated area by prohibiting shipping, and by prohibiting diving or other underwater activities except in accordance with a permit issued by the Department of Environment, Heritage and Aboriginal Affairs.

In December 1991 the *Fisheries Act 1982* was amended to include provision for the establishment of Marine Parks. Under the Fisheries Act the Government may constitute as a Marine Park any waters, or land and waters, considered to be of national significance by reason of the aquatic flora or fauna of the aquatic habitat. Any changes to constituted marine parks can only be carried out by a resolution passed by both Houses of Parliament. One such Marine Park has since been proclaimed, the 44 000 ha Great Australian Bight Marine Park Whale Sanctuary, dedicated in 1995. A complementary 125 000 ha marine national park has been constituted in adjoining waters under the *National Parks and Wildlife Act 1972*.

The control and administration of all marine parks constituted under the Fisheries Act rests with the Minister of Primary Industries and Resources. The Minister must within two years of the constitution of the Marine Park propose a plan of management. Preparation of a plan includes public consultation and must consider the interest of Marine Parks which are contiguous with a reserve established under the *National Parks and Wildlife Act 1972*. Management arrangements must be coordinated with the management of any adjacent reserve established under the law of a State or the Commonwealth.

Once a Marine Park is constituted, provisions of the *Mining Act*, *Petroleum Act* and the *Petroleum (Submerged Lands) Act* do not apply unless proclaimed by the Governor.

The *Wilderness Protection Act 1992* provides for the protection of wilderness and the restoration of land to its condition before European colonisation. The Act established the five member Wilderness Advisory Committee, whose task is to assess all land in South Australia to identify areas that meet, or may be restored to, conditions matching the wilderness criteria, such as to warrant protection under the Act. The Act provides for the establishment of Wilderness Protection Areas and Zones, the latter reserve type applying where pre-existing mining is a temporary permitted activity.

A Wilderness Code of Management has been prepared to guide the management of Wilderness Reserves and public use of those areas. Five Wilderness Protected Areas have been proclaimed, all on Kangaroo Island. Management plans are a statutory requirement for Wilderness Reserves.

The *Crown Lands Act 1929* allows for the dedication of land for a range of purposes, including nature conservation and recreation. Under the Act, Conservation Reserves are proclaimed as an additional reserve type. There are currently forty-one Conservation Reserves vested under the care and control of the Minister, protecting areas of natural habitat throughout South Australia. This Act lacks the requirement for management plans and the degree of protection from other uses that apply to reserves under the other legislation.

Outside of protected areas the *Native Vegetation Act 1991* (which replaced the *Native Vegetation Management Act 1985)* requires landholders to obtain the consent of the Native

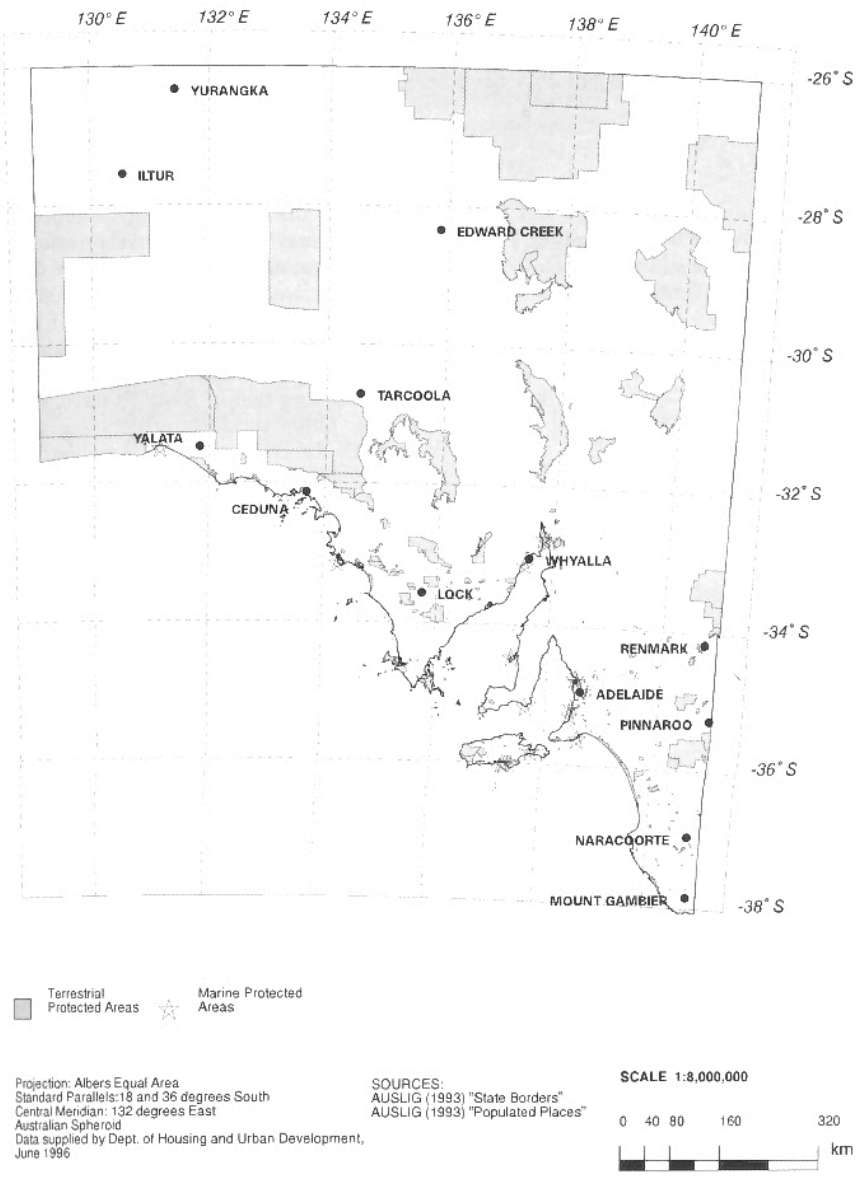

Figure 95. Terrestrial and marine protected areas of South Australia. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

Vegetation Authority before clearing can be undertaken. Approximately 900 Heritage Agreements have been created, covering around 600 000 hectares.

While not strictly designed for the conservation of flora *per se*, the *Pastoral Land Management and Conservation Act 1989* and the *Soil Conservation and Land Care Act 1989*, both have major implications for retaining native vegetation cover in this State. Sustainable use of the pastoral lands of South Australia, and the effective introduction of soil conservation and land care measures, provide greater protection of native flora over larger areas of the State than could possibly have been achieved through gazetted protected areas alone.

Tasmania

The *National Parks and Wildlife Act 1970* provides for the establishment of conservation areas by the Governor's proclamation. Conservation areas may include privately owned lands, subject to the consent of the owners. Conservation areas that are Crown land may be declared State Reserves or Game Reserves by Governor's proclamation. A proclamation which declares a State Reserve does not have effect until approved (or not disallowed) by both Houses of Parliament. State Reserves and Game Reserves may not be revoked unless the Governor's draft proclamation is first approved by each House of Parliament. This proclamation may give a name to the State Reserve including that of State Reserve, National Park, Nature Reserve, Historic Site or Aboriginal Site. Other statutory powers, e.g. granting of mining leases or forestry rights, do not apply in State Reserves or Game Reserves unless a management plan approved by both Houses of Parliament so provides.

In Conservation Areas (some of which are named Wildlife Sanctuaries), wildlife and habitat are protected by regulations, but other activities such as mining and forestry are permitted. Management plans can provide additional protection. Section 22A–G of the *Forestry Act 1920* authorises preparation and approval of forest management plans in respect of Crown land that is both reserve land within the meaning of the *National Parks and Wildlife Act 1970*, i.e. set aside for a conservation purpose, and land in a state forest or timber reserve. Forestry operations may proceed in such areas with the concurrence of both the Parks and Wildlife Service, and Forestry Tasmania, subject to those operations not jeopardising the conservation values for which the area was declared.

National Parks are generally outstanding natural areas greater than 4000 hectares. Nature Reserves comprise areas of significant natural features reserved for nature conservation and scientific study. In Game reserves, management is aimed at nature conservation but permits may be given to enable the hunting of introduced or native game species in season.

Currently (as at 6 April 1998) Tasmania has 16 National Parks covering an area of 1 373 213 ha, 106 Conservation Areas covering an area of 403 906 ha, 54 Nature Reserves covering an area of 44 776 ha, 107 Forest Reserves covering an area of 49 720 ha, and 55 State Reserves covering an area of 18 142 ha.

Management plans are required to be prepared in respect of all areas proclaimed under the *National Parks and Wildlife Act 1970*. They must be publicly displayed, with comments being sought before finalisation and approval by the Governor. Where provision is made for use of a State Reserve other than as provided for in the Act, relevant parts of the management plan require the approval of both Houses of Parliament.

State Reserves, Game Reserves and Conservation Areas are administered by the Parks and Wildlife Service under the *National Parks and Wildlife Act 1970*, with advice from an Advisory Committee. Whereas some Conservation Areas are administered directly by the Service, there are, in addition, approximately 40 conservation areas where other government authorities or the owners are the managing authorities. The Service also manages Protected Areas, State Recreation Areas, Coastal Reserves etc., reserved under the *Crown Lands Act 1976*. Reserves administered include those covered by the sea and the sea itself. These areas are Marine Parks or Reserves. Administration is in cooperation with the Department of Primary Industry and Resources.

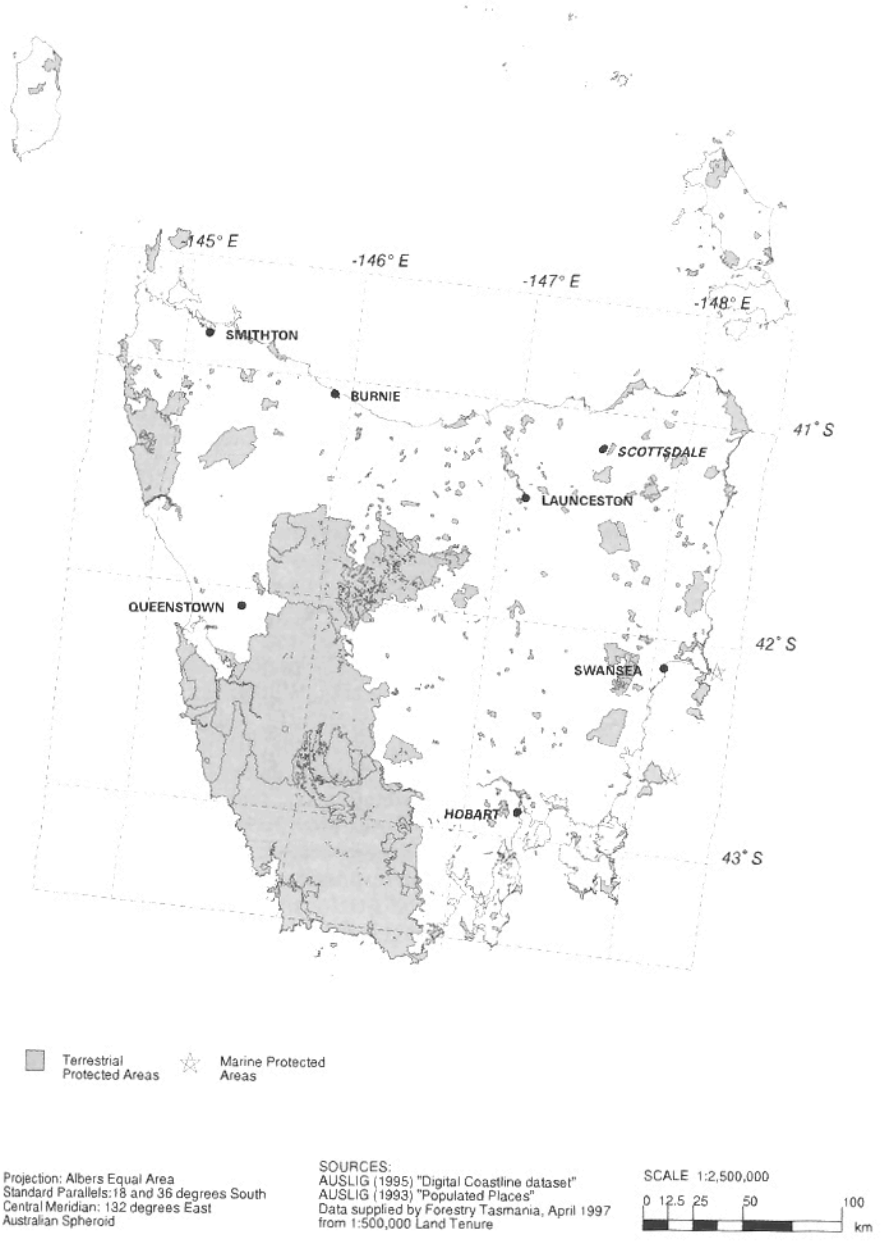

Figure 96. Terrestrial and marine protected areas of Tasmania. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

Under the Conservation Area Scheme under the *National Parks and Wildlife Act 1970*, private land may be proclaimed as a private reserve. Landholders enter an agreement, and the conditions are entered on the land title. Landholders may be provided with financial assistance for agreeing to protect wildlife or habitat.

Under the *National Parks and Wildlife Act 1970* and the *Land Titles Act 1980* private land conservation values may be protected by covenant on the title. Several covenants dealing with threatened species are currently being finalised.

Under the *Forestry Act 1920*, the Governor may, by proclamation in the *Government Gazette*, set aside land within a state forest as a forest reserve. Forest reserves are declared under section 20 of the *Forestry Act 1920* for the purposes of public recreation, preservation or protection of flora or fauna, or features of aesthetic, scientific or other value. Forest reserves may only be revoked with the approval of both Houses of Parliament.

The *Public Land (Administration and Forests) Act 1991* established the Public Land Use Commission, which advises on the allocation of public land, and therefore has a range of powers to protect native flora and fauna, including removing areas from logging zones.

The *Threatened Species Protection Act 1995* provides for the protection and management of native flora and fauna through listing of threatened species and a requirement for specific strategies to be implemented to provide action to promote the recovery of the listed species. The strategies also require the identification and management of threatening processes which impact on endangered species and identification of critical habitats.

Tasmania is also currently establishing a regionally based Land for Wildlife Scheme as part of its regional Bushcare extension arrangements under the Natural Heritage Trust.

Victoria

The *National Parks Act 1975* (together with the *National Parks (Alpine National Parks) Act 1989*, and the *National Parks (Wilderness) Act 1992*) provides for the establishment, protection and management of National Parks, State Parks, Wilderness Parks and other parks for the preservation and protection of the natural environment, indigenous flora and fauna, and features of scenic, archaeological, ecological, geological, historical or other scientific interest. The Act also provides for the protection and management of wilderness zones and remote and natural areas within National or State Parks, and designated water supply catchment areas in particular National Parks. The Act provides for the use of parks by the public for the purposes of enjoyment, recreation or education; for the encouragement and control of that use; and, in wilderness areas, for inspiration, solitude and appropriate self-reliant recreation. There are also provisions in the Act for the Director of National Parks to manage land not specifically reserved under the Act.

New parks or additions to existing parks are established by legislation which amends the appropriate schedules to the *National Parks Act 1975*. The Act requires the Director to prepare a management plan for each National, State, Wilderness and other Park. While the statutory Director of National Parks administers the *National Parks Act 1975*, Parks Victoria, a new organisation established as the service delivery agency for the Government's Parks program, is responsible for on-ground management of parks and reserves.

Currently (as at 30 June 1998) Victoria has 35 National Parks covering an area of 2 570 396 ha, six Marine and Coastal Parks covering an area of 46 660 ha, 416 Nature Conservation Reserves covering an area of 214 120 ha, three Wilderness Parks covering an area of 202 050 ha, 32 State Parks covering an area of 185 883 ha, and six 'other' parks covering an area of 35 638 ha.

The *Crown Land (Reserves) Act 1978* provides for the reservation of areas for a variety of purposes. Areas reserved under the Act include Nature Conservation Reserves (Flora and Fauna Reserves, Flora Reserves), Natural Features reserves and Marine Parks and Reserves.

The *Wildlife Act 1975* enables areas reserved under the *Crown Land (Reserves) Act 1978* for the propagation or management of wildlife, or for the preservation of wildlife habitat, or for

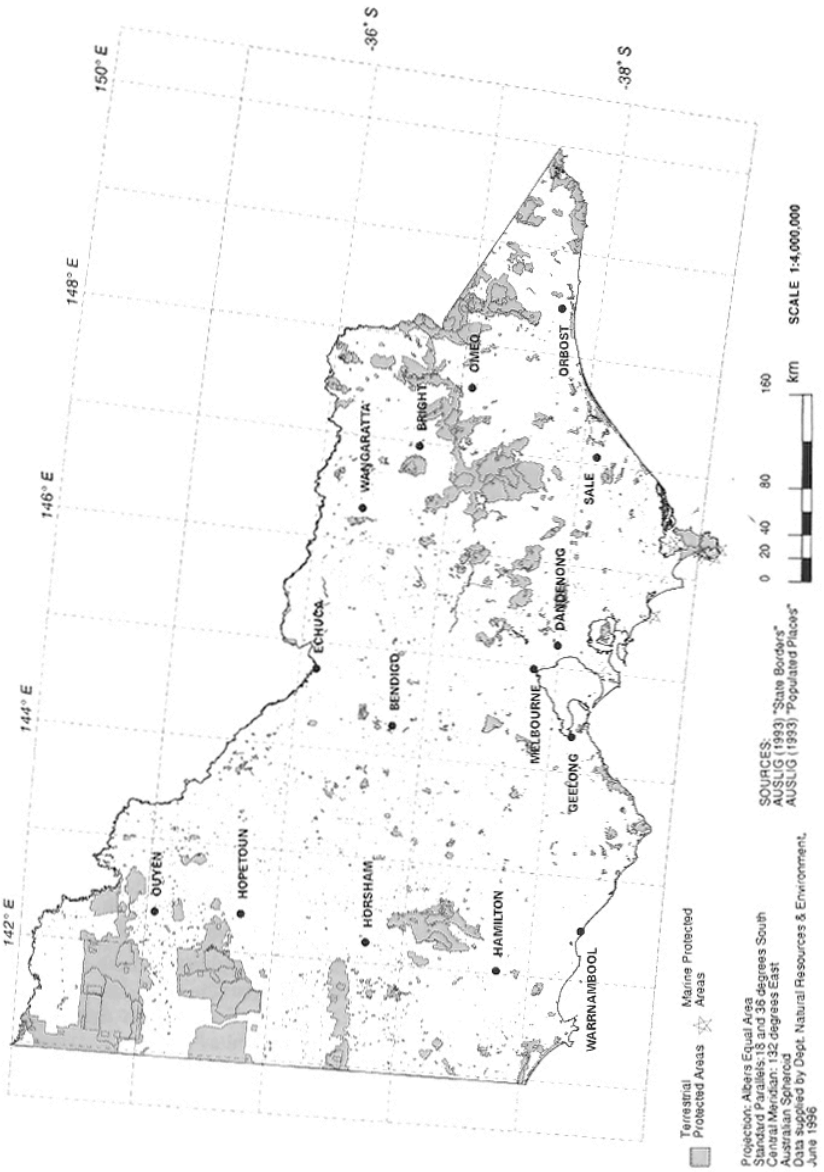

Figure 97. Terrestrial and marine protected areas of Victoria.
Source: I.D.Cresswell and G.M.Thomas (1997). *Terrestrial and Marine Protected Areas in Australia.* Environment Australia Biodiversity Group. Canberra. Reproduced with permission.

any other purpose, to be classified as State Wildlife Reserves or Nature Reserves. The Secretary to the Department of Natural Resources and Environment is required to prepare as soon as practicable a plan of management for each State Wildlife Reserve and Nature Reserve. The Minister may adopt or vary such plans.

The *Reference Areas Act 1978* provides for Reference Areas to be proclaimed by the Governor-in-Council, and for the Minister to issue directives for their protection, control and management. Reference Areas are areas of ecological interest and significance, and are managed under the Act to ensure their long term viability to conserve these ecological attributes.

The *Flora and Fauna Guarantee Act 1988* protects Victoria's flora and fauna for 'varied and future needs', through the establishment and management of State reserves, refuges and conservation areas.

The *Heritage Rivers Act 1992* provides for the protection of heritage rivers and natural catchment areas and requires a management plan to be prepared for each river and catchment area.

The *Catchment and Land Protection Act 1994* establishes a peak Catchment Management Council, nine Catchment Management Authorities and one Catchment and Land Protection Board across the State to oversee the sustainable management of catchments, which includes the conservation of flora as an integral land management activity. The Act requires the preparation of Regional Catchment Strategies and is aimed at setting up a framework for the integrated management and protection of catchments. It outlines the general duties of landowners in addition to containing provisions for the control of pest plants and animals.

The *Coastal Management Act 1995* established the Victorian Coastal and Bay Management Council, to oversee the long term planning of the coast to ensure the protection of significant environmental features, and the sustainable use of natural coastal resources. It also provides for the establishment of regional Coastal Boards, and the development of a Victorian Coastal Strategy which requires the development of Coastal Action Plans, including detailed environmental planning.

The *Victorian Conservation Trust Act 1972* established the Victorian Conservation Trust (now known as the Trust for Nature Victoria) as an independent body to conserve areas of ecological significance through the acceptance of community conservation funds such as gifts and bequests. By 1996, in conjunction with the State Government, the Trust for Nature Victoria had negotiated voluntary covenants over more than 180 properties covering more than 6500 ha, and was negotiating a further 130 properties covering over 5000 ha (ANZECC Working Group on Nature Conservation on Private Land, 1996). Outright purchase of these properties would have cost an estimated $20 million. The Trust for Nature Victoria has also initiated a revolving fund with a small capital base to buy, covenant and resell land, in order to provide maximum flexibility in achieving its conservation goals.

Clearing of native vegetation in Victoria was severely restricted by the amendment in 1989 of the *Planning and Environment Act 1987*, which in practice stops broadscale clearing on blocks greater than 0.4 ha.

The voluntary 'Land for Wildlife Scheme', begun in 1981 and administered by the Department of Natural Resources and Environment and the Bird Observers Club of Australia, encourages landholders to conserve native habitat. However agreements under this scheme may be revoked at any time and cover the current landholder only.

Voluntary Land Management Cooperative Agreements are a component of the Flora and Fauna Guarantee Program under the *Conservation, Forests and Lands Act 1987* and may cover public, Crown lease or freehold land. They are designed to encourage cooperative management and conservation of flora and fauna. Long-term covenants may be linked to the title. Also of relevance to flora conservation under the *Conservation, Forests and Lands Act 1987* is the establishment of codes of practice for land management covering various aspects of land degradation. Codes of practice are not legally binding.

In December 1997 Victoria launched its Biodiversity Strategy, which contains the major strategic direction for flora and fauna conservation within a regional context. The strategy is in three parts and sets out broad principles and challenges for sustaining the 'living wealth' of the State together with directions in management.

Western Australia

The protection of flora throughout Western Australia is a function of the Department of Conservation and Land Management (CALM) as is management of Western Australia's conservation reserve system under the *Conservation and Land Management Act 1984*.

Statewide protection of all taxa is effected under the Wildlife Conservation Act 1950. On Crown land protected flora cannot be taken without a licence and protected flora taken on private land cannot be sold without a licence having been issued. A number of species, in addition to declared rare flora, have been prohibited from being taken on Crown land because of the impact of commercial harvesting on them. Access to Crown land for the purpose of commercially harvesting flora is also subject to the consent of the relevant management body of the land. Access to conservation reserves for this purpose is not permitted. A management program for the commercial harvesting of protected flora is in place.

Protected flora that is threatened may be declared 'rare flora' by the Minister under the *Wildlife Conservation Act 1950* to provide it with a special level of protection (the Minister's written consent is required to take declared rare flora irrespective of the land tenure where it occurs). Regional or district management programs for declared rare flora and recovery plans for individual taxa are produced and implemented.

Land can be reserved for conservation purposes by the Minister under the *Land Administration Act 1997* (which replaced the *Land Act 1933*). If a reserve is made Class A under this Act, e.g. a reserve providing for the conservation of flora, and it is subsequently proposed to amend its purpose or significantly change the reserve, then the proposal has to be tabled in Parliament by the Minister, where it may be disallowed.

Under the *Conservation and Land Management Act 1984* national parks, conservation parks and nature reserves (for the conservation of flora and fauna) are automatically vested in the National Parks and Nature Conservation Authority. Management plans for these reserves have to achieve or promote the reserve's purpose. Other reserves for conservation and recreation subject to the *Conservation and Land Management Act 1984* are designated section 5(g) or 5(h) reserves.

As at 30 June 1998 Western Australia has 4 874 282 ha of National Park, 117 324 ha of Conservation Park, 10 772 271 ha of Nature Reserve, and 147 785 ha of Section 5(g) reserves vested in the National Parks and Nature Conservation Authority.

The National Parks and Nature Conservation Authority is established under the *Conservation and Land Management Act 1984* to develop policies for preserving the natural environment, to submit proposed management plans for the reserves vested in it to the Minister for approval, to monitor the carrying out of approved management plans and to encourage public appreciation of nature. On the Authority's recommendation, the Minister may classify reserves or parts of reserves vested in the Authority for such purposes as prohibited or restricted access or, in the case of a national park, for the purpose of a wilderness area. Classified areas are in effect management zones.

Under the *Conservation and Land Management Act 1984*, the Governor may reserve Western Australian waters (marine and estuarine habitats) as a marine nature reserve, a marine park, or a marine management area. Marine flora cannot be taken in marine reserves without lawful authority. Marine Parks comprise 1 013 940 ha and marine nature reserves 132 000 ha. All of these reserves are vested in the Marine Parks and Reserves Authority which has functions analogous to those of the National Parks and Nature Conservation Authority.

Under the *Fish Resources Management Act 1994*, the Minister for Fisheries may set aside fish habitat protection areas in any Western Australian waters which are not in a marine reserve established under the *Conservation and Land Management Act 1984*.

State forests and timber reserves are reserved by the Governor and vested in the Lands and Forest Commission under the *Conservation and Land Management Act 1984*. These reserves are managed for multiple purposes including conservation, recreation, timber production on a sustained yield basis and water catchment protection. As the vested body for State forests and timber reserves, the Lands and Forest Commission develops policies to promote the purposes of these reserves, submits proposed reserve management plans to the Minister for approval and monitors the implementation of approved management plans. The area of State forest and timber reserves as at 30 June 1998 was 1 727 514 ha and 141 550 ha respectively. There are 82 723 ha of 5(g) reserves vested in the Lands and Forest Commission. Forest produce cannot be removed from State forests, timber reserves and Crown land without authorisation under the *Conservation and Land Management Act 1984*. Forest produce includes sandalwood, and the sustainable removal of sandalwood from Crown land and alienated land is subject to this Act and the *Sandalwood Act 1929*.

Under the *Soil and Land Conservation Act 1945* landholders wishing to clear more than one hectare of native vegetation are required to obtain permission from Agriculture Western Australia (Commissioner of Soil and Land Conservation). Clearing can be prevented where it is likely to result in a land degradation hazard, or where rare flora is involved. Areas not allowed to be cleared must be fenced to prevent grazing.

In May 1995 the Western Australian Government introduced additional clearing controls under the *Soil and Land Conservation Act 1945*, designed to prevent clearing in shires or on individual farms which have been extensively cleared.

Specific measures include:

- land clearing being restricted if less than 20% of the individual property is covered with remnant vegetation or deep rooted perennial vegetation;
- land clearing being discouraged in country shires with less than 20% of remnants (including nature reserves) but being allowed where landholders can clearly prove that further clearing will not cause land degradation or threaten native species;
- if the property has more than 20% but the shire has less than 20% of remnants, the proponent being required to demonstrate the clearing will not threaten important conservation values or cause land degradation.

Land clearing proposals that may have a significant effect on the environment are referable to the Environmental Protection Authority for its consideration for environmental impact assessment under the *Environmental Protection Act 1986*. Under this Act, enforceable environmental protection policies which regulate land clearing, related threats to native vegetation and the environment generally can be made (e.g. the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1997*).

Under the *Conservation and Land Management Act 1984*, provision is also made for landowners to enter agreements to manage private land as if it were a nature reserve or one of the other categories of conservation reserve that the Act applies to. The details of the agreements would be worked out between the landholder and CALM, although no agreements had been put in place as at June 1998.

CALM also operates a 'Land for Wildlife' scheme which provides assistance to landholders registered under the scheme to protect nature (biodiversity) conservation values on their land. CALM also provides advisory assistance to landholders and encourages the retention and management of private native vegetation, and is developing a voluntary nature conservation covenanting scheme.

Agriculture Western Australia, in conjunction with CALM, administers the Remnant Vegetation Protection Scheme started in 1988, under the *Soil and Land Conservation Act 1945*. The Scheme provides financial assistance for fencing remnant vegetation. Applications are assessed on the conservation value of the vegetation, and the successful applicants are required to enter into a 30 year covenant that precludes the use of the land for any purpose that would be detrimental to the vegetation. In the ten years the scheme has been operating, 975 areas of remnant vegetation, totalling over 43 000 hectares, have been protected.

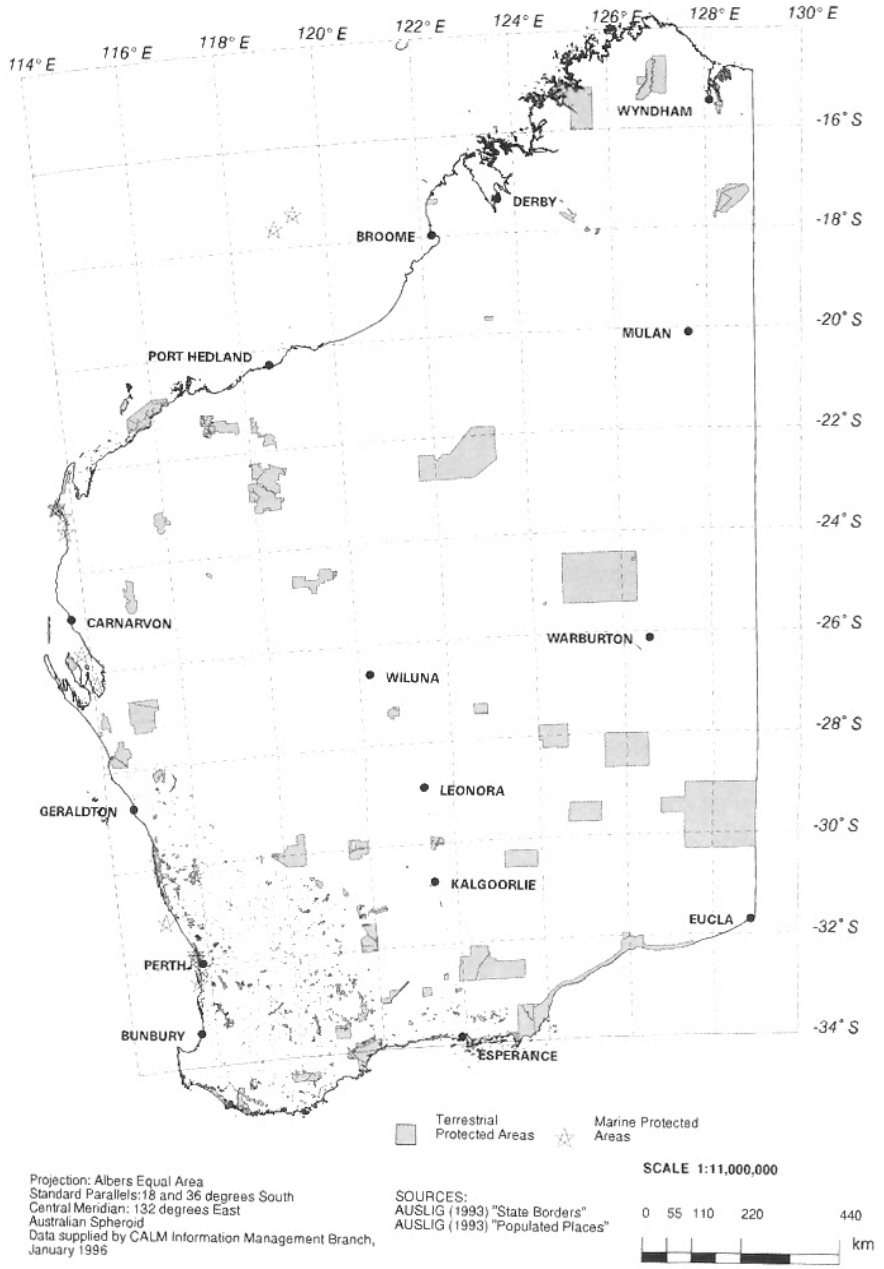

Figure 98. Terrestrial and marine protected areas of Western Australia. Source: I.D.Cresswell and G.M.Thomas (1997), *Terrestrial and Marine Protected Areas in Australia*. Environment Australia Biodiversity Group, Canberra. Reproduced with permission.

Under the *Country Areas Water Supply Act 1947*, controls exist over clearing of native vegetation in six catchments in the south-west of Western Australia. Applications to clear are made to the Water and Rivers Commission, and if an application is refused, the landowner may claim compensation.

There are still about 800 properties in Western Australia under the Conditional Purchase Lease System, which requires the blocks to be half-cleared before they can be converted to freehold. The Department of Land Administration has not enforced this requirement at the operational level for several years, although technically it still stands.

Past clearing practices in the agricultural region have resulted in extensive land salinisation. The Western Australian Government's 'Salinity Action Plan' of 1996 has set a number of objectives to manage salinity including protection and maintenance of biological and physical diversity within agricultural areas, and substantial revegetation with woody perennials.

A Memorandum of Understanding for the Protection of Remnant Vegetation on Private Land in the Agricultural Region of Western Australia was signed in 1997 by the following agencies to coordinate action throughout the State: CALM; the Department of Environmental Protection; Agriculture Western Australia; the Water and Rivers Commission; the Environmental Protection Authority and the Commissioner for Soil and Land Conservation.

On Crown land leased for pastoral purposes, the Pastoral Lands Board established under the *Land Administration Act 1997* has a responsibility to ensure that pastoral leases are managed on an ecologically sustainable basis. A pastoral lessee cannot clear land, sow non-indigenous pastures or carry out non-pastoral activities on a pastoral lease without a permit from the Pastoral Lands Board. The Board cannot issue such permits unless environmental conservation requirements have been complied with under the *Agriculture and Related Resources Protection Act 1976*, the *Environmental Protection Act 1986*, the *Soil and Land Conservation Act 1945*, the *Wildlife Conservation Act 1950* or any other applicable law which relates to environmental conservation on a pastoral lease.

In recognition of the vulnerability of rail and roadside vegetation to disturbance and degradation and its importance to regional flora conservation, the 'Roadside Conservation Committee' has been established which co-ordinates and promotes the conservation and effective management of rail and roadside vegetation for the benefit of the environment and the people of Western Australia.

To better facilitate the protection of remnant vegetation communities in the Perth Metropolitan Region, in the context of the Western Australian Government's 'Urban Bushland Strategy', a proposed 'Perth's Bushplan' is being developed.

Collecting Permits, Import and Export Permits

Each Australian State and Territory has a system of permits governing the collection of native plants and animals for all purposes, including scientific studies. These regulations, managed by various organisations, are backed in many cases by heavy penalties. The import and export of plants is controlled by the *Wildlife Protection (Regulation of Exports and Imports) Act (1982)*, and has particular impact on material which is designated as Type material (at export or subsequently), or species listed on the schedules of the *Convention on International Trade in Endangered Species*. Information on permit requirements is available from the ABRS Website.

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