



AUSTRALIAN CAPITAL TERRITORY
NATURE CONSERVATION ACT 1980
NATURE CONSERVATION STRATEGY
NO. 263 OF 1997

Pursuant to section 15X of the *Nature Conservation Act 1980*, I approve the draft strategy entitled 'The ACT Nature Conservation Strategy,' attached to this instrument, as the nature conservation strategy for the Territory.

Dated this 5th day of December 1997

A handwritten signature in black ink, appearing to read 'Gary Humphries'.

GARY HUMPHRIES
MINISTER FOR THE ENVIRONMENT, LAND AND PLANNING

THE A.C.T. NATURE CONSERVATION STRATEGY

Strategic goal

...to protect our biological diversity and maintain ecological processes and systems

Strategic Vision

The people of the ACT greatly value the natural environment and are responsible custodians of the heritage of future Canberrans and Australians.

Standards of city planning and management for environmental protection are acclaimed internationally and the extent and management of the nature conservation estate is exemplary.

Land use and development planning has a strong regional focus with biodiversity conservation requirements routinely integrated into decision-making processes.

A regional conservation network links national parks, nature reserves, habitat corridors and significant vegetation

remnants. Environmental flows in streams and rivers are maintained and aquatic ecosystems flourish.

A comprehensive environmental monitoring program guides management directions and priorities.

Management for nature conservation is based on a professional capability working to world's best practice standards. Community groups and individuals actively involve themselves in management programs, and Government forms partnerships with stakeholders on important issues.

Business standards and lifestyle choices reflect community goals for an ecologically sustainable and quality environment for all.

ENVIRONMENT ACT

Copies of the ACT Nature Conservation
Strategy are available from:

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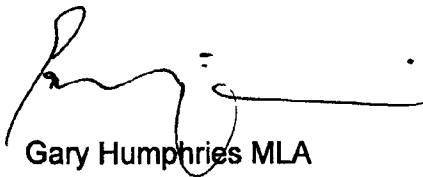
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FOREWORD

The native plants and animals of the ACT, their ecological communities and their habitats are part of our natural heritage and an important community and economic asset. Their conservation and protection is a task in which we all can participate.

The ACT Nature Conservation Strategy provides a framework for a coordinated and strategic approach to protection of our biological diversity and the maintenance of underpinning ecological processes. Implementation will be a continuing process subject to review and refinement in the light of progress made, challenges encountered and increasing knowledge about our natural environment.

The Strategy represents a broad consensus on where our nature conservation priorities lie and what are the most effective ways of securing a sustainable and quality environment for all. It is the outcome of a productive partnership between Government and the community and I am confident that it will make a positive contribution to ecologically sustainable development goals for the ACT and region.



Gary Humphries MLA

Minister for the Environment, Land and Planning

5 December 1997

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1. INTRODUCTION

Biological diversity (biodiversity) describes the full range of living things. It is the variety and number of species of organisms, the genetic variation within a species and the ways in which they interact with each other in communities and ecosystems.¹

Ecological processes and systems provide fundamental life-support services for humankind and all other species. For example, maintenance of soil fertility and provision of clean, fresh air and water depend on essential ecological services.²

Ecological integrity implies firstly, that the natural features of an ecosystem are intact, and secondly, that the processes required to maintain the ecosystem are maintained. If these criteria are met then a system is considered to be viable; if they are met through time then a system can be considered to be sustainable.³

The principles of ecologically sustainable development have expanded and refined contemporary thinking about what is involved in identifying and conserving our natural assets. They embrace maintenance of ecological integrity and conservation of biological diversity at a landscape scale. Application of these environmental tenets in an equitable and economically prudent manner is still being explored. The ACT Nature Conservation Strategy is one of the mechanisms being employed.

Together with the *Land (Planning and Environment) Act 1991* (which, via the *Territory Plan*, provides for reservation of Public Land for conservation of the natural environment) the *Nature Conservation Act 1980* (through the authority of the Conservator of Flora and Fauna, and the ACT Parks and Conservation Service) comprises the statutory core for nature conservation in the ACT. While statutory powers underpin the application of nature conservation policy and are used routinely to manage related issues, effective conservation of our natural assets is ultimately dependent upon a supportive and involved community complemented by a professional management capability. Both need to work from a comprehensive information base if quality nature conservation outcomes are to be achieved

1.1 THE IMPORTANCE OF CONSERVING OUR BIODIVERSITY

Our urban and rural lifestyles impose considerable pressures on the natural environment. There are, however, natural heritage assets and values that provide substantial and fundamental societal benefits. They need to be recognised and protected from further damage.

Biological resources. The world's plants and animals provide us with all our food, many medicines and industrial products.

Loss of species diversity means options for future exploitation are foregone. Who would have foreseen, even one generation ago, the horticultural and cut flower business generated by our native plants. Medicinal and food products continue to offer considerable potential. Australian trees and timbers are valued world-wide.

¹ Amos, N, Kirkpatrick, J B & Giese, M, 1993

² Amos, N, Kirkpatrick, J B & Giese, M, 1993

³ Australian National Parks & Wildlife Service, 1995

If the wild genetic material that forms the basis of many of our existing biological products is no longer accessible, opportunities for increased productivity or coping with environmental change are removed. Breeding for disease resistance often means resorting to wild stock.

Ecological processes. Benefits arising from conservation of Australia's biodiversity include the provision of a wide array of ecological services (natural processes that play an essential part in maintaining ecosystem integrity). They are fundamental to our way of life and our economy, but are often grossly undervalued.

Examples include water catchment protection, maintenance of soil production and fertility, protection from soil erosion, nutrient storage and recycling, and pollution breakdown and absorption. Consider the alternatives in terms of water quality and siltation management if the Canberra water supply was not protected by vegetated catchments. Healthy and diverse ecosystems are self-sustaining.

Social benefits. The natural environment provides for many of the spiritual, educational, aesthetic and recreational needs of our community. There are direct economic benefits to be obtained by assisting others to appreciate environmental experiences – for example, in the tourism and recreation industries.

Cultural heritage values are often linked to our natural environment. Landscapes and other features may grow in significance because of their uniqueness, connection with people or events, or simply because of their intrinsic characteristics such as age or complexity.

A respect for nature ethos There is a widely held ethical basis for conserving our biodiversity. It is expressed in the National Strategy for the Conservation of Australia's Biological Diversity in the following terms: 'We share the earth with many other life forms that warrant our respect, whether or not they are of benefit to us. Earth belongs to the future as well as the present; no single species or generation can claim it as its own'.

Benefits of timely action. There is little scope to restore natural ecosystems and rehabilitation costs can accumulate alarmingly if degrading influences are not identified and managed adequately. The inevitable consequence of inaction is increasing loss of productivity and general decline in the quality and value of our natural assets through (in many cases, irreplaceable) loss of biodiversity and heritage values.

While preferred lifestyles and economic and political priorities may be the immediate realities that determine our environmental standards, in the long term our basic welfare and survival depend on them being ecologically sustainable. One important way we can all promote the maintenance of those values that contribute so positively to our 'bush capital' is to *live with nature*. This may require changes in attitude or lifestyle or culture and acceptance of certain social or economic consequences. However, the ACT has an enviable planning and development history and an increasingly environmentally aware community. Many of the environmental pitfalls that accompany overzealous or uncoordinated development having been avoided.

This foundation is being secured and supplemented by several important government initiatives that promote a strategic and integrated approach to

environmental planning at a regional scale and between all levels of government. This Nature Conservation Strategy complements these activities by guiding the development of nature conservation priorities and directions, and their integration into the overall planning and management process.

1.2 STRATEGIC CONTEXT

The ACT is party to a number of key national strategies for the conservation of Australia's natural biological values. ACT Government obligations that arise from these strategies are being met largely through existing programs and participation in national forums, particularly the Australian and New Zealand Environment and Conservation Council (ANZECC). A number of documents have been produced to articulate their application in an ACT context and as a vehicle for the ACT's own initiatives. ACT Government planning strategies establish the framework for implementation of environmental conservation policy generally.

Examples of the relationship between selected national and ACT strategies that address conservation of our natural assets are at the Appendix.

1.3 GOALS AND OBJECTIVES

The strategic goal for the ACT Nature Conservation Strategy is adopted from The National Strategy for the Conservation of Australia's Biological Diversity – *to protect our biological diversity and maintain ecological processes and systems*.

Tangible objectives, that will enable the ACT to work towards this goal, are put forward in a structured form. Objectives are accompanied by implementation strategies designed to achieve positive conservation outcomes in an environment of economic restraint and increasing regional collaboration in planning and management of natural resources.

1.4 BACKGROUND TO THE A.C.T. NATURE CONSERVATION STRATEGY

A draft of this document entitled *A Nature Conservation Strategy for the ACT - Draft* was released for public comment on 26 June 1997. It contains extensive discussion of the principles of biodiversity conservation with local examples of their application and issues arising. Public comment raised no substantive issue in relation to content or accuracy of the principles and examples presented. Consequently, the draft Strategy retains value as a resource document and will remain available for that purpose.

This final document is not so comprehensive, focussing more on implementation rather than background information. This is where commitments are made and performance is judged. It is also the area where comment on the draft document was concentrated and consequent amendments made. Chapters have been re-ordered to a more logical sequence.

Those who refer to the draft Strategy for background information should bear the following in mind.

- *A Nature Conservation Strategy for the ACT – Draft* remains as a resource document only. It has no status other than for those purposes.

- Implementation tables contained in *A Nature Conservation Strategy for the ACT – Draft* have been revised in the light of submissions received. Accordingly, they have no status and readers are referred to this document.
- Additional material has been inserted in the introduction to this document and in the chapter on implementation in response to comment received, although discussion in *A Nature Conservation Strategy for the ACT – Draft* still stands in its own right.

2. CONSERVATION OF BIOLOGICAL DIVERSITY

2.1 BIOREGIONAL PLANNING FOR BIODIVERSITY CONSERVATION

A regional approach in which environmental characteristics are the principal determinants of boundaries for conservation planning is of major importance if biodiversity conservation is to succeed.⁴

There is widespread recognition in the ACT and region of the intrinsic benefits of an integrated approach to regional planning. Several forums have been established with the express purpose of addressing common strategic issues in a coordinated manner.

A regional perspective is particularly relevant to conservation of the ACT's natural assets because of the relative scale of the landscapes involved. The long-term prospects for real success in many areas of concern will be influenced by, and in many cases be dependant upon, complementary action in NSW.

As a participant in the Alps Memorandum of Understanding and an active member of groups such as the Upper Murrumbidgee Catchment Coordinating Committee, the ACT has demonstrated a firm commitment to regional nature conservation and has benefited from a number of cooperative management programs. Also, the ACT Flora and Fauna Committee applies a regional perspective when assessing the conservation status of plants and animals of the ACT.

Biogeographically, the ACT is a component of the South Eastern Highlands and Australian Alps bioregions (see Fig. 1) sharing its environmental characteristics and ecological parameters with surrounding New South Wales and parts of Victoria. These bioregions establish a biologically relevant framework for conservation effort. When combined with land-use patterns, land tenures and jurisdictional boundaries, a coordinated and integrated approach to regional biodiversity conservation becomes possible.

A regional perspective to biodiversity conservation is also important in the context of habitat linkages as part of a regional conservation network. Habitat linkages (or corridors) have the potential to make a major contribution to regional conservation strategies by ameliorating the detrimental effects that habitat fragmentation and isolation have on wildlife populations.

The value of a regional approach to conservation of natural assets is recognised in the ACT and Sub-region Planning Strategy. In particular, the concept of a regional network of linked habitat corridors and increased cooperation between adjacent jurisdictions on nature conservation matters are seen as key elements of a regional planning strategy (see Fig. 2). Establishment of State of the Environment reporting at a regional scale is also being pursued.

⁴ Australian & New Zealand Environment & Conservation Council, 1996

FIGURE 1 **SOUTH-EASTERN AUSTRALIA ILLUSTRATING THE BIOGEOGRAPHICAL
REGIONS WITHIN WHICH THE ACT LIES**

**AA - AUSTRALIAN ALPS
HIGHLANDS**

**SEH - SOUTH EASTERN
HIGHLANDS**

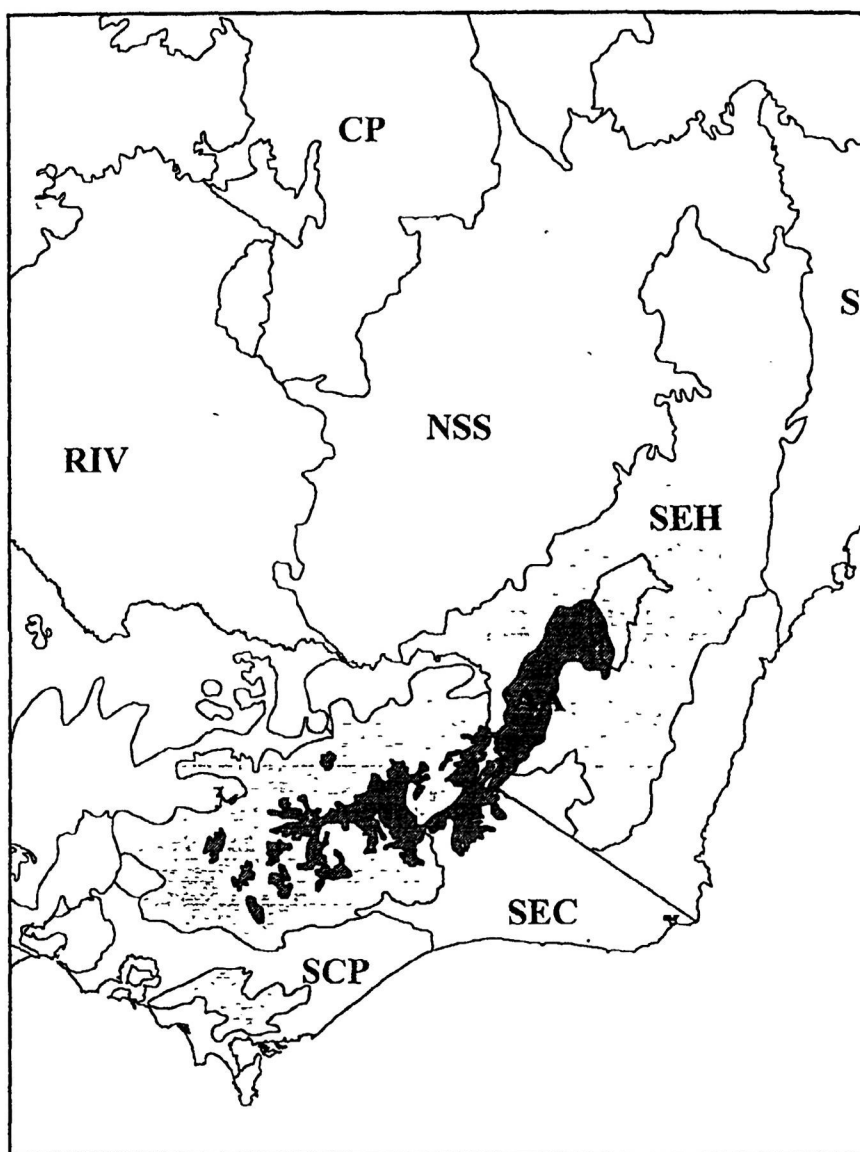
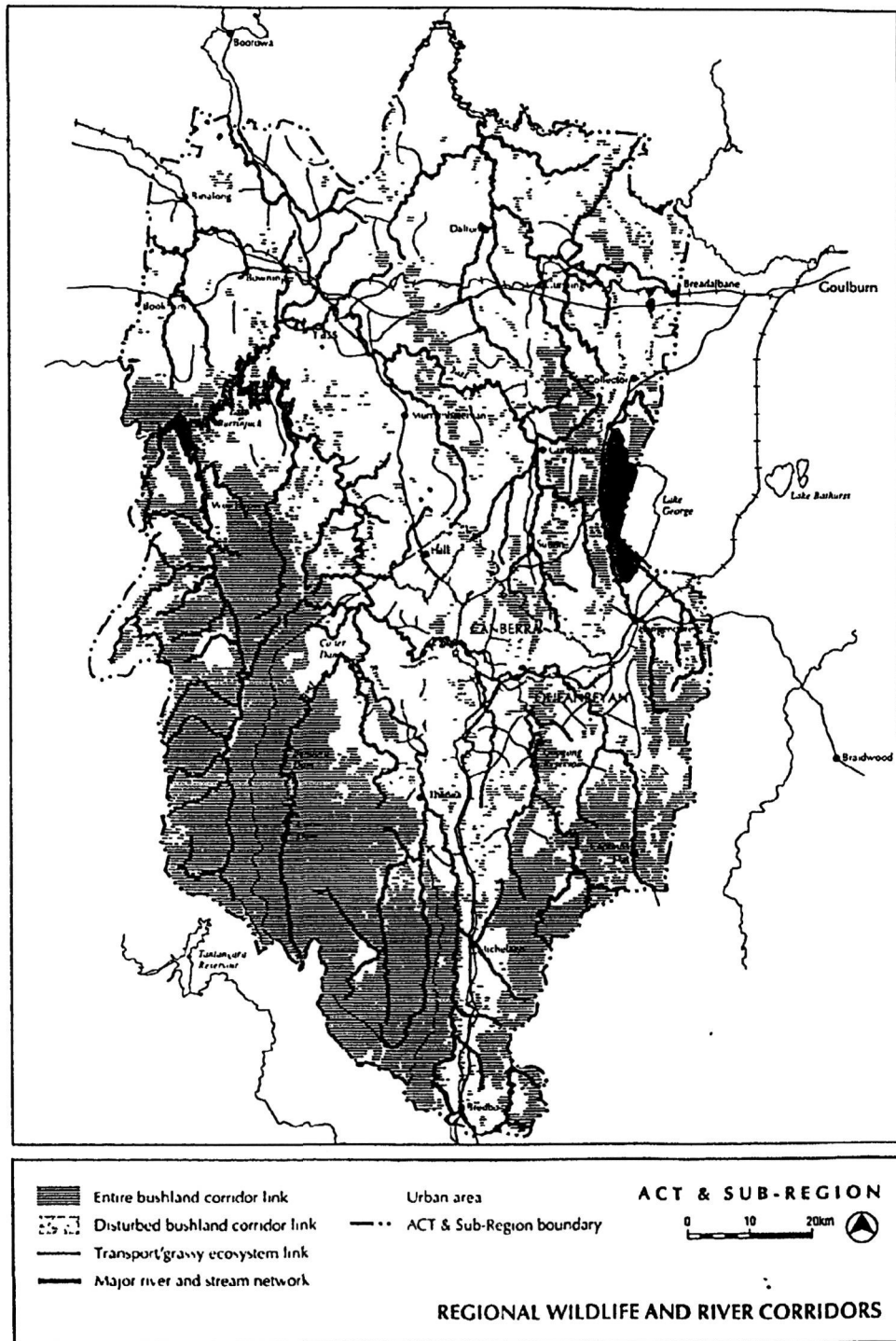


FIGURE 2 PRELIMINARY DELINEATION OF A NATURE CONSERVATION NETWORK FOR ACT AND SUB-REGION



IMPLEMENTATION STRATEGY - BIOREGIONAL PLANNING FOR BIODIVERSITY CONSERVATION

Objective	Action	Performance indicator/target
1 To establish and review conservation priorities in a bioregional context	<p>a) Continue to participate in NSW-ACT forums that have implications for biodiversity conservation</p> <p>b) Consider bioregional factors in policy development</p>	<p>(i) Active membership of regional government forums for land use planning maintained (e.g. Australian Capital Region Development Council, Upper Murrumbidgee Catchment Coordination Committee)</p> <p>(ii) ACT & region bushfire control groups have a coordinated approach to the identification & protection of nature conservation values</p> <p>(iii) Continued active membership & participation in Alps Memorandum of Understanding</p> <p>(iv) Functional liaison with regional & national nature conservation agencies & the Office of the Commissioner for the Environment is maintained, together with continuing active membership of relevant national networks & forums (e.g. ANZECC working groups)</p> <p>(v) NSW regional land use & planning policies accommodate ACT concerns</p> <p>(i) Biogeographical units (based on the Interim Biogeographical Regionalisation for Australia) are adopted as the basis for determining primary boundaries for conservation planning.</p> <p>(ii) Regional intergovernmental forums (e.g. Regional Leaders' Forum) consider bioregional implications of decisions</p> <p>(iii) ACT conservation issues integrated into regional conservation policies</p> <p>(iv) Territory Plan coordinates with cross-border zoning in land use planning</p> <p>(v) Administration of Nature Conservation Act uses regional criteria (e.g. licensing criteria, implementing Flora & Fauna Committee recommendations)</p> <p>(vi) Nature based tourism issues integrated into regional conservation policies</p>
2 To integrate an ACT 'nature conservation network' within a regional network of linked habitat corridors, native vegetation remnants and reserved areas	a) Prepare a master reference document as a planning tool & management guide based on work already done for the ACT & Sub-region Planning Strategy	<p>(i) Master plan prepared in consultation with regional authorities & endorsed at cross-government level</p> <p>(ii) Includes identification of network deficiencies & gaps, & special values which need particular planning & management attention</p> <p>(iii) Plan routinely used in relevant open space planning & management exercises & incorporated into GIS systems</p> <p>(iv) ACT nature conservation network incorporated into regional corridor network at a compatible scale</p>

2.2 CONSERVATION THROUGH RESERVATION

A system of protected areas is the core of any program that seeks to maintain the diversity of ecosystems, species and wild genetic resources.⁵

A system of protected areas (reserve system) is central to the conservation of biodiversity and natural ecological processes. The primary function of a reserve system is to sample biological diversity in a comprehensive, adequate and representative manner. Security of tenure and formal management objectives for nature conservation are fundamental.

In the ACT, extensive areas of land are reserved as Public Land with statutory management objectives for conservation of the natural environment (see Fig. 3). Their management forms the core of our biodiversity conservation effort. This is our *nature conservation estate* – it meets internationally agreed criteria for protected areas dedicated to conservation of biodiversity. In the more remote areas of Namadgi National Park, characteristics associated with relatively large natural areas subject to minimal disturbance confer wilderness qualities that warrant particular management recognition.

While the nature conservation estate is impressive in areal terms, it should not be assumed that the biological diversity of the ACT is comprehensively represented. Grassland and woodland ecosystems are poorly represented in the reserve system and riverine systems are also an area of concern. Habitat critical to the continued survival of some threatened species and communities occurs in these ecosystems and a special conservation effort is warranted.

There is a sound statutory framework in the ACT within which reserve planning and management must be undertaken. It is particularly relevant to deciding

- the range of land uses and activities that may be appropriate (that is, conservation objectives are not compromised), and
- the level of impact or change that is acceptable as a result of such land uses or activities (that is, the natural assets and the ecological processes with which they are inextricably linked are maintained for the long term).

It is a substantial challenge to ensure that conservation requirements are determined and satisfied, and that use of the resource is sustainable.

Plans of management play a crucial role in setting management guidelines and establishing criteria for issues resolution so that management objectives are pursued in an open, accountable and cost-effective way.

While accepting the variety of values, sensitivities and attractions that are inherent in our nature reserve system, it is important that the following principles are applied during the development and implementation of plans of management:

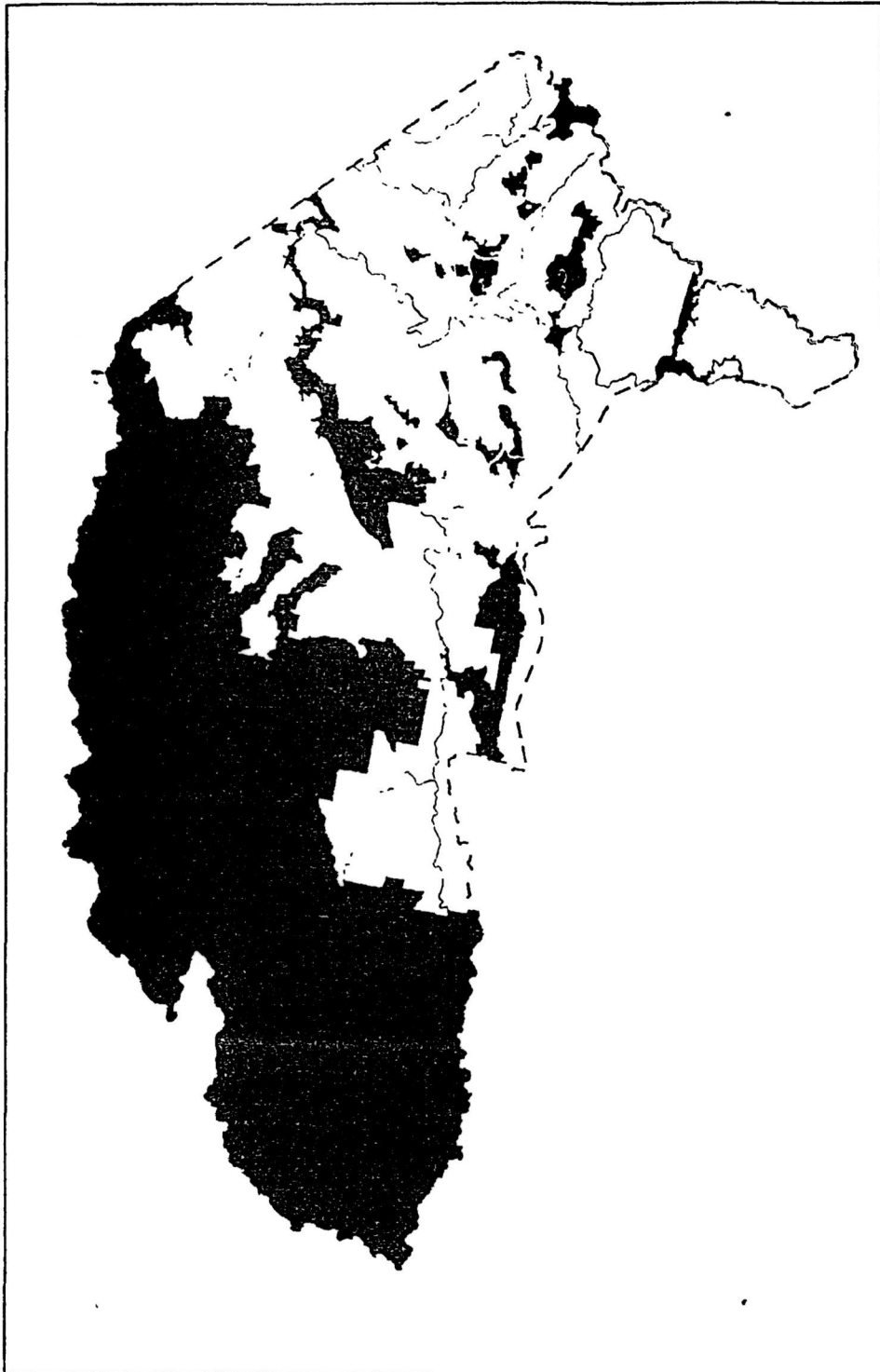
- Use of natural resources within the reserve system should be consistent with management objectives for their conservation. If uses are invasive or have a high level of impact, they should be able to demonstrate direct benefits to management for conservation and be managed to minimise impact.

⁵ IUCN, UNEP & WWF, 1992 *Caring for the earth A strategy for sustainable living* IUCN, Gland

'Restoration' of a natural area to a pre-existing condition following a high-impact activity is not a meaningful option

- **Management for conservation should always be at the fore of management policy with the conservation requirements of special, sensitive, threatened or otherwise significant assets receiving specific attention.**
- **Policy implementation processes should foster stakeholder involvement in an open and accountable way.**

FIGURE 3 **THE ACT NATURE CONSERVATION ESTATE**



IMPLEMENTATION STRATEGY - CONSERVATION THROUGH RESERVATION

Objective	Action	Performance indicator/target
<p>1. To manage the nature conservation estate to maintain the range of ecosystems present to the fullest possible extent consistent with natural processes and ecological dynamics</p>	<p>a) Identify sensitive or significant areas, determine conservation requirements & formulate management guidelines</p> <p>b) Ensure that management policies provide for adequate protection of biodiversity values, & that land & recreational uses are consistent with management objectives</p> <p>c) Maintain adequate management standards</p>	<p>(i) Ecological surveys of reserved areas are progressively undertaken</p> <p>(ii) Management requirements for sensitive or significant values are documented</p> <p>(i) Relevant management plans & policy development incorporate conservation requirements</p> <p>(ii) Management plans for public land are in place</p> <p>(iii) Implementation of management plans incorporates a review process and involves key stakeholders</p> <p>(i) Satisfactory benchmarking & best practice comparisons is maintained with other land management agencies.</p> <p>(ii) Continuing participation in the ANZECC-sponsored Benchmarking & Best Practice Program</p> <p>(iii) Monitoring components of management programs for natural assets indicates values managed for are being maintained (including enhancement of degraded values).</p>
<p>2 To incorporate within the nature reserve system viable samples of all ACT ecosystems</p>	<p>a) Complete ecological survey of the ACT</p> <p>b) Provide for Public Land designation of inadequately reserved examples</p>	<p>(i) Ecological survey program continuing in a systematic way</p> <p>(ii) Deficiencies and gaps in the reserve system are identified</p> <p>(i) Territory Plan amended to secure a representative reserve system from a regional perspective</p> <p>(ii) Alternative measures provided for conservation of ecosystems that cannot be adequately reserved</p>

2.3 OFF-RESERVE CONSERVATION OF BIODIVERSITY

Maintaining biological diversity is much more than just protecting wildlife and their habitats in nature conservation reserves. Ecologically sustainable management of all Australia's terrestrial and marine environments is essential.⁶

It is essential that the reserve system is complemented and supported by off-reserve conservation. By themselves reserves are unlikely to satisfy conservation requirements for all ecosystems or all species. Off-reserve conservation must aim to safeguard those species and communities not adequately reserved and link reserves and vegetation remnants with habitat corridors so that the landscape as a whole survives as a functional ecological unit. It must also accommodate free-ranging wildlife issues and adequately manage the environmental impacts of land development and use.

Rural lands contribute in a substantial way to the natural resources of the Territory. A strategic approach to ecologically sustainable land use involves collaboration in the identification and conservation of values present. Direct costs to the landholder may be involved and mechanisms that promote conservation and offset unreasonable costs to a lessee warrant investigation. Opportunities should be explored for linking Property Management Agreements with the land rent review process as a way of reviewing lessee performance, taking advantage of new knowledge about natural assets on the land and examining options for the provision of incentives. Where the Commonwealth is landholder, continued coordination to achieve conservation objectives is logical.

Ecologically sustainable development places a premium on conservation of biodiversity, and planning and management of an expanding city and its environs can contribute to the protection of ecological values by:

- providing for open space that protects those elements of the pre-Canberra landscape that are now poorly conserved;
- establishing and augmenting habitat links in landscape developments; and
- keeping environmental pressures emanating from the urban environment to a level that is consistent with maintenance of biodiversity.

Urban expansion implies an increase in human population numbers. While there is no doubt that the presence of a major and expanding city is the primary environmental threat to the ecological integrity of the ACT, there are complex and wide-ranging questions for the community to address that lie outside the scope of this document. Promotion of the principles of ecologically sustainable development and management of environmental impact is the approach taken.

In his 1995 State of the Environment Report, the ACT Commissioner for the Environment discusses some of the principles and issues involved, and the ACT Environment Advisory Committee proposes to investigate avenues for pursuing the subject.

Important nature conservation values occur in unleased land managed by a range of ACT and Commonwealth government agencies. Management priorities and

⁶ Australian & New Zealand Environment & Conservation Council, 1996

objectives are diverse and are not necessarily in accord with those of nature conservation. There is a continuing need for inter-agency liaison to ensure that potentially conflicting activities on unleased land recognise and take account of nature conservation requirements.

A nature conservation network will be developed as a planning and management approach to the identification and protection of the natural assets of the ACT in forms that enhance prospects for long-term viability and rationalise management costs. It will build upon work already done and allow a strategic approach to conservation effort where priorities and opportunities are identified at a scale that permits land use and development to proceed in an ecologically sustainable fashion. It will allow catchment or property-based activities to contribute effectively to the overall conservation of our natural resource heritage.

Management of free-ranging wildlife is an off-reserve conservation issue that must be rationally approached. A case-by-case basis using scientifically-based principles is necessary. Impact management needs to recognise community sensitivities about native animals, but more readily accommodate the implications of living in the 'bush capital'.

IMPLEMENTATION STRATEGY - OFF-RESERVE CONSERVATION

Objective	Action	Performance indicator/target
1 To integrate nature conservation into the management of leased rural lands as a fundamental tenet of both ecologically sustainable primary production and of conservation of the biodiversity of the ACT	<p>a) As part of a programmed ecological survey of the biological resources of the ACT, give priority to identification of nature conservation values on rural lands & the incorporation of their management requirements into land management programs</p> <p>b) Provide for Property Management Agreements to be subject to review in relation to both lessee performance & their nature conservation provisions</p> <p>c) Examine the options for an incentive scheme for the protection of native vegetation & wildlife habitat on rural leasehold land in the ACT</p>	<p>(i) Surveys commenced and continuing</p> <p>(ii) Management information progressively extracted for surveyed rural blocks & made available to landholders</p> <p>(iii) Land management practices reflect advice given</p> <p>(iv) Occupancy agreements incorporate nature conservation requirements as the opportunity arises</p> <p>(i) Policy development commenced</p> <p>(ii) Policy endorsed by Government</p> <p>(i) Incentive scheme proposal commenced, ANZECC and Commonwealth initiatives taken into account.</p> <p>(ii) Scheme receives Government endorsement.</p>

<p>2 To incorporate the conservation requirements of native species and ecological communities into planning for land development, with special consideration being given to those elements of our natural assets that are poorly conserved or sensitive to environmental change</p>	<p>a) Undertake comprehensive ecological surveys for all greenfields development as an integral part of the development planning process</p> <p>b) Develop Territory Plan fauna & flora guidelines, & apply to development assessments & land use proposals</p> <p>c) Provide for protection of biodiversity values that require special management</p>	<p>(i) Surveys programmed & undertaken with best practice contemporary standards applied & adequate lead time & resources</p> <p>(i) Flora & fauna guidelines finalised</p> <p>(ii) Conservation requirements for ecological values identified & thoroughly considered in environmental impact assessment processes</p> <p>(i) Land use planning & development decisions incorporate a range of protective mechanisms in accordance with ecologically sustainable development principles (e.g. reservation of public land, off-reserve management arrangements, infrastructure design to accommodate special requirements, offsetting of development options against conservation requirements).</p>
<p>3 To protect and augment off-reserve and urban nature conservation assets with special consideration being given to those remaining elements of the natural landscape that are poorly conserved or have special habitat values.</p>	<p>a) Develop a system for identifying & recording sites of ecological significance</p> <p>b) Develop a protective strategy for identified ecological assets</p>	<p>(i) Ecological assets data base established.</p> <p>(i) Policy documents (e.g. Territory Plan, management plans for Public Land) & land occupancy conditions (e.g. management agreements, lease conditions) provide for conservation of specified natural assets</p> <p>(ii) Protective measures applied through appropriate administrative & operational measures (e.g. landholders advised of conservation requirements, statutory protection measures applied)</p>

<p>4 To identify the ecological values of natural assets in road easements and other unleased land where conflicting management objectives may place values at risk, and coordinate management for their conservation</p>	<p>a) Identify ecological values in unleased land & introduce appropriate management practices or modification of existing inappropriate practices.</p> <p>b) Establish a system for identifying & protecting roadside ecological values</p> <p>c) Continue or develop programs for research into & promotion of the use of native species in both public & private landscaping projects, including the use of local genetic material</p>	<p>(i) Liaison network established between relevant agencies, interest groups & Environment ACT.</p> <p>(ii) Increased coordination of management of unleased land results in decrease in unnecessary loss or degradation of natural assets.</p> <p>(i) Specific roadside conservation network established between stakeholders to provide a coordinated approach to the identification & conservation of natural values in road easements.</p> <p>(ii) Ecological assets data base feeds into liaison/coordination functions</p> <p>(iii) Community groups participate in roadside conservation programs.</p> <p>(iv) Roadside marker system in place.</p> <p>(i) Landscape planning & contract administration favours use of local native species where possible</p> <p>(ii) Community tree planting programs continue to be supported, emphasis on local propagative material</p>
<p>5 To ensure that ACT biodiversity values in Commonwealth land are identified and protected</p>	<p>a) Establish good lines of communication for each area of concern</p> <p>b) Incorporate conservation requirements into land management programs</p>	<p>(i) Administrative line of communication established for each area</p> <p>(ii) On-site action officer liaison established and maintained</p> <p>(iii) Clear understanding between parties of the authority underlying decisions & directions.</p> <p>(i) Identification & protection of nature conservation values on Commonwealth land is consistent with ACT-wide priorities and programs.</p>
<p>6 To develop a nature conservation network linking protected areas, habitat corridors and significant vegetation remnants</p>	<p>a) Prepare a master reference document as a planning tool & management guide</p>	<p>(i) Master plan prepared based on ecological survey data and work already done for the ACT & Sub-region Planning Strategy.</p> <p>(ii) Includes identification of network deficiencies & gaps, & special values which need particular planning & management attention</p> <p>(iii) Plan routinely used in relevant open space planning & management exercises & incorporated into GIS systems</p>
<p>7 To manage the Eastern Grey Kangaroo population so that conservation requirements are satisfactorily integrated with other management issues</p>	<p>a) Develop and implement an integrated strategy for kangaroo management</p>	<p>(i) Kangaroo Advisory Committee progressively develops plans for kangaroo management across the ACT</p> <p>(ii) Management policy based on Committee advice is finalised</p> <p>(iii) Scientifically-based kangaroo management programs in place</p>

2.4 CONSERVATION OF THREATENED SPECIES AND COMMUNITIES

To all societies committed to a sustainable natural resource base, an adaptive human culture, and a commonwealth of human dignity for their citizens, the task of restoring species and communities threatened with extinction is a central challenge.⁷

Biological diversity is the classical sustainable resource; given care, it can be used and enjoyed and can maintain itself through time. Conversely, however, the loss of component parts of our biological diversity is absolute – once a species is extinct, it cannot be recreated.

Most Australian native species and ecological communities do not occur in other countries and we have a special responsibility to conserve them. All Australian governments have acknowledged the importance of conserving threatened species in the InterGovernmental Agreement on the Environment and a national strategy for the conservation of Australian species and ecological communities threatened with extinction is nearing completion. The principles and strategies agreed are reflected in this document.

Conservation of biological resources in their natural state requires an ecosystem approach based on information on biology and ecological processes and the effects of prevailing or forecast environmental influences – information that typically is incomplete. However, planning and management decisions still need to be made and, in recognition that with biological systems the wrong decision can have serious and permanent repercussions, a precautionary approach is warranted. This is the *Precautionary Principle*. It is concerned with decision-making under scientific uncertainty and goes beyond the aim of conventional environmental policy that seeks to prevent damage to the environment once the risk of that damage is known or proved. The Precautionary Principle is particularly relevant to living things and their interactions with their environment – resources that lack substitutes and about which we know least.

Since it commenced operating in 1995, the ACT Flora and Fauna Committee has been a source of expert advice to the Minister for the Environment, Land and Planning on the conservation status of ACT plants and animals. Species or ecological communities that are threatened with extinction may be formally declared and the Conservator is then required to prepare an Action Plan to provide for their conservation requirements. As of 1 June 1997, nineteen species and two communities have been formally recognised by declaration as being threatened with extinction.

The conservation status of ACT species and ecological communities is determined in a regional context to avoid undue local bias. However, as management authority only applies to the ACT, the Action Plan process must focus on meeting the conservation requirements of a declared species or community directly at a local level, and indirectly at a regional level through liaison and coordination.

A strategic approach to the conservation of our biodiversity needs to include two core objectives. Firstly, the conservation requirements of species and ecological

⁷ Clark, T W, 1996 'Appraising threatened species recovery efforts: Practical recommendations' In Stephens, S., & Maxwell, S., (eds) *Back from the brink: Refining the threatened species recovery process* Surrey Beatty & Sons, Chipping Norton

communities that are threatened with extinction must be addressed as a matter of priority, with a view to their conservation status being improved to such a degree that they are no longer subject to threat of premature extinction. Secondly, the conservation requirements of more secure elements of our biodiversity need to be satisfied so that their status does not decline to one of threatened with extinction. Implementation proposals are directed at both these objectives. Biodiversity monitoring implications are discussed at Chapter 2.5.

IMPLEMENTATION STRATEGY - CONSERVATION OF THREATENED SPECIES AND ECOLOGICAL COMMUNITIES

Objective	Action	Performance indicator/target
1 To enable species and communities that are threatened with extinction to survive and thrive in their natural habitats	<p>a) Develop & implement Action Plans for declared species & communities</p> <p>b) Maintain a regional perspective to development & implementation of conservation strategies</p> <p>c) Provide for conservation requirements of threatened species & communities in land use planning & development decisions, & land occupancy arrangements (e.g. leases)</p>	<p>(i) Action Plans prepared in a timely fashion following declaration.</p> <p>(ii) Implementation requirements satisfied</p> <p>(i) Declarations of threatened species & ecological communities are based on their bioregional conservation status</p> <p>(ii) Active membership of relevant networks & working groups that address regional land management & nature conservation issues in order to maximise coordinated application of best practice methodology</p> <p>(iii) Action Plans address regional conservation issues</p> <p>(iv) Close government liaison with community groups undertaking regional studies</p> <p>(v) Active participation in national recovery teams & associated development of recovery plans for species that occur locally</p> <p>(i) Flora & fauna guidelines to the Territory Plan are finalised & incorporate critical habitat criteria</p> <p>(ii) Administrative & statutory avenues for protection of critical habitat applied to occupied land (e.g. landholder extension services, Property Management Agreements in rural leases, management agreements with service authorities, Conservator's authority to give directions, entry in the Heritage Places Register)</p> <p>(iii) Satisfactory collaboration with the Commonwealth in implementing conservation measures on Commonwealth land</p>

<p>2 To prevent additional species and ecological communities from becoming threatened</p>	<p>a) Monitor key ecological threats & provide an effective management response in areas of concern</p> <p>b) Identify species and communities at risk & monitor their condition</p> <p>c) Include information on threatened species & communities, & ecologically threatening processes in information & education programs</p>	<p>(i) The proposed ACT biodiversity monitoring program incorporates key ecological threats as a continuing component.</p> <p>(ii) Emerging or increasing threats have timely & relevant administrative, scientific & operational management responses applied (e.g. Flora & Fauna Committee assesses the ecological significance of a potentially threatening process)</p> <p>(iii) State of the Environment report does not identify new or increasing ecological threats</p> <p>(i) Conservation status included in ecological survey assessment</p> <p>(ii) Monitoring program addresses species and communities of concern</p> <p>(iii) Nominations to Flora & Fauna Committee of species and communities at risk</p> <p>(i) Specific material produced for incorporation into community programs & targeted information outlets</p>
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2.5 MONITORING OUR BIODIVERSITY

Over time, all natural systems undergo change. Overlaid on that natural change are the changes wrought by human activity. The current global concern...is that the rate of change in biodiversity due to human activity is at an unprecedented high level, and is unsustainable.⁸

Just as it is important to know the standing and extent of our financial or business assets – so that management decisions in response to economic trends and market influences can be made – so too must we know what is happening to our natural assets if we are to manage them in a way that will be sustainable. Three fundamental and complementary approaches are required.

First, we have to know what is the present state of our assets (our biodiversity). This is inventory work – surveying and identifying species and communities, and documenting their abundance and distribution and any evidence of threatening processes at work. An ecological survey program is discussed at Chapter 2.2.

The second is to monitor changes over time, recording patterns of change or indications of stability. By providing signals about the state of a system, the results of monitoring allow management options to be evaluated.

Understanding the cause of change is the third essential component for sustainable management of biodiversity. Successful intervention by management requires a sound appreciation of the causes of any changes observed by the monitoring process. Such knowledge derives from scientific research, addressing phenomena occurring over a range of time scales.

The role of biodiversity monitoring is to provide a measure of the condition of the assets being managed and how they are changing in response to natural processes and to pressures from use, management practices and other influences. Monitoring should meet the need for increased information about these resources and the effects of management actions on them. It should improve our knowledge base and lead to gradual improvements in management. In the ACT context, regional cooperation in the gathering and management of resource information is important to the assessment process.

Processes that change biodiversity operate over a range of time frames. Some, such as urban land development or vegetation clearing for agriculture, bring about rapid change. Others such as climate change, weed infestation or natural succession act slowly over years, decades or longer. To be useful, monitoring must provide long-term records of the status of various ecosystem components and facilitate measurement of the *direction* and *rate* of change.

A well designed record-keeping system is an essential component of any successful monitoring program. Data from such disparate sources as meteorological equipment, information on disturbance events, photographs, and biological monitoring need to be collected together and maintained in an accessible form, ready to be analysed.

Ready access to a well-managed reference collection of ACT biological material is an important aid to managers of natural resources, members of the community

⁸ Redhead, T, Mummery, J & Kenchington, R, 1994

who seek specific knowledge or are involved in management programs, and scientific researchers. Their needs differ and not all these needs are met satisfactorily. The goal is to have an identifiable collection of ACT reference material that:

- is reasonably and generally accessible by members of the ACT community; and
- is curated in a way that accommodates ACT Government needs for access to and management of local specimens and data.

Information also needs to be presented in various forms to satisfy a range of reporting needs. Monitoring activities need to be developed within a coherent framework that is consistent with existing and planned reporting activities, and that meets scientific, public policy and environmental management goals. Effective State of the Environment reporting is particularly dependent on monitoring information being available in a consistent and reliable form.

Biodiversity monitoring in the ACT has tended to be *ad hoc* and short term. Long term data is not available for many areas of interest. Consequently, we are unable to reliably assess the condition of much of our natural assets or report with confidence on environmental trends or management effectiveness. A biodiversity monitoring program will be developed.

IMPLEMENTATION STRATEGY - MONITORING OUR BIODIVERSITY

Objective	Action	Performance indicator/target
1 To establish a monitoring system to record information on changes in the ACT's ecological communities and habitats	a) Map the vegetation of the ACT b) Establish a series of long-term sampling sites in key & representative habitat types c) Establish monitoring programs for selected species, faunal groups & ecological communities d) Maintain flora & fauna data bases including a geographic information system e) Examine options for a reference collection of ACT flora & fauna	(i) Vegetation mapping completed & recorded; monitoring program developed (i) Monitoring program designed; site selection criteria developed, sampling sites established (ii) Monitoring program implemented (i) Selection criteria developed (based on factors such as conservation status, environmental threats, indicator properties or management regimes) (ii) Monitoring programs in place (i) Data base & GIS management systems in place & regularly updated (ii) Benchmarking indicates data curation & custodianship established to acceptable scientific standards (iii) Information analysed & used in related decision-making processes Whole-of-government approach to use of common data (i) Operating principles developed & agreed (ii) Existing ACT Government collections curated & developed to endorsed program standards (iii) Collaborative arrangements established in relation to access and management of material held by other ACT institutions

3. MANAGEMENT OF ECOLOGICAL THREATS

3.1 MANAGEMENT OF PEST ANIMALS

Introduced species exert a major pressure on biodiversity. They have direct effects as competitors, predators, parasites or diseases of native wildlife, or cause habitat degeneration, often to the detriment of those species.⁹ When established in the wild as an environmental pest, introduced species present particular management challenges.

Pest animals established in the wild become integrated into the ecosystem which they occupy. As a consequence, control action may have implications for other organisms. Pest management needs to be based on a knowledge of the animal's ecology with a focus on cost-effective damage control (rather than maximising numbers killed). This requires an understanding of the factors that regulate pest populations and the effect that reducing pest densities has on levels of damage.

The investment required for a pest animal control program is usually substantial. It is important that the benefits achieved in a control campaign be maintained over time by a continuing commitment to the program objectives. This is particularly the case for conservation of biodiversity values where short-term economic benefits are unlikely to be a relevant consideration. Eradication of a pest animal is rarely possible and control efforts need to be in proportion to impact reduction benefits. Anticipation and early detection of problems are key elements of a cost-effective pest management strategy.

The opportunity to take advantage of the ACT's relative isolation from other main centres, by controlling the introduction of potential pest species, should not be ignored. This is particularly relevant considering our geographical relationship with the upper reaches of the Murrumbidgee catchment and the Australian Alps. We have a special responsibility to manage threats to biodiversity that have potential to impact upon these environments.

In order to manage environmental pest animal impact over time in a cost-effective way, a strategic approach to planning, managing and evaluating control programs is essential. It needs to be soundly based in coordinated impact management programs that are developed in a structured and professional way to achieve measurable outcomes of enduring ecological benefit. Characteristics of such an approach include an assessment of the ecological significance of the problem being considered and early involvement of key stakeholders. Development of a vertebrate pest animal management strategy, to complement the ACT Weeds Strategy, will be undertaken.

⁹ State of the Environment Advisory Council, 1996

IMPLEMENTATION STRATEGY - MANAGEMENT OF PEST ANIMALS

Objective	Action	Performance indicator/target
<p>1. To adopt a strategic approach to management of pest animals in the natural environment based on the principles of cost-effective impact management and best practice benchmarking</p>	<p>a) Develop a vertebrate pest animal management strategy for the ACT that will provide a framework for continuing policy refinement & its cost-effective application in a timeframe that will achieve enduring benefits</p> <p>b) Implement vertebrate pest animal strategy</p> <p>c) Adopt a regional perspective to identifying management controls (including import prohibition) for species with pest potential</p> <p>d) Manage the impact of existing vertebrate pests</p>	<p>(i) Vertebrate pest strategy principles & objectives are established</p> <p>(ii) All relevant stakeholder interests & issues are identified.</p> <p>(iii) Strategy is developed & adopted</p> <p>(i) Monitoring indicates sustained pest impact reduction</p> <p>(i) Statutory lists of animals subject to control reviewed in relation to regional status</p> <p>(ii) Licence administration incorporates stringent assessment of applications involving species with existing or potential environmental pest impact</p> <p>(iii) Regional liaison/consultation mechanisms established</p> <p>(iv) Coordinated regional programs in place</p> <p>(i) Control programs are continued in a coordinated way, ensuring that resources are used strategically for sustained benefits</p> <p>(ii) Survey & monitoring of animal pests routinely incorporated into management programs</p> <p>(iii) Links maintained with (& augmented as necessary) national pest control information programs.</p>

3.2 MANAGEMENT OF ENVIRONMENTAL WEEDS

By competition for limited resources and initiation of environmental chain reactions, introduced species reduce native plant and animal diversity and modify the landscape.¹⁰

Environmental weeds are plants that invade (or are capable of invading) natural ecosystems. Weed invasion has been identified as a principle cause of decline in native flora. It also can have a range of effects on the survival prospects of fauna by altering the availability of food, nest sites, cover and protection from predators.

The options available for weed control in areas managed for conservation of biodiversity are fewer than those in agro-ecosystems due to their complex structural and floristic compositions. Use of techniques such as broad-acre application of weedicides is generally precluded. Prevention and early intervention are the most cost-effective techniques that can be deployed.

Preventative measures include controlling the movement, propagation and sale of selected environmental weed species and minimising disturbance to natural environments. Managed buffer zones may have application where sources of infestation are concentrated. Reducing infestation to levels that are ecologically acceptable requires the integrated application of a range of control methods and the rehabilitation of treated sites.

Up to 40% of plant species found growing wild in the ACT are exotic. Over 500 naturalised exotic species are recognised and at least one third of these could become serious environmental weeds. While only a few of these species have been formally recognised as weeds of concern, there is a larger group of invasive (but currently restricted in range) species in bushland adjoining Canberra, along river corridors and in grassland areas. In addition to the substantial threat posed by major weed species such as Serrated Tussock, African Lovegrass and St John's Wort, the combined effect of many other invasive plants may prove to be similarly significant. The ACT has been fortunate to date that aquatic species, that make up some of Australia's worst environmental weeds, have not become established here.

The ACT Weeds Strategy creates a framework for a Territory-wide approach to weed control within a regional context. Implementation of the ACT Weeds Strategy will be the primary vehicle for achieving environmental weed management goals.

The focus for environmental weed management will be directed at preventing the development of new weed problems, reducing the impact of existing weed problems and coordinated action on weed management. Areas requiring increased attention include:

- the importation and movement of potential sources of environmental weeds (for example, imported landscaping material and transport of infected equipment between catchments);
- minimising disturbance to natural areas (to inhibit establishment of weeds); and

¹⁰ Humphries, S E, Groves, R H & Mitchell, D S, 1991

- fostering increased community appreciation of the threats posed by environmental weeds.

Priorities and techniques for these on-ground actions need to be guided by developments in research-based knowledge on the ecology of environmental weeds. Their interactions with the environment (for example, mechanisms of establishment and spread) may have particular implications for management in natural areas

IMPLEMENTATION STRATEGY - MANAGEMENT OF ENVIRONMENTAL WEEDS

Objective	Action	Performance indicator/target
<p>1 To control the introduction and spread of environmental weeds and manage the artificial spread of native species outside their historically natural range</p>	<p>a) Survey & monitor existing environmental weed infestations as an aid to determining management priorities & assessing management effectiveness</p> <p>b) When elimination or control is feasible, implement programs to destroy or control wild populations of environmental weeds</p> <p>c) Ensure that resources are used strategically to contain the spread of environmental weeds & to minimise their impact on native species</p> <p>d) Manage the importation, keeping, propagation & trade in environmental weeds in order to prevent the establishment of wild populations</p> <p>e) Reduce the potential for the establishment of environmental weeds by ensuring that physical disturbance & other alterations to the environment in natural areas are kept to a minimum</p> <p>f) Identify native species of concern & implement management measures in accordance with priorities and protocols determined by the Weeds Strategy</p>	<p>(i) Work program design incorporates monitoring & reporting of environmental weeds.</p> <p>(i) Management measures applied in accordance with Weeds Strategy. Priority species or areas are treated accordingly.</p> <p>(ii) Weed ecology research results incorporated into assessment process.</p> <p>(i) Weeds Strategy implemented.</p> <p>(ii) Work programs coordinated in accordance with Weeds Strategy</p> <p>(iii) Collaboration between land management agencies & community programs (such as Landcare and Parkcare) is maximised.</p> <p>(i) Interagency liaison maintained both regionally & nationally to identify actual or potentially weedy species at an early stage.</p> <p>(ii) Reviewed statutory lists of plants subject to control under Nature Conservation Act.</p> <p>(iii) Industry & wider community education and information programs address environmental weed issues</p> <p>(iv) Surveillance, law enforcement & advisory services target areas of concern</p> <p>(i) Work program design, equipment used & field operative techniques reviewed (on a regular basis) to minimise unnecessary disturbance</p> <p>(ii) Liaison within government land management & development agencies with a view to coordinated appreciation of issues involved (e.g. coordination of trenching activities)</p> <p>(iii) Community education and information programs target relevant groups or areas of activity</p> <p>(iv) Techniques used by community groups (e.g. Landcare, Parkcare) involved in weed management programs incorporate minimum disturbance principles</p> <p>(i) Non-local native species that are identified as having significant actual or potential impact on nature conservation values are incorporated into environmental weed management program</p>

3.3 MANAGEMENT OF CHANGED FIRE REGIMES

Much of our native flora and fauna has evolved with fire as a natural environmental factor and some species rely upon particular fire regimes for continued survival. With settlement, however, the timing, frequency and intensity of these fires have changed.¹¹

Just as species can have particular requirements in regard to the physical aspects of their habitat, so too can they have particular requirements in regard to frequency, intensity and timing of bushfires – a fire regime.

Particular fire regimes can favour some plant and animal species (including invasive species) to the detriment of other species. The size and pattern of areas burnt is also an important factor, particularly in habitat that is fragmented as a result of development. Fire regimes are not determined by a single fire, but rather sequences of fires (including lack of fires) in an area.

If the role of fire in the processes that form and maintain our natural environment is to be maintained, imposition of prescribed fire regimes is indicated. Fire is also one of the few factors controlling long-term patterns in natural communities that land managers can influence. These considerations need to be balanced against other factors that include protection of life and property, significant resource implications, and inadequate knowledge of many of the ecological relationships and processes involved. The influence of foreseeable but unpredictable wildfires also needs to be accommodated.

Few examples exist of a comprehensive imposed broadacre nature conservation fire regime. In south-eastern Australia they are, in practice, likely to remain largely confined to special purpose habitat manipulation or protection exercises, or relatively small, discrete management areas.

Wildfire will be the major influence in terms of area and it is important that fire control and fuel management measures take account of nature conservation considerations. In this context, the ecological implications of fire fuel management are recognised in the draft ACT Bushfire Fuel Management Plan. Maintenance of biodiversity and natural processes is identified as a management objective. The Bushfire Fuel Management Plan will be an important medium for incorporating ecological considerations into fire and fuel management policies and actions.

Key prerequisites to the success of fire control and fuel management as a conservation tool are

- an effective fire recording system,
- associated monitoring of ecological outcomes; and
- systems for linking research to management that allow fire regimes to be assessed and modified in the light of experience and gains in knowledge.

¹¹ Australian and New Zealand Environment and Conservation Council (1996)

IMPLEMENTATION STRATEGY - MANAGEMENT RESPONSE TO CHANGED FIRE REGIMES

Objective	Action	Performance indicator/target
<p>1 To integrate ecological criteria into fire and fuel management</p>	<p>a) Assess the ecological effects of fires in areas with natural values</p> <p>b) Ensure that fire management objectives & practices for natural areas address ecological factors</p> <p>c) Fire control activities accommodate nature conservation priorities.</p>	<p>(i) Details of all fire occurrences recorded</p> <p>(ii) Program of assessment and reporting of ecological effects in place</p> <p>(iii) GIS fire history data record established and maintained</p> <p>(i) Ecological consequences of fuel reduction programs considered during both planning & review of the ACT Bushfire Fuel Management Plan.</p> <p>(ii) Action Plans for threatened species & communities identify fire related conservation factors.</p> <p>(iii) Fuel management options at the urban edge of natural areas (where protection of life and property may be the priority concern) include prescribed burning where particular ecological benefits can be realised (e.g. implementation of a threatened species Action Plan)</p> <p>(i) Training and information provided to fire control authorities/personnel include alternative control techniques for protection of nature conservation values</p>
<p>2 To increase the knowledge base for use and role of fire for conservation of biodiversity and maintenance of ecological processes</p>	<p>a) Continue research into the ecological role of fire</p>	<p>(i) Active links maintained with research institutions & nature conservation agencies</p> <p>(ii) Collaborative field trials supported</p> <p>(iii) New information incorporated into management policies & practices</p> <p>(iv) Two areas of importance receive particular focus</p> <ul style="list-style-type: none"> • use of fire to achieve preferred conservation results (e.g. weed control in natural areas); • determination of preferred fire regimes to maintain the values of nature conservation assets.

3.4 MANAGEMENT OF DEGRADATION OF AQUATIC SYSTEMS

Many of the benefits Australian's obtain from aquatic ecosystems can only be obtained if the ecosystems themselves are protected from degradation.¹²

Canberra is Australia's largest inland city. It lies entirely within the Murrumbidgee River catchment. Our potential for significant deleterious impact on aquatic systems that in many cases are already degraded is considerable, and preventing this happening is a community responsibility shared by us all.

Freshwater aquatic ecosystems include rivers, streams, lakes, impoundments, bogs, swamps and other wetlands, and their terrestrial (riparian) setting. In the ACT, the following environmental pressures need to be managed to minimise environmental threats to the biodiversity values of our natural assets.

Water management schemes such as impoundments (from farm dams to major water storages), stream crossings and flood mitigation devices change habitat directly and alter seasonal flow and hydraulic characteristics of a stream. They impose an artificial environment which can result in changes in plant and animal populations. When stream flows are intercepted or impounded, it is important to determine and allow for 'environmental flows' that sustain the health and viability of downstream ecological systems. Environmental flow guidelines are being developed for ACT lakes and streams. They are directly applicable to management of water storage systems in the ACT and also provide a basis for a regional approach to management of flows in the Molonglo, Queanbeyan and Murrumbidgee Rivers.

Streamside vegetation buffers nutrient and sediment movement, stabilises river banks, and contributes directly to aquatic and terrestrial ecosystems by providing food, shelter and breeding sites. Its loss or modification can place undue stress on natural values and measures for the maintenance and enhancement of riparian vegetation will be strengthened.

Pollution of our waterways is insidious, entering at point sources from urban and industrial areas or more diffusely at a catchment scale. Modification of inappropriate land management practices, application of the highest standards to waste water management and fostering an aware and responsible community are corrective mechanisms to be pursued.

Introduced aquatic species are extremely difficult, if not impossible, to control once established in the wild. The impact of introduced fish on native populations includes competition for food and habitat, predation, hybridisation and the introduction of disease. Introduced plants alter riparian vegetation and stream morphology, and aquatic species can have devastating impact. So far the ACT has managed to control establishment of significant aquatic weeds, but terrestrial species such as willow and blackberry are significant riparian invaders.

Excessive exploitation of aquatic resources at the expense of ecological values is always a possibility, especially where economic benefits may accrue. Extraction of water and sediment, taking or harvesting of plants and animals, waste disposal, and recreational pursuits are the main uses that need to be managed to sustain

¹² Australian and New Zealand Environment and Conservation Council (1992)

values present. Management of exploitative processes can be approached by a combination of increased community awareness of issues arising, the development of guidelines and standards that adequately reflect biodiversity conservation requirements, and vigilance in the monitoring and surveillance of activities of concern

IMPLEMENTATION STRATEGY - MANAGEMENT OF DEGRADATION OF AQUATIC SYSTEMS

Objective	Action	Performance indicator/target
1 To manage ACT lakes, streams and wetlands so that environmental flow requirements are maintained and nature conservation requirements receive adequate consideration in water and catchment management programs	<p>a) Develop & implement quantitative environmental flow guidelines</p> <p>b) Establish effective liaison mechanism between landholders & agencies responsible for water & catchment management.</p> <p>c) Minimise artificial impediments to fish passage in streams & the downstream impact of modified waterways</p>	<p>(i) Guidelines finalised</p> <p>(ii) Environmental flows in ACT waterways, as assessed against ACT environmental flow guidelines, are adequate for the maintenance of aquatic biodiversity values</p> <p>(iii) New impoundments or other water management schemes incorporate optimal flow management provisions</p> <p>(i) Stakeholder working party established to address common issues</p> <p>(ii) Regional catchment & water management forums have a coordinated cross-sectoral approach to common downstream environmental issues</p> <p>(iii) Ecologically sustainable land management progressed in terms of aquatic implications (e.g. control of sediment & nutrient sources at a catchment scale, protection of riparian vegetation, management of extractive activities).</p> <p>(i) Design briefs for stream crossings & other potential barriers include requirements that fish passage requirements are accommodated</p> <p>Stormwater drain design minimises downstream impact of concentrated flows.</p>
2 To manage urban and industrial sources of pollution so that the biodiversity values of freshwater aquatic ecosystems remain within natural limits	<p>a) Monitor pollution sources & water treatment effectiveness</p> <p>b) Ensure that pollution management & water treatment programs are undertaken to best practice standards</p>	<p>(i) Water & sewage management agencies have effective monitoring programs in place to ensure compliance.</p> <p>(i) Water quality in ACT waterways, as assessed against ACT Water Quality Guidelines, is adequate to ensure the maintenance of biodiversity values</p>

<p>3 To ensure that aquatic and terrestrial nature conservation values of native riparian vegetation are protected and enhanced where necessary</p>	<p>a) Control livestock access to permanent streams</p> <p>b) Land use conditions for rural land will specifically address conservation & rehabilitation of native riparian vegetation</p> <p>c) Conserve and rehabilitate native riparian vegetation on plantations, public land & other unleased land</p> <p>d) Promote rehabilitation of riparian vegetation & monitoring of aquatic responses in community programs (c g Waterwatch, Parkcare, Landcare, Fisheries Action Program)</p>	<p>(i) Permanent streams in rural lands fenced out or otherwise separated from unrestricted stock access</p> <p>(i) Conservation requirements for riparian vegetation in rural leases satisfactorily provided for in occupancy arrangements (c g. Property Management Agreements for rural leases).</p> <p>(i) Management plans, codes of practice & other relevant policies specifically address conservation & rehabilitation of native riparian vegetation</p> <p>(ii) Best practice management applied to implement policy</p> <p>(i) Combined aquatic & terrestrial rehabilitation programs with monitoring component supported in grants programs</p>
<p>4 To protect native aquatic fauna from over-exploitation and to ensure that introduced species do not put native populations at risk</p>	<p>a) Protect native aquatic fauna in fishery management programs.</p> <p>b) Minimise risk to native populations in recreational fish stocking program</p> <p>c) Manage importation, sale & keeping of non-local species to reduce risk of pest & disease introduction to the wild</p>	<p>(i) Threatened species identified & protection provided</p> <p>(ii) Fishing controls for native species directed at a sustainable fishery</p> <p>(i) Exotic species not introduced to new areas</p> <p>(ii) Fish stocking policy in place</p> <p>(iii) Regular monitoring program demonstrates little or acceptable change in native fish populations</p> <p>(i) Licence administration incorporates stringent assessment of applications involving species with existing or potential environmental pest impact (as per pest animal chapter)</p> <p>(ii) Random inspections of fish dealers indicate reduced breach of importation & fish handling controls</p> <p>(iii) Statutory lists of species subject to control because of pest potential reviewed on a regular basis.</p> <p>(iv) Community education & information programs address aquarium management & fish introduction issues.</p> <p>(v) Recreational fishing community reports decreased incidence of illegal release of fish.</p>

3.5 MANAGEMENT OF DECLINE AND LOSS OF NATIVE VEGETATION

The clearing of natural habitat and the fragmentation of previously large and connected areas of natural habitat is the most significant threat to biodiversity at present and into the future.¹³

The loss and fragmentation of natural ecosystems has been the greatest cause of biotic erosion in Australia. As land clearing proceeds, the uncleared areas become fragmented vegetation remnants that invariably have special conservation values in addition to their other recognised benefits – such as contributing to landscape amenity and land productivity. The conservation requirements of remnant vegetation are an essential aspect of ecologically sustainable land use that need to be integrated into ongoing management.

If remnant vegetation is to be conserved in an intact condition, it needs to be adequately protected and managed. The primary conservation tools are revegetation, natural regeneration and management of threats such as weed invasion and soil disturbance and further clearing. Where possible, patches of remnant vegetation should be allowed to remain linked by corridors of native vegetation such as those along roadsides, railway lines, watercourses, and farm shade and shelter belts. Rehabilitation programs to augment existing values are often involved. An appreciation of conservation values present (through assessment of the environmental consequences of proposed activities) and continued vigilance are important protective strategies.

In the ACT, fragmentation of native vegetation has occurred in areas used for agriculture and pastoralism, through urban development and associated infrastructure, and pine plantation establishment. Vegetation has been modified by timber harvesting, fuel reduction burning and the invasion or introduction of alien plants and animals.

Outside the nature reserve system, important vegetation remnants occur in rural lands, undeveloped land associated with the ACT's softwood plantation industry and to a lesser extent in urban areas (for example, undeveloped land in transport corridors and the grounds of some institutional complexes and urban parks).

While there is no statutory control specific to clearing of native vegetation outside the reserve system, the *Nature Conservation Act 1980* contains a number of relevant provisions where protection can be provided for special nature conservation values (such as the habitat of a species threatened with extinction). Where clearing affects the conservation requirements of a place entered in the Heritage Places Register, controls become applicable under provisions of the *Land (Planning and Environment) Act 1991*. Sometimes there is the opportunity to include clearance controls in land occupancy conditions (such as leases, Property Management Agreements or agistment licences).

The main issues of concern in the ACT are the cumulative affects of clearing of small areas of native vegetation and the need for an overall strategy for a coordinated approach to conservation of remnant vegetation. From a regional perspective, the demand by ACT residents for quality firewood has a consequent

¹³ Toyne, P. (1992) in *Biological diversity: Its future conservation in Australia* Proceedings of the Fenner Environment Conference 1992. Department of the Environment, Sport and Territories, Canberra

impact on declining woodlands in NSW. This a regional issue that the ACT can act upon directly.

IMPLEMENTATION STRATEGY - MANAGEMENT OF DECLINE AND LOSS OF NATIVE VEGETATION

Objective	Action	Performance indicator/target
1. To conserve native vegetation remnants	a) Identify significant native vegetation remnants & conserve them b) Promote landholder & wider community participation in the identification of areas of remnant vegetation & their subsequent management	(i) Ecological survey data extracted & assessed (ii) Ecological assets data base includes remnant vegetation information (iii) Linking & management requirements incorporated into nature conservation network (iv) Protection and rehabilitation of vegetation remnants incorporated into land management programs (i) Strong community interest & participation in remnant vegetation conservation program
2 To manage the clearing of native vegetation so that biodiversity conservation requirements are not compromised	a) Assess land development proposals for environmental implications b) Ensure that land use activities or proposals that involve the clearing of naturally occurring native vegetation in conservation networks, habitat corridors or other sites of ecological significance are subject to an assessment & approval process directed at protecting nature conservation values	(i) Flora & fauna guidelines, & approvals processes consider remnant vegetation & conservation network requirements (i) Statutory provisions for vegetation clearance control are reviewed & amended as necessary. (ii) Nature conservation network program & ecological sites data base form the basis for assessing vegetation values & clearance management requirements
3. To reduce the impact of ACT firewood demand on declining woodland values in NSW	a) Promote the use of alternative fuel sources	(i) Increased use of plantation timber for firewood (both softwood and hardwood) (ii) Decrease in consumption of firewood originating in areas of conservation concern

4. INVOLVING THE COMMUNITY

The involvement of all Australians is vital to the conservation of biological diversity. Initiatives already being taken at the community level can be catalysed by a variety of integrated measures that increase awareness and involvement.¹⁴

Biodiversity cannot be conserved by governments alone or only in reserved areas. Conservation of our natural environment is a community responsibility which increasingly is being recognised and accepted. Many government environment programs are now designed with a specific community participation component.

Increasing the awareness and involvement of landholders and the wider community in the conservation of biodiversity is a major challenge. Building upon existing arrangements for participation in cooperative land and environmental management schemes would seem to be the most effective approach.

In the ACT, community involvement in nature conservation takes many forms, accommodates many interests and skills, and is characterised by a substantial voluntary contribution. There is a gradation of commitment and control from independent, unilateral action to a partnership with government.

Important centres of community action include the 'hands-on' approach epitomised by Parkcare and Landcare groups, representative or peak groups that coordinate the interests of particular segments of the community, expert committees that advise governments on particular issues and the individual citizen who participates in any of the above forums as well as acting independently according to personal priorities and preferences.

The task is to ensure that there is a common thread of awareness within the primary focus of these community activities of the relevance of their work to biodiversity conservation. The pursuit of differing management priorities and objectives can achieve common goals if there is a shared appreciation of biodiversity conservation concepts and issues. A pragmatic approach is warranted so that preferred outcomes can be achieved by diverse means.

Government can play an important role by initiating, fostering or reinforcing as appropriate. The benefits that flow from a motivated and supportive community need to be recognised in all endeavours. The building of partnerships between Government and the community, with financial support as appropriate, will play an increasingly important role in conservation of the natural resources of the ACT, on both leased and public land. In this context, an open and consultative approach to policy development and management planning will have particular value.

¹⁴ Australian and New Zealand Environment and Conservation Council (1996)

IMPLEMENTATION STRATEGY - INVOLVING THE COMMUNITY

Objective	Action	Performance indicator/target
<p>1 To increase community awareness of the biodiversity values of the natural assets of the ACT and their conservation requirements</p>	<p>a) Provide information & guidance to the general community</p> <p>b) Expand biodiversity studies in school curricula</p> <p>c) Develop & implement management policy for conservation of biodiversity in a consultative & open way</p>	<p>(i) Community programs & volunteer groups whose activities relate to land or nature conservation are assisted in a coordinated way regarding biodiversity conservation principles & practices & the relevance of them to their work.</p> <p>(ii) Nature interpretation programs routinely promote an understanding of natural processes & their implications for everyday life</p> <p>(iii) Internet home page developed, other innovative avenues for promoting community awareness explored & suitable schemes established.</p> <p>(iv) A 'living with nature' ethos is promoted with a view to the responsibilities associated with living & working in the 'bush capital' being widely accepted</p> <p>(i) Curricula reviewed & modified where necessary to incorporate new material & emphasise inter-relationships between disciplines & their relevance to biodiversity</p> <p>(ii) Liaison mechanisms between schools system and asset managers enhanced, particularly regarding knowledge of local issues & use of natural resources</p> <p>(i) Formal management policy documents routinely released for public comment (e.g. management plans for public land, Action Plans for threatened species)</p> <p>(ii) Rationale for policy development & consequent decisions documented & made readily available</p> <p>(iii) Media information routinely made available as part of reporting processes</p> <p>(iv) Community representation on government committees maintained/strengthened</p>
<p>2 To increase direct community involvement in the conservation of biodiversity</p>	<p>a) Foster community interest & action</p> <p>b) Promote collaborative community involvement in survey, monitoring & research programs</p>	<p>(i) Volunteer activities related to land management & nature conservation (e.g. Parkcare & Landcare) continue to be actively supported, biodiversity conservation priorities are considered in their work & related information is made available to them a coordinated way</p> <p>(ii) Environment & heritage grants scheme is continued & expanded for approved community projects</p> <p>(iii) Opportunities for community involvement in Government programs are routinely assessed and participation increases</p> <p>(i) Pilot program(s) developed</p> <p>(ii) Continuing promotion & building on experience</p>

5. IMPLEMENTATION

Each chapter of this Strategy includes an implementation component outlining objectives to be achieved, actions to be pursued and performance indicators or targets against which to measure progress. A time-frame is deliberately omitted because of the statutory nature of the document. Uncertainties associated with biological and administrative variables, and implementation unknowns in terms of resources and/or research requirements also militate against timing details in a framework document of this kind. Consequently, while implementation proposals are firm statements of management intent in terms of direction and priority, they need to be treated as strategic guidelines to be incorporated into planning and management programs where possible and refined as necessary. A *Strategy Implementation Plan* is discussed later in this chapter.

5.1 RESOURCES

The ACT has a good record in nature conservation with a substantial and continuing commitment to protection of our natural heritage. However, the record must be maintained and enhanced if enduring benefits are to be achieved. In this context, good legislation, planning and policy is only one (albeit important) aspect of effective conservation. On-ground implementation through survey, monitoring, management and research is as essential as it is resource demanding.

While the strategies put forward in this document are directed towards conservation of biodiversity, many draw upon elements of existing programs or policy commitments where a re-ordering of priorities or refinement of implementation detail in areas of concern will achieve enhanced results in biodiversity conservation terms.

With few exceptions (notably an ACT biodiversity monitoring program) new proposals are a more focused discussion of existing policy initiatives.

While government has important and unavoidable responsibilities for biodiversity conservation, this Strategy cannot succeed without broad community support. This support encompasses being accountable for actions that have implications for biodiversity, collaborating with others in the pursuit of common goals and contributing resources that reflect the community's role as a consumer and custodian of assets that are the natural heritage of present and future Canberrans and other Australians. Unless there is adequate commitment and resources from both public and private sectors, many of the objectives may not be achieved. The inevitable consequence will be serious degradation of our natural assets through (in many cases, irreplaceable) loss of biodiversity and heritage values, accompanied by substantially increased costs for remedial action.

Where additional government financial resources are indicated in order to develop or implement policy, they will be sought in the context of Government budgetary processes with their inherent priorities and constraints. Collaboration between government, business, national institutions and the broader community will be vital. There will be some coordination requirements for implementation measures that overlap between this Nature Conservation Strategy and other ACT environment strategies.

It is also important to appreciate that biodiversity conservation is a national task that (as a core objective of the National Strategy for Ecologically Sustainable Development) crosses many disciplines and business sectors. The Commonwealth Government actively supports regionally-based initiatives for achieving biodiversity conservation goals and it is anticipated that the ACT will continue to take advantage of relevant national funding programs such as the Natural Heritage Trust.

Research into biodiversity conservation issues is also undertaken nationally and there are many programs being conducted elsewhere that have direct application to the ACT. While the ACT Government has nationally recognised expertise in some areas of research and management, our capability is limited and necessarily finite. Maintenance of strong links with a range of institutions and agencies is vital to augment our own efforts if developments in knowledge and techniques are to be translated into best practice conservation in the ACT.

5.2 THE STRATEGY IMPLEMENTATION PLAN

It is anticipated that the ACT Nature Conservation Strategy will have a life of five to ten years in its current form with many of its implementation commitments being integrated into broader management and planning programs for conservation of our natural assets, particularly those undertaken by government agencies. To ensure that its biodiversity conservation emphasis is not diminished in the process, business planning and work programming exercises should include action items directed at furthering progress towards specified strategic objectives.

To this end, the Conservator of Flora and Fauna will develop and maintain a *Strategy Implementation Plan* as an aid to implementation of commitments made in the Nature Conservation Strategy. The Implementation Plan will be prepared on an annual basis in conjunction with across-Government business planning exercises. It will contain agreed actions, performance indicators or targets, and target dates. Priorities will be indicated and the rationale explained. Production will necessarily be a collaborative effort between affected agencies and any such plan must reflect (and be reflected in) ACT Government output and performance agreements. It will also serve as a useful link with other government strategies that address biodiversity conservation issues – for example, the ACT and Sub-region Planning Strategy, which establishes several important environmental initiatives for the ACT and region.

5.3 REVIEW AND REPORTING

Implementation of this Strategy will be a continuing process involving policy review, refinement in the light of developments in nature conservation knowledge and techniques, and assessment of management effectiveness. It is important that impetus be maintained over time and that performance and directions be subject to review. The ACT community also needs to be aware of progress, issues and achievements.

Two mechanisms will be used to achieve this objective.

- The ACT Environment Advisory Committee will oversee development of Strategy Implementation Plans. They will be prepared in a form that can readily be made available to the public.
- The Conservator will review implementation of the Strategy on a regular basis and report accordingly. In the interests of efficiency and timeliness, these reports should coincide with the State of the Environment reporting process undertaken independently by the Commissioner for the Environment.

APPENDIX

EXAMPLES OF SELECTED NATIONAL AND ACT STRATEGIES THAT ADDRESS CONSERVATION OF OUR NATURAL ASSETS

NATIONAL ENVIRONMENT STRATEGIES	A.C.T. ENVIRONMENT STRATEGIES
InterGovernmental Agreement on the Environment Conservation of biodiversity & ecological integrity fundamental to environmental policy National Strategy for Ecologically Sustainable Development Protection of biodiversity & maintenance of ecological processes a core objective	Territory Plan Identification & protection of open space Conservation of ecological resources & functions ACT & Sub-region Planning Strategy A policy framework for coordinated regional planning, development & resource management
National Strategy for the Conservation of Australia's Biological Diversity Conservation of biodiversity & the maintenance of essential ecological processes, establishment of a national reserve system National Strategy for the Conservation of Australian Species & Ecological Communities Threatened with Extinction (draft) To enable species & ecological communities threatened with extinction to survive & thrive in their natural habitats	THE A.C.T. NATURE CONSERVATION STRATEGY <ul style="list-style-type: none"> REGIONAL PERSPECTIVE TO BIODIVERSITY CONSERVATION ON-RESERVE & OFF-RESERVE CONSERVATION CONSERVATION OF THREATENED SPECIES & ECOLOGICAL COMMUNITIES BIODIVERSITY MONITORING MANAGEMENT OF ECOLOGICAL THREATS COMMUNITY INVOLVEMENT IN CONSERVATION
National Forest Policy Statement Reservation of a representative & viable native forest estate, sustainable forest use National Decade of Landcare Plan Control of land degradation to achieve sustainable land use National Weeds Strategy To reduce the detrimental impact of weeds on the sustainability of Australia's productive capacity & natural ecosystems	ACT Decade of Landcare Plan Integrated management of land degradation ACT Weeds Strategy A ten year strategy for implementing a coordinated program for controlling weeds ACT Bushfire Fuel Management Plan (draft) To reduce the potential impacts of bushfire so as to protect human life, property and significant natural and cultural assets
National Greenhouse Response Strategy Retention of native vegetation & creation of conservation reserves to conserve & enhance the sink capacity of the natural environment	ACT Greenhouse Strategy Sustainable use of the community's natural assets to give enhanced environmental amenity
National Water Quality Management Strategy (draft) Sustainable use of the nation's water resources National Principles for the Provision of Water for Ecosystems Policy direction for water allocation decisions	ACT Water Quality Guidelines Bench levels for assessing water quality ACT Water Resource Guidelines - environmental flows (draft) Determination of environmental flows for lakes & streams
National Waste Minimisation & Recycling Strategy National actions and controls to achieve waste minimisation & recycling objectives	No Waste by 2010. A Waste Management Strategy for Canberra An ACT framework for sustainable waste resource management actions
Australian State of the Environment Report Environmental conditions & issues	ACT State of the Environment Report Environmental conditions, pressures & responses Recommendations to Government

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