Review of the National Strategy for the Conservation of Australia's Biological Diversity

A Background Paper prepared by the
National Biodiversity Strategy Review Task Group

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Convened under the Natural Resource Management Ministerial Council's
Natural Resource Policies and Programs Committee

The Australian Government Department of the Environment and Water Resources has prepared this publication for the National Biodiversity Strategy Review Task Group.

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Background Paper on the Review of the *National Strategy for the Conservation of Australia's Biological Diversity*

1. Introduction

Biological diversity (also known as biodiversity) is defined as "*variability among living organisms from all sources* (*including terrestrial, marine and other ecosystems and ecological complexes of which they are part*), *which includes diversity within species and between species and diversity of ecosystems.*"[1]

Biodiversity supports our human societies ecologically, economically, culturally and spiritually. At least 40 per cent of the world's economy and 80 per cent of the needs of the poor are derived from biological resources.[2] Biodiversity includes genetic differences within each species - for example, between varieties of crops and breeds of livestock, chromosomes, genes, and DNA – these are the building blocks of life that determine the uniqueness of each individual and each species.

Yet another aspect of biodiversity is the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures (including humans) form communities, which interact with one another and with the air, water, and soil around them.

Australia is one of the most biologically diverse countries on the planet. In a global comparison, Australia has:

- More species of higher (vascular) plants than 94 per cent of all countries;
- More mammals, birds, reptiles and amphibians than 95 per cent of all countries;
- More species of mammals than 93 per cent of all countries;
- More birds than 79 per cent of all countries; and
- More amphibians than 95 per cent of all countries.[3]

Even more impressive are the number of endemic species we have in Australia. These are species that occur nowhere else on earth. Australia has more endemic plants than 98 per cent of the world's countries, and more endemic non-fish vertebrates than any other country.

Despite the fundamental importance of biodiversity to our global well-being, natural systems are being degraded and ecosystems, species and genetic diversity are being reduced. The *2006 State of the Environment* report[4] notes that despite action to protect biodiversity, biodiversity decline will continue because of the consequences of past actions and the time it will take to see the effects of current initiatives. However, it is possible there will be improvements in some areas because of investments made in environmental assets.

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[1] http://www.deh.gov.au/soe/2006/publications/report/glossary.html
[2] http://www.oecd.org
[3] http://www.deh.gov.au/soe/2001/index.html
[4] http://www.deh.gov.au/soe/2006/index.html

It should also be noted that the 2006 State of the Environment *report indicated it was not possible to give a comprehensive national picture of the state of Australia's environment because of the lack of accurate, nationally consistent environmental data. The report recommends that the investment in environmental data should remain a high priority.*

A range of activities supported by governments aimed at addressing the decline in biodiversity is at Appendix A.

During the lead up to the Rio Earth Summit in the early 1990s, the global community acknowledged the threat posed by degradation of ecosystems and loss of species and genetic diversity. The result of these discussions and subsequent negotiations was the United Nations *Convention on Biological Diversity* (CBD)[5], which was agreed in June 1992. This pact among the vast majority of the world's governments sets out commitments for maintaining the world's ecological underpinnings whilst supporting economic development. The three objectives of the CBD are:

- The conservation of biodiversity;
- The sustainable use of biological resources; and
- The fair and equitable sharing of the benefits that result from the use of genetic resources.

Australia is a Party to the CBD. An obligation under the CBD is that all Parties develop a national biodiversity strategy that is consistent with these three objectives.

The *National Strategy for the Conservation of Australia's Biological Diversity* (the Strategy)[6] and the related *National Objectives and Targets for Biodiversity Conservation 2001–2005* (National Objectives)[7] are the basis for a national work program to fulfil our obligations under the CBD. The Strategy is now due for review. Further information on the review process and timeframe is at Appendix B and C. A glossary of key terms is at Appendix D.

2. Purpose

The purpose of this background paper is to:

- Facilitate consultations with stakeholders on the review of the Strategy;
- Provide an overview of the Strategy and the review process; and
- Provide a preliminary outline of the key issues relating to biodiversity in Australia, particularly where these may relate to matters that have changed in significance or relevance since the original Strategy.

While there are many views on what the conservation of biodiversity means, for the purposes of the revision of the Strategy it is interpreted to be an umbrella term that includes the protection, sustainable use and ongoing management of biodiversity (see Appendix D).

[5] http://www.biodiv.org
[6] http://www.deh.gov.au/biodiversity/publications/strategy/index.html
[7] http://www.deh.gov.au/biodiversity/publications/objectives/pubs/nots.pdf

3. Background to the Strategy

3.1 Origins

The Strategy was prepared by the Australian and New Zealand Environment and Conservation Council (ANZECC)[8], the precursor of Natural Resource Management Ministerial Council[9], and endorsed by the Council of Australian Governments in 1996. The Strategy covered a period of ten years to 2006.

The Strategy's aim is *to bridge the gap between current activities and those measures necessary to ensure the effective identification, conservation and ecologically sustainable use of Australia's biodiversity.*

3.2 2001 review of the Strategy

In June 2001 ANZECC reviewed the Strategy, concluding that substantial progress had been made towards achieving the aims of the Strategy.[10] The review found major advances in implementing biodiversity conservation measures, including the identification of threatening processes, management for conservation and progress towards implementing ecologically sustainable forest management practices.

However, the review also found that a number of the Strategy's objectives had not been achieved. To address these gaps the National Objectives document was developed, setting objectives and targets for ten priority outcomes over the period 2001–2004. The National Objectives were endorsed by the Australian Government, and the New South Wales, Western Australian, Australian Capital Territory, South Australian and Victorian governments.

4. Progress

4.1 Policy developments

Since the release of the Strategy in 1996 the Australian Government and the states and territories have developed a range of biodiversity and other related policies that aim to achieve biodiversity conservation objectives. A comprehensive list of relevant policy, legislative and planning frameworks is at Appendix A.

There is a high level of consistency between the goals of national biodiversity policy (the Strategy and National Objectives) and state and territory biodiversity and natural resource management strategies. Despite some differences in emphasis, today all jurisdictions give high priority to biodiversity conservation. They vary in focus (e.g. on private or reserved land, or both, and in marine or terrestrial environments, or both); the emphasis given to particular threats (e.g. clearing, invasive species, over-harvesting); and in the mix of mechanisms for implementation of strategies (e.g. legislation, public awareness, funding programs and the management of land and marine reserves).

4.1.1 National

The last decade has seen changes in our approaches to biodiversity issues. For example, significant investment has been made at the national level in bioregional planning and

[8] http://www.deh.gov.au/about/councils/anzecc/index.html
[9] http://www.mincos.gov.au
[10] http://www.deh.gov.au/biodiversity/publications/review/index.html

integrated projects through the *Natural Heritage Trust*[11], the *National Action Plan on Salinity and Water Quality*[12], and other Australian Government programs to help restore and conserve Australia's environment and natural resources at community, local government, regional, state and national levels.

Many of these initiatives recognise the importance of biodiversity conservation and outline approaches for addressing the key objectives of the Strategy. More information on these initiatives and other relevant national policy, legislative and planning frameworks is at Appendix A.

4.1.2 State and territory progress

The majority of state and territory strategies closely follow the central themes and strategic directions of the national Strategy and the National Objectives. The overarching goals and language of many of the documents are similar.

These policy frameworks are complemented by legislative protection for biodiversity and a variety of specific programs and actions. Many jurisdictions have some form of overarching legislation for protection of biodiversity.

For example, some states and territories have biodiversity protection legislation that post-dates their biodiversity strategy (Victoria and New South Wales). In others, the legislation predates the national Strategy and has a narrower focus (Tasmania, Queensland, Australian Capital Territory, South Australia and Western Australia). South Australia and Western Australia have proposed new legislation to bring them into line with the *Environment Protection and Biodiversity Conservation Act 1999.*

In most jurisdictions, biodiversity policy is enacted through specific biodiversity legislation to protect threatened species and communities, and through general environment protection legislation that addresses development impacts (New South Wales, Victoria, Queensland and Tasmania). Most jurisdictions also have a range of other laws to manage biodiversity in specific areas (e.g. coastal management legislation), or to address certain threats (e.g. clearing controls, pest and weed regulations).

More information is at Appendix A.

4.2 Information management

Significant progress has been made in scientific identification and documentation of the occurrence and distribution of Australia's species of plants, animals, fungi and micro-organisms, and in the development of databases.

The national and state/territory *State of the Environment*[13] reporting provides information about biodiversity conditions, trends and pressures for the Australian continent, surrounding seas and Australia's external territories. The reports are based on data and information gathered and interpreted against environmental indicators wherever possible.

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11 http://www.nht.gov.au
12 http://www.napswq.gov.au
13 http://www.deh.gov.au/soe/index.html

The *National Land & Water Resources Audit*[14] was established in 1997 under the Natural Heritage Trust to provide baseline assessments of Australia's natural resources as a basis for improved decision making in natural resource management.

An *Australian Terrestrial Biodiversity Assessment*[15] was carried out by the Audit in 2002, and a second assessment report will be prepared by June 2008. The current phase of the Audit has a particular focus on coordinating national collations of accessible information on Australia's natural resources, in line with the *National Natural Resource Management Monitoring & Evaluation Framework*.[16] This builds on the work of all Australian governments to provide decision makers, on the ground managers, scientists and the community with access to reliable spatial data.

4.3 Incentives

There is an increasing realisation that effective policy needs to enable and promote positive behavioural change among individuals and organisations in response to a recognised problem. Regulation traditionally seeks to provide standards for appropriate behaviour and a disincentive to unwanted behaviour. Governments need to find a practical balance between encouraging and resourcing a culture of proactive behavioural change, whilst enforcing legislation and dealing with breaches of the law. In policies relating to biodiversity conservation, a range of incentives are being developed to encourage stakeholders to actively pursue good environmental outcomes. These include market-based approaches such as auctions and offsets schemes, and education, training and planning tools.

National investment through both the *Natural Heritage Trust* and the *National Action Plan for Salinity and Water Quality* in market-based instruments has resulted in a better understanding of when and how to utilise these instruments. Australian Government and state and territory government programs are directly contributing to the increased understanding and on ground use of market based instruments. Examples of these programs/instruments include the *National Market Based Instruments Pilot Program*[17], the *Biodiversity Hotspots Program*[18], the *Forest Conservation Fund*[19] the Victorian *BushTender*[20] program and the New South Wales *Property Vegetation Plan.*[21]

4.4 Community engagement

Long-term success in the conservation and management of Australia's biodiversity is dependent on the actions of the broader community. It is crucial that farmers, irrigators, fisheries, forest operators, public utility managers, local government officers, catchment authority officers, regional natural resource management bodies, community volunteers, Indigenous communities and many others are supported and encouraged in their efforts to manage Australia's natural resources for the benefit of all Australians now and into the future. Initiatives such as *The Decade of Landcare Program* (1989)[22] and *Bushcare*[23] (under the first

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14 http://www.nlwra.gov.au
15 http://audit.ea.gov.au/ANRA/vegetation/docs/biodiversity/bio_assess_waysforward.cfm
16 http://www.nrm.gov.au/publications/evaluation/index.html
17 http://www.napswq.gov.au/mbi/index.html
18 http://www.deh.gov.au/biodiversity/hotspots/programme.html
19 http://www.deh.gov.au/land/forestpolicy/fcf/index.html
20 http://www.dse.vic.gov.au/dse/index.htm
21 http://www.nativevegetation.nsw.gov.au/p/factsheet_03.pdf
22 http://www.daff.gov.au/natural-resources/landcare/publications/decade-plan
23 http://www.nht.gov.au/nht1/programs/bushcare/

phase of the *Natural Heritage Trust* in 1996) have been instrumental in helping to build a culture of active community engagement in biodiversity issues.

Today, all Australian governments have a range of mechanisms in place to encourage this community engagement including by:

- Supporting regional community based decision making structures;
- Providing support for voluntary conservation efforts, through investment in education and training;
- Developing accessible natural resource management tools; and
- Providing people on the ground to assist biodiversity conservation efforts.

5. Institutional and capacity building issues

Australia has made significant progress in implementing a range of innovative institutional and capacity building measures that assist the delivery of efficient and integrated biodiversity policy objectives. Initiatives have included:

- Engaging local and regional communities in natural resource management (for example, Landcare[24] is a national voluntary community network of approximately 4,000 groups that aims to improve natural resource management practices);
- Integrating biodiversity planning and management into natural resource management;
- Improving our knowledge and understanding of species, habitats, ecosystems and the characteristics of Australia's biodiversity;
- Education about, and extension of, biodiversity science and knowledge through public institutions and teaching and learning networks;
- Technical improvement in the scale and effectiveness of biodiversity information management and delivery; and
- Advances in national and international collaboration in biodiversity information management and biodiversity research and documentation.

These achievements have been substantial but there are significant challenges inherent in the national delivery of biodiversity objectives that will require ongoing work by governments, communities and industry in refining institutional and capacity building arrangements.

Other issues that may merit more attention in the revised Strategy include:

- Enhanced coordination and integration of planning, resource management and policy at national, state/territory, regional and local levels;
- Increased level of industry engagement;

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[24] http://www.landcareonline.com/

- Improved public awareness and understanding of biodiversity;
- Increased knowledge of biodiversity, including enhanced monitoring of trends and of the responses of biodiversity to management actions;
- Increased sophistication in the assessment of the cost-effectiveness of a range of management options for biodiversity conservation;
- Enhanced recognition and application of Indigenous knowledge of biodiversity; and
- Further refinement of approaches to the sustainable use of biodiversity.

See Appendix E for further information.

6. Emerging issues

The Strategy is now ten years old and the social, environmental and economic context in which it was first developed has shifted significantly. For example, given that threats to biodiversity extend across a range of tenures, and that it has become increasingly apparent that biodiversity can only partially be conserved in protected areas, there has been a growing recognition by governments that:

- The protection of natural assets on private land is an important component of Australia's conservation agenda;
- Indigenous Australians through their connection to the land and responsibilities for managing large tracts of the country play an important part in managing Australia's biodiversity;
- Biodiversity is the foundation for the many ecosystem services on which society depends (refer to Appendix F);
- Climate change is increasingly being acknowledged as having a particularly significant impact on Australia's biodiversity;
- Community engagement and partnerships with key industry sectors are important;
- Reliable and easily accessible data and information is critical for management; and
- Market incentives have the potential to increase the cost effectiveness of program delivery and reveal environmental values that are currently not accurately valued in the market place.

While major advances concerning biodiversity in policy, legislation, research, management and community engagement have brought considerable benefits, it is clear that biodiversity conservation is not an easy task. Although there remain considerable gaps in nation-wide monitoring of biodiversity, evidence from *State of the Environment* reporting and other sources demonstrates that many species and habitats continue to decline in extent and/or condition.

A Biodiversity Decline Working Group was established in 2004 to report to the Natural Resource Management Ministerial Council on the underlying causes of decline in terrestrial

biodiversity in Australia. It identified three broad issues: namely loss of habitat values and ecosystem function; spread of invasive species; and climate change – as the main threats to biodiversity and as an area where strategic investment would lead to long-term improvements to biodiversity assets. These issues are outlined in Section 7: Key biodiversity conservation issues.

7. Key biodiversity conservation issues

A revised Strategy will update the commitment by Australian governments to the national importance of biodiversity, including maintaining the critical ecological functions on which our economy depends, and the quality of our lives and those of future generations.

We invite stakeholders to consider and provide feedback on the following broad issues to guide the work of revising the Strategy. A series of indicative questions relating to these issues is also provided in Section 8: Key questions for facilitating stakeholder feedback.

The key issues identified by the Biodiversity Decline Working Group relate to terrestrial biodiversity decline. These are discussed below, with the addition of marine and coastal issues. The Natural Resource Management Ministerial Council is forming a working group to prepare a report on marine biodiversity decline.

7.1 Loss of habitat values and decline in ecosystem function

The major threats driving loss of terrestrial, marine, coastal and aquatic species habitat and/or ecosystem function include:

- Inappropriate grazing and fire management regimes;
- Introduced plants, animals and diseases;
- Broad scale land clearing;
- Climate change;
- Intensification of natural resource use and modifications to natural regimes for agriculture, infrastructure and development projects, especially on the more fertile soils and in coastal and high human population areas;
- Urban expansion and ribbon development;
- Changes to floodplain, groundwater and estuarine hydrology;
- Acidification of coastal waterways from acid-sulphate soils;
- Pollution from land and marine based sources;
- Removal of mangroves and other shore stabilising species;
- Illegal, unreported and unregulated fishing;
- Unsustainable and illegal harvesting of native fauna and flora;

- Interactions with protected species causing injury and mortality;
- Unsustainable sectoral marine management regimes;
- Soil salinisation and sodisation (sodicity) including dryland salinity; and
- Inefficient institutional arrangements.

Australian land and seascapes are constantly changing as a result of economic, demographic and ecological drivers. Losses of habitat values and of ecosystem function are possible consequences of this change. The imperative is to ensure that positive outcomes for biodiversity conservation are built into the processes of change.

7.2 Spread of invasive species

Invasive species (including pests, weeds and diseases) are causing increasing impacts on production and environmental assets. Preventing introduction, establishment and spread of invasive species is cost-effective when compared with the costs of control actions once they have established.

Eleven of the most significant invasive animal species have environmental, economic and social impacts conservatively estimated to cost $720 million annually.[25] Of this total, foxes, rabbits, feral pigs and feral cats accounted for 83 per cent of all costs. In total, 25 exotic mammals, 20 birds, one amphibian and four reptiles have become established in Australia.

It is estimated that the cost to the Australian economy from the agricultural impacts of weeds is in the vicinity of $4 billion per annum.[26] Some 370 weed species in Australia have been declared noxious by state and territory governments. The *2001 State of the Environment* report[27] advises that competition by weed species is likely to have been responsible for the extinction of four native plant species and presents a continuing threat to another 57 species. The potential impact of future introductions on biodiversity is also likely to be substantial.

The cost to Australia imposed by invasive marine species has not been quantified; however there is a significant negative impact on local biodiversity and estuarine/marine industries such as aquaculture. There are approximately 150–250 known introduced marine species in Australia.

7.3 Climate change impacts on biodiversity

Of all the emerging issues facing terrestrial, coastal and marine environments worldwide, climate change is one of the most challenging.

Climate change is now considered to be a real, serious and long-term threat to our terrestrial, coastal and marine ecosystems, with the potential for changes to the ecology of these environments. Climate change, in particular, global warming and the likely rise in global sea surface temperatures and potential sea level rise and ocean acidification, poses a number of threats to key biodiversity values of many coastal and marine ecosystems. Significant localised rises in sea water temperature have resulted in coral bleaching events worldwide,

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[25] *Counting the cost: Impact of invasive animals in Australia,* Pest Animal Control CRC 2004
[26] *The economic impact of weeds in Australia,* Australian Weed Management CRC 2005
[27] http://www.deh.gov.au/soe/2001/index.html

including a number of marine protected areas in Australia. The past decade has witnessed some particularly severe events.

The distribution and viability of many native and invasive species and ecosystems is likely to change as the climate changes. This will alter how we manage Australia's conservation and production landscapes. For example:

- Species might change in distribution and abundance, population dynamics, life history patterns and reproductive cycles;
- Vulnerable species might be at increased risk of extinction;
- The status of protected areas may change as climatic zones for species move and pressures such as changed fire regimes and invasive species impacts alter the function of the landscape and the structure of ecological communities;
- The extent and distribution of agricultural land may change with increased variability in climate; and
- Invasive and over-abundant native species might gain more opportunities for establishing in wider areas.

Given the potential scale of climate change and the possible social, ecological and economic impacts, it is important that integrated management options are explored and that potential responses address the whole production and conservation landscape.[28]

Climate change impacts on biodiversity are both slow and cumulative, as well as influenced by extreme events. It is therefore important to recognise that policy responses will require a mix of both mitigation and adaptation arrangements.

[28] Current national responses are outlined in the *National Biodiversity and Climate Change Action Plan* (NRMMC 2004).

8. Key questions for facilitating stakeholder feedback

In light of the issues discussed in this paper, please consider the following questions in your response.

8.1 Policy environment

- How should the revised Strategy address the three broad issues[29] identified in Section 7: Key biodiversity conservation issues as the main threats to biodiversity in Australia?
- What can Australia learn from international approaches to biodiversity policy and management?
- What are the major environmental, economic and social changes affecting the conservation of biodiversity since the original Strategy was released?
- Should the revised Strategy identify where investment should be prioritised?
- How can the revised Strategy enhance and capitalise on collaboration between all levels of government, the wider community and industry?
- How can the Strategy address today's opportunities to conserve our biodiversity, as well as challenges, to halt biodiversity decline?
- How can the Strategy inform program delivery on the ground?
- Does the revised Strategy need to reflect developments in the use of market based instruments?

8.2 Roles and responsibilities

- What respective roles and responsibilities do government, industry, natural resource management groups and the community have in managing biodiversity?
- What role do the community and stewardship play in conserving biodiversity, particularly for private landowners, industry and natural resource management groups?
- How can various industry, natural resource management and government sectors share information about conserving biodiversity?
- How can emerging industry policies be effectively incorporated into the revised Strategy and vice versa?
- How can industry increase the value of the biodiversity products and services it provides?
- How can the role of Indigenous Australians in biodiversity conservation be better recognised and resourced?
- What is the role of the education system in ensuring appropriate levels of understanding and skill?

[29] (1) Loss of habitat values and decline in ecosystem function (2) spread of invasive species and (3) climate change impacts on biodiversity.

8.3 Operational

- What should the timeframe for the revised Strategy be?
- How can the revised Strategy take into account the various levels of biodiversity protection and sustainable use activity being developed across Australia?
- How can the revised Strategy be made flexible and adaptive to enable it to respond to changes in environmental, social and economic factors over time?
- Should the revised Strategy identify and prioritise actions? If so, on what basis?
- How can the revised Strategy raise awareness in the general public and industry of the issues surrounding biodiversity?
- How can the revised Strategy best complement regulatory approaches to biodiversity conservation?

Appendix A–Relevant policy, legislative and planning frameworks

National

Framework/Policy	Year
National Strategy for the Conservation of Australia's Biological Diversity	1996
National Objectives and Targets for Biodiversity Conservation 2001-2005	2001
Natural Heritage Trust (Phase 1) *Natural Heritage Trust* (Phase 2)	1997 2002
National Action Plan for Salinity and Water Quality	2000
Council of Australian Governments Water Reform Framework *National Water Quality Management Strategy* *National Water Initiative*	1994 1998 2004
National Framework for the Management and Monitoring of Australia's Native Vegetation	1999
National Forest Statement *Farm Forestry National Action Statement*	1992 2005
National Oceans Policy *Framework for a National Cooperative Approach to Integrated Coastal Zone Management*	1998 2003
National Weeds Strategy *Australian Weeds Strategy*	1997 2006
Marine Protected Areas and *Directions for the National Reserve System – A Partnership Approach*	2005
Coastal Catchments Initiative	2001
National Biodiversity and Climate Change Action Plan	2004
Threat Abatement Plans (various)	From 1996
National Approach to Firewood Collection and Use in Australia	2001
Australian Biosecurity System for Primary Production and the Environment	draft
National Strategy for Ecologically Sustainable Development	1992
National Natural Resource Management Monitoring and Evaluation Framework	2002
National Principles and Guidelines for Rangeland Management	1999
State of the Environment	2001 and 2006
The Decade of Landcare	1989
Bushcare	1996
Wetlands Policy of the Commonwealth Government of Australia	1997
Legislation	
Natural Heritage Trust of Australia Act 1997	1997
Environment Protection and Biodiversity Conservation Act 1999	1999
Quarantine Proclamation Act 1998	1998
Convention on Wetlands (*Ramsar*)	1971

Source: Australian Government websites

State and Territory

Jurisdiction	Framework/Policy	Legislation
New South Wales	*NSW Biodiversity Strategy* (1999)	*Threatened Species Conservation Act 1995* *Threatened Species Conservation Amendment Act 2002*
Tasmania	*Tasmania's Nature Conservation Strategy* (*2002-2006*)	*Threatened Species Protection Act 1995* *Tasmanian Regional Forest Agreement 1997* *Nature Conservation Act 2002*
Queensland	*Queensland Biodiversity Policy Framework* (2003)	*Nature Conservation Act 1992* *Wet Tropics World Heritage Protection and Management Act 1993* *Vegetation Management Act 1999*
Victoria	*Victoria's Biodiversity Strategy* (1997)	*Flora and Fauna Guarantee Act 1988*
Australian Capital Territory	*ACT Conservation Strategy* (1997)	*Nature Conservation Act 1980* *Environmental Protection Act 1997*
Northern Territory	*Northern Territory Northern Territory Parks and Conservation Masterplan* (draft)	*Territory Parks and Wildlife Act 1977* *Territory Parks and Wildlife Conservation Act 2000* *Territory Parks and Wildlife Conservation Amendment Act 2006*
South Australia	*No Species Loss – A Biodiversity Strategy for South Australia 2006-2016* (draft)	*National Parks and Wildlife Act 1972* Proposed new Biodiversity Conservation legislation
Western Australia	*A 100-year Biodiversity Conservation Strategy for Western Australia: Blueprint to the Bicentenary in 2029* (draft)	*Wildlife Conservation Act 1950*–to be replaced by the *Biodiversity Conservation Bill 2003*

Source: State and Territory government websites

Appendix B–The Review Process

Timeframes

The aim is to have a revised Strategy approved by the Natural Resource Management Ministerial Council (NRMMC) in 2008, with a draft Strategy document likely to be available on the internet for broad public comment in 2007.

The Review Process

a*) *The National Biodiversity Strategy Review Task Group will oversee the review

The National Biodiversity Strategy Review Task Group has been set up under the NRMMC to review the Strategy. The NRMMC consists of the national, state, territory and New Zealand government ministers responsible for primary industries, natural resources, environment and water policy.

The Review Task Group consists of members from each state and territory government and the Australian Government (see Appendix C for membership details). The Review Task Group will review the Strategy in consultation with key stakeholders across Australia, using a range of methods including face-to-face meetings, workshops and by posting information on the Internet.

b*) *Consultation with stakeholders

The review will include comprehensive consultation with the Australian community and with key stakeholders at the national, state, regional and local levels. It is proposed that the consultation process will include a range of approaches such as use of the internet, workshops and information forums. Consultations will explore how the Strategy could be made more relevant and accessible, and interested parties will also have an opportunity to provide feedback on a draft revised Strategy.

Key objectives of the consultation include providing information on the Strategy to stakeholders and identifying and discussing major issues relating to the conservation of biodiversity.

These will be achieved through a series of questions designed to elicit targeted responses on a range of policy, target setting, roles and operational issues (example questions are presented in Section 8 of this paper).

Secretariat (Australian Government Department of the Environment and Water Resources)

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Appendix C–Members of the National Task Group on the Review of the National Biodiversity

Name	Organisation
Allan Holmes, Chair	South Australia (Chief Executive Officer, Department for Environment and Heritage)
Bill Logan	Australian Capital Territory (Territory and Municipal Services Department)
Ian Hunter	New South Wales (Department of Environment and Conservation)
John Woinarski	Northern Territory (Department of Natural Resources, Environment and the Arts)
Tony Roberts	Queensland (Environment Protection Agency)
Graeme Moss	South Australia (Department for Environment and Heritage)
Penny Wells	Tasmania (Department of Primary Industries and Water)
Paul Smith	Victoria (Department of Sustainability and Environment)
Gordon Wyre	Western Australia (Department of Environment and Conservation)
Conall O'Connell	Australian Government (Department of the Environment and Water Resources)
Heather Tomlinson	Australian Government (Department of Agriculture, Fisheries and Forestry) and Primary Industries Standing Committee representative
Michael Dunlop	Commonwealth Scientific and Industrial Research Organisation representative (CSIRO Sustainable Ecosystems)
Michael Coughlan	Bureau of Meteorology representative

Appendix D–Glossary

The following definitions have been provided in order to facilitate discussion. They do not necessarily reflect the view of the Task Group.

Biodiversity (Biological diversity)
Variability among living organisms from all sources (including terrestrial, marine and other ecosystems and ecological complexes of which they are part), which includes diversity within species and between species and diversity of ecosystems.
(*2006 State of the Environment report*)

The variability among living organisms from all sources including, *inter alia*, the terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.
(*Convention on Biological Diversity,* 1992)

Climate change
The United Nations Framework Convention on Climate Change (UNFCCC) defines the term in Article 1 as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods."
(*The United Nations Framework Convention on Climate Change*)

The Intergovernmental Panel on Climate Change (IPCC) definition of climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). It may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (modified from IPCC 2001).
(*National Biodiversity and Climate Change Action Plan 2004–2007*)

Conservation
In relation to biodiversity: the protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment; in relation to natural and cultural heritage: generally, keeping in safety or preserving the existing state of a heritage resource from destruction or change.
(*2006 State of the Environment report*)

The protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.
(*National Strategy for the Conservation of Australia's Biological Diversity,* 1996)

Ecological communities
Assemblages of native species that inhabit particular areas in nature.
(*Environment Protection and Biodiversity Conservation Act 1999*)

Ecosystem
A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.
(*2006 State of the Environment report*)

A community of organisms, interacting with one another, plus the environment in which they live and with which they also interact (e.g. a lake, a forest, a grassland, tundra). Such a system includes all abiotic components such as mineral ions, organic compounds, and the climatic regime (temperature, rainfall and other physical factors). The biotic components generally include representatives from several trophic levels; primary producers (autotrophs, mainly green plants),

macroconsumers (heterotrophs, mainly animals) which ingest other organisms or particulate organic matter, microconsumers (saprotrophs, again heterotrophic, mainly bacteria and fungi) which break down complex organic compounds upon death of the above organisms, releasing nutrients to the environment for use again by the primary producers' (Abercrombie *et al* 1992).
(*National Biodiversity and Climate Change Action Plan 2004–2007*)

Ecosystem services
The conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life.
(Nature's Services - Societal Dependence on Natural Ecosystems, Daily, G. E. (*1997*). *Island Press, Washington)*

Ecologically sustainable use
The use of a species or ecosystem within the capacity of the species, ecosystem and bioregion for renewal or regeneration.
(*National Strategy for the Conservation of Australia's Biological Diversity,* 1996)

Environment
Includes ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas; and the social, economic and cultural aspects of a thing mentioned in the previous three categories.
(*2006 State of the Environment report*)

Market-based instruments and trading-based schemes
Market-based instruments are regulations that encourage behaviour through market signals rather than through explicit directives regarding pollution control levels or methods. Trading-based schemes are a subset of market-based instruments that focus on instruments involving trading. They include cap and trade schemes, auctions and information disclosure. However, they do not include taxes and subsidies.
(*National Action Plan for Salinity and Water Quality,* 2000)

State of the Environment reporting
A process that provides a scientific assessment of environmental conditions, focusing on the effects of human activities, their significance for the environment and societal responses to the identified trends.
(*2001 State of the Environment report*)

Sustainable use
The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.
(*Convention on Biological Diversity,* 1992)

Appendix E–Institutional and Capacity Building Issues for Biodiversity Conservation in Australia

Australia has made significant progress in implementing a range of innovative institutional and capacity building measures that assist the delivery of efficient and integrated biodiversity policy objectives. Initiatives have included:

- Engaging local and regional communities into natural resource management (for example, Landcare[30] is a national voluntary community network of approximately 4,000 groups that aim to improve natural resource management practices);
- Integrating biodiversity planning and management into natural resource management;
- Improving our knowledge and understanding of species, habitats, ecosystems and the characteristics of Australia's natural biodiversity;
- Education about, and extension of, biodiversity science and knowledge through public institutions and teaching and learning networks;
- Technical improvement in scale and effectiveness of biodiversity information management and delivery; and
- Advances in national and international collaboration in biodiversity information management and biodiversity research and documentation.

These achievements have been substantial but there are significant challenges inherent in the national delivery of biodiversity objectives that will require ongoing work by governments in refining institutional and capacity building arrangements. The following are four broad areas that a revised Strategy could cover.

1. Coordination and integration of planning

Significant investment has been made in bioregional planning and integrated projects through the *Natural Heritage Trust*, the *National Action Plan on Salinity and Water Quality*, and state and territory government programs to help restore and conserve Australia's environment and natural resources at community, local government, regional, state and national levels.

Bioregional planning and integrated approaches to biodiversity conservation are being adopted at a policy level in many parts of Australia. Ongoing effort is required to fully implement these policies.

Successful conservation and sustainable use of Australia's biodiversity requires individuals, public and private agencies to work together in a coordinated manner. All levels of government, industry and the community need to share knowledge, to understand costs and benefits, to be clear about their different roles and responsibilities, and to ensure that they have the capability and resources to contribute effectively.

2. Improve public awareness of biodiversity and engagement with community

Biodiversity is affected by the cumulative impact of countless everyday decisions and actions taken by the community. However the concept of biodiversity is not well understood by the community. Communication strategies have been implemented in a number of jurisdictions to address this, but further work is needed. Research commissioned by the Australian Government has shown that

[30] http://www.landcareonline.com/

various target audiences are not aware of the existence of the Strategy, including some important non-government groups.

It is important to recognise that communities and individuals are real drivers of positive change, and that community and individual actions to conserve biodiversity depend on adequate understanding, information, motivation and support.

3. Facilitate access to Australia's biological resources

The *Convention on Biological Diversity* (CBD) affirms national sovereignty over countries' genetic and biochemical resources. In return for facilitating access to these resources, countries are entitled to the fair and equitable sharing in the benefits derived from that use, including the return of benefits to conserve biodiversity.

The Australian Government, states and territories have signed up to a *Nationally Consistent Approach for Access to and the Utilisation of Australia's Native Genetic and Biochemical Resources*.[31] In signing the Nationally Consistent Approach, all Australian jurisdictions agreed to deliver on our responsibilities under the CBD to sustainably manage access to our native genetic and biochemical resources with benefits accruing to our biodiversity, economy and society.

Australia needs to capitalise on a rapidly changing legal and scientific landscape. Legal certainty, through consistent rules, and the removal of time and cost burdens, will stimulate investment in scientific research while protecting the environment. Encouraging the business sector, in particular the biotechnology sector, to invest in research and development improves our understanding of Australia's biodiversity, increases its value and produces win-win outcomes for all involved.

4. Indigenous culture and stewardship

Arid and semi-arid Australia is rich in Indigenous cultural heritage with many sites of spiritual significance. Indigenous Australians have managed their lands for tens of thousands of years. Both land and seas are central to their lives and well-being. Biodiversity underpins Indigenous history and culture and is fundamental to spiritual beliefs, as well as providing a basis for economic growth and innovation.

The conservation of Australia's biodiversity is a priority for Indigenous people and communities throughout Australia. It is therefore essential that the revised Strategy ensures that Indigenous Australians are integral in the review process of this strategy and ultimately involved in the management of biodiversity for these areas.

Australian governments encourage Indigenous landowners to manage their lands and sea country for the protection of natural and cultural features and assist in the creation of a network of protected areas across the country. For example, Kakadu and Uluru-Kata Tjuta National Parks are two of Australia's best known national and cultural icons and both are World Heritage sites.

It is particularly important that the traditional duty of care for the land and traditional knowledge is passed on to the next generation of land managers. Through cooperative partnerships with industry and governments, Indigenous people have used their traditional knowledge to provide work, training and education in their local communities.

[31] http://www.deh.gov.au/biodiversity/publications/access/nca/index.html

Appendix F–The relationship between biodiversity and ecosystem services

Definition of Ecosystem Services

Ecosystem services can be described as *the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life.*[32]

Figure 1 outlines the relationship between biodiversity and ecosystem services, which is described in the following text.

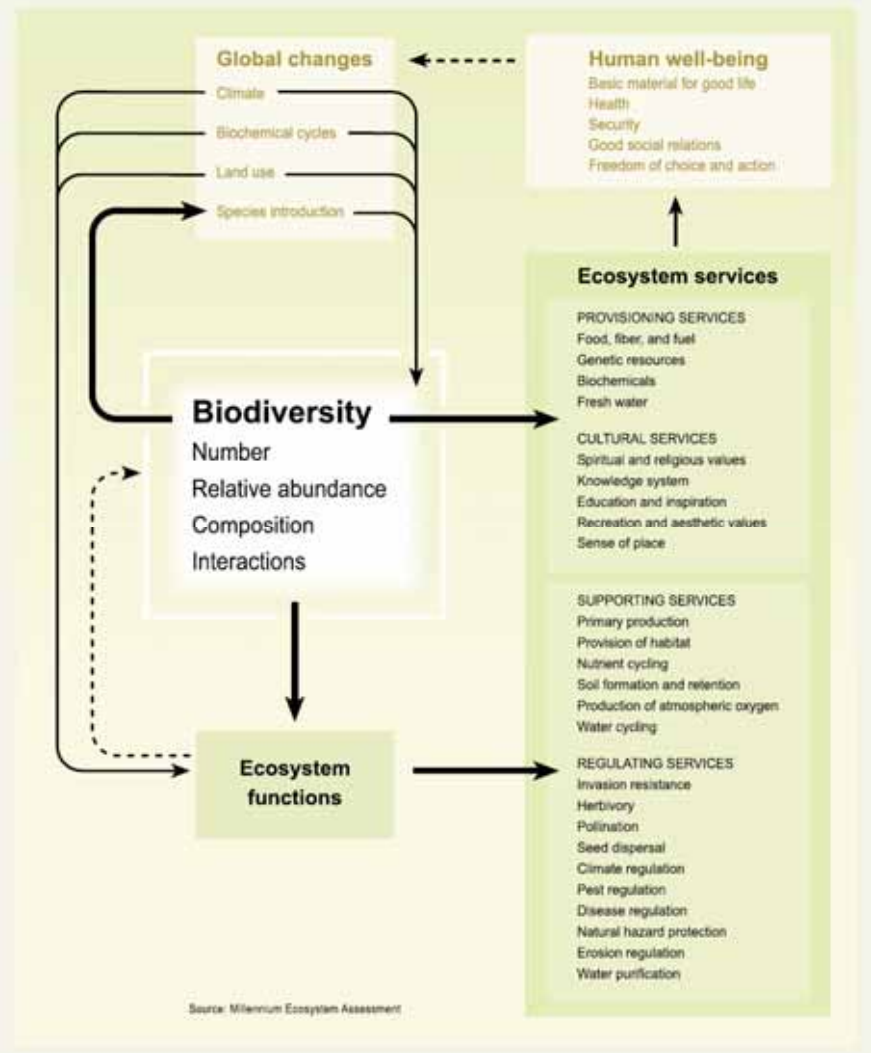

Figure 1: The relationship between biodiversity and ecosystem services

[32] *Nature's Services - Societal Dependence on Natural Ecosystems. Daily, G. E. (1997), Island Press, Washington.*

Biodiversity, ecosystems and resilience

There has been considerable debate about the relationship between ecosystem function, ecosystem services and biodiversity. Research has generally shown that a greater diversity of functional types leads to greater productivity, although in the short term systems can be highly productive with low biodiversity.

These and other arguments and research findings argue that conserving as much biodiversity as possible is a wise strategy for managing risks associated with medium and long term climate and other environmental change and for keeping future management options open.

Issues surrounding ecosystem services

Controversy also arises around perceptions and misconceptions about the relationship between biodiversity and ecosystem services. It is becoming possible to predict which services will decline fastest as different components of biodiversity are lost. The *Millennium Ecosystem Assessment*[33] recognised that:

1. The central reason for talking about ecosystem services is to encourage the full suite of use and non-use values to be considered together; and

2. Biodiversity underpins all ecosystem services and although some services can be delivered in the short term by simplified ecosystems, these systems have less resilience and greater potential to fail in the long term.

[33] http://www.maweb.org/en/index.aspx