

CABINET - SUBJECTS FOR CONSIDERATION, 05 DECEMBER 2005 12:15 PM

Not Relevant

1 New Initiatives/Policy Matters

Not Relevant

102 EC05/0083CS

**No Species Loss - A Biodiversity Strategy for South
Australia
DEFERRED UNTIL JANUARY 2006**

Not Relevant

102

5/12/05

CABINET COVER SHEET

1. **TITLE:** *No Species Loss – A Biodiversity Strategy for South Australia*

 2. **MINISTER:** **Hon John Hill MP**
Minister for Environment and Conservation

 3. **PURPOSE:** To seek Cabinet approval of the:
 - *No Species Loss Strategy - A Biodiversity Strategy for South Australia (No Species Loss Strategy)*; and
 - release of the *No Species Loss Strategy* for a three-month public consultation period.

 4. **RELATIONSHIP TO GOVERNMENT POLICY AND/OR SA'S STRATEGIC PLAN TARGET:**

The *No Species Loss Strategy* directly relates to South Australia's Strategic Plan target 3.8 "lose no species".

The *No Species Loss Strategy* also addresses the following South Australia's Strategic Plan targets under objective three 'Attaining Sustainability':

 - any clearance of native vegetation being offset by significant biodiversity benefit by 2005 (T3.6);
 - integrate native vegetation/biodiversity management in South Australia's eight Natural Resource Management (NRM) regional plans by 2010 (T3.7); and
 - have five well-established biodiversity corridors linking public and private lands across the state by 2010 (T3.4).

 5. **RESOURCES REQUIRED FOR IMPLEMENTATION:** Each agency identified within the *No Species Loss Strategy's Recommendation and Target List* is responsible for resourcing their respective initiatives and projects. These initiatives and projects will be met from existing Budget allocations. Resources for initiatives requiring additional Budget allocation will be considered as part of the responsible agency's priority setting and budget processes.
- Treasury and Finance has been consulted and advised that no costing comment is required.

6. COMMUNITY AND ENVIRONMENTAL IMPACT:

Impacts of the *No Species Loss Strategy* include:

- Environmental – improving long-term protection, conservation and sustainable use of terrestrial, aquatic and marine biodiversity;
- Small business – security resulting from a sustainable base for production, and for tourism through benefits of improved terrestrial and marine environments;
- Regional – securing the long-term future of economies dependent on environmental resources; and
- Community – securing the long-term future of biodiversity for all South Australians.

7. RISKS:

The consequences of the *No Species Loss Strategy* not proceeding are that there will continue to be a decline in South Australia's biodiversity. This will be accompanied by decision-making that lacks integration and inadequate protection of species, habitats and ecosystems with associated risks to terrestrial and marine environments.

8. CONSULTATION:

The following agencies have been consulted:

- Department of Treasury and Finance
- Department of the Premier and Cabinet (National Competition Policy Implementation Unit)
- Department of Trade and Economic Development (Small Business)
- Office of Regional Affairs
- Department of Families and Communities
- Department of Water, Land and Biodiversity Conservation
- Environment Protection Authority
- Zero Waste SA
- Forestry SA
- SA Water
- Department for Primary Industries and Resources
- South Australian Tourism Commission
- Department of Aboriginal Affairs and Reconciliation
- Department of Further Education Employment Science and Technology
- Department of Education and Children's Services
- Department of Transport, Energy and Infrastructure

9. **COMMUNICATION STRATEGY:**

It is proposed that the release of the *No Species Loss Strategy* will be announced via a Ministerial Statement and media event. Public consultation of the *No Species Loss Strategy* will occur for a three-month period.

The *No Species Loss Strategy* will be available on the DEH Website and in hardcopy form.

10. **URGENCY:**

Within the 10-day rule.

11. **RECOMMENDATIONS:**

It is recommended that Cabinet:

4.1 Approve the *No Species Loss – A Biodiversity Strategy for South Australia (No Species Loss Strategy)*.

4.2 Approve the release of the *No Species Loss Strategy* for a three month public consultation period; and

4.3 Note that each agency identified within the *No Species Loss Strategy's Recommendation and Target List* is responsible for resourcing their respective initiatives and projects. These initiatives and projects will be met from existing Budget allocations. Resources for initiatives requiring additional Budget allocation will be considered as part of the responsible agency's priority setting and budget processes.

I declare that I have no actual or potential conflict of interest in relation to the proposals contained in this submission.

Signature of Minister:


JOHN HILL

Date:

23.11.08

TO: THE PREMIER FOR CABINET

RE: NO SPECIES LOSS – A BIODIVERSITY STRATEGY FOR SOUTH AUSTRALIA

1. PROPOSAL

That Cabinet:

- 1.1. Approve *No Species Loss – A Biodiversity Strategy for South Australia (No Species Loss Strategy)*.
- 1.2. Approve the release of the *No Species Loss Strategy* for a three month public consultation period; and
- 1.3. Note that each agency identified within the *No Species Loss Strategy's Recommendation and Target List* is responsible for resourcing their respective initiatives and projects. These initiatives and projects will be met from existing Budget allocations. Resources for initiatives requiring additional Budget allocation will be considered as part of the responsible agency's priority setting and budget processes.

2. BACKGROUND

- 2.1. South Australia's terrestrial, aquatic, and marine biodiversity have significant environmental, economic, social, and cultural value.
- 2.2. South Australia relies on and needs healthy ecosystems to provide the basics of life – food, water, shelter, clothing and clean air – and to regulate our climate, decompose organic wastes, pollinate plants, and inspire our societies and cultures.
- 2.3. The goods and services of industry that drive South Australia's economy and support our society also stem largely from healthy and functioning ecosystems. For example, industries such as pastoralism, recreation, nature based tourism, commercial fisheries and aquaculture, agriculture, horticulture, fishing and forestry all rely heavily on healthy terrestrial and marine ecosystems.
- 2.4. The integrity of South Australia's biodiversity is under significant pressure from habitat fragmentation and degradation, invasive species, total grazing pressure, climate change, development, unsustainable tourism and recreation, changes to environmental flow regimes and pollution.
- 2.5. South Australia's biodiversity is in decline. Since European settlement, 23 species of mammals and 26 plant species have become extinct in South Australia. A further 22 per cent of species (over 1000 plants and animals) are currently listed as threatened at the State level.

- 2.6. Strategic protection, planning and integrated management is needed for the long-term conservation and sustainable use of South Australia's biodiversity. There is a need for adequate legislative and planning frameworks to manage the threats that are causing the decline of South Australia's biodiversity.

3. DISCUSSION

- 3.1. The Government's 20 Point Plan for Better Reserves and Habitats included the incorporation of a *No Species Loss* strategy into government planning processes.
- 3.2. South Australia's Strategic Plan has also adopted a target to "lose no species" (T3.8).
- 3.3. In response to these Government commitments the *No Species Loss Strategy* (Attachment 1) has been developed to set out the Government's commitment and direction for halting decline in the state's biodiversity over the next ten years, with a major review of progress to occur in five years.
- 3.4. The *No Species Loss Strategy* is structured around a vision, five goals and 13 principles for achieving biodiversity protection and conservation at a State level. The framework for action to achieve the vision and goals is based on five strategic areas. Targets and recommendations within these areas will guide conservation and management action over the next ten years.
- 3.5. The vision of the *No Species Loss Strategy* is:
- *the people of South Australia supporting their native plants and animals and ecosystems to survive, evolve and adapt to environmental change.*
- 3.6. The *No Species Loss Strategy* contains five goals that will guide the protection, conservation and sustainable use of South Australia's biodiversity. These goals are to:
- halt, and where possible, reverse the decline across all levels of South Australia's terrestrial and marine biodiversity;
 - minimise the risks to biodiversity and changing ecological systems from human impacts;
 - better understand South Australia's biodiversity, make information more readily available and underpin decision making with knowledge;
 - manage biodiversity through active partnerships of community, government and industry within the natural resource management sector, and factor biodiversity sustainability into their decision making; and

- have urban, rural and indigenous communities that are more aware, value, share the responsibility for and enjoy the benefits of South Australia's biodiversity.
- 3.7. The framework for action to achieve the five goals of *No Species Loss Strategy* is based on five strategic areas:
- Strategic Area I – Conserving South Australia's biodiversity;
 - Strategic Area II – Addressing the impacts of climate change;
 - Strategic Area III – Improving information, knowledge and capacity;
 - Strategic Area IV – Coordinating and integrating within the natural resource management sector; and
 - Strategic Area V – Raising community awareness and participation.
- 3.8. The *No Species Loss Strategy* also lists recommendations and targets that will guide actions over the next five to ten years. Each recommendation and target will be assigned to a lead agency and support partner. Negotiations to assign a lead agency and support partner have commenced and will be completed during the three-month consultation phase.
- 3.9. Economic, financial and budgetary implications
- 3.9.1. Required resources
- The *No Species Loss Strategy* articulates various recommendations and targets that will guide actions over the next five to ten years. Each agency identified within the *No Species Loss Strategy's Recommendation and Target List* is responsible for resourcing their respective initiatives and projects. These initiatives and projects will be met from existing Budget allocations. Resources for initiatives requiring additional Budget allocation will be considered as part of the responsible agency's priority setting and budget processes.
- 3.9.2. Staffing implications
- Staffing requirements to implement actions under the *No Species Loss Strategy* will be addressed on a project-by-project basis by the relevant agencies.
- 3.10. Impact on the community and the environment
- The long-term protection, conservation and sustainable use of terrestrial, aquatic and marine biodiversity will have a positive impact for current and future generations of South Australians.
- 3.10.1. Regulatory impact
- The *No Species Loss Strategy* does not have a regulatory impact. However, the Strategy contains a target that proposes

the development of new legislation that facilitates protection and conservation of terrestrial and marine biodiversity. The implementation of this target will be subject to a further Cabinet submission, which will address specific regulatory impacts.

3.10.2. Small business impact

The sustainable use of biodiversity, and the reliability of natural resources resulting from the *No Species Loss Strategy* will result in increased certainty for business (eg, the fishing and native fruits industries). For tourism, the benefits of maintaining and improving natural environments will include the ongoing opportunities for nature-based recreational activities.

Through the development of the *No Species Loss Strategy*, the Department for Environment and Heritage (DEH) consulted with relevant stakeholder agencies. No significant impacts on small business were identified through this consultation. DEH will work with relevant stakeholders to address any impacts identified through the public consultation period.

3.10.3. Impact on the environment

The *No Species Loss Strategy* is aimed at halting, and where possible, reversing the decline in South Australia's biodiversity and natural environments. Biodiversity loss will continue unless we act to address the decline now. It is therefore essential that the *No Species Loss Strategy* be adopted with a sense of urgency. Implementation of the *No Species Loss Strategy* will have a beneficial impact on the environment through:

- protecting and recovering significant terrestrial, aquatic and marine species, ecological communities and ecosystems;
- improving understanding of the impacts of climate change on biodiversity;
- supporting the improvement of knowledge about biodiversity;
- providing for the better coordination and integration of biodiversity considerations into the natural resource management sector;
- ensuring the planning and development assessment system is designed to adequately assess and address the impacts of development on biodiversity;
- considering the use of incentive based policy mechanisms to engage community and industry in biodiversity conservation; and
- supporting partnerships with the community to enhance biodiversity conservation outcomes.

3.10.4. Impact on families and society

South Australians place a high value on native plants and animals. Native plants and animals:

- support tourism, which produces a significant economic return for the State;
- contribute to a sense of cultural identity; and
- are central to Aboriginal cultures.

The intent of the *No Species Loss Strategy* is to secure the long-term future and value of South Australia's biodiversity assets, for the benefit of all South Australians. Consequently, the broader impact on families and society will be positive. The *No Species Loss Strategy* aims to increase community awareness of the need for conservation of South Australia's biodiversity, and participation in conservation initiatives at a local level.

DEH will work with communities to address any family and society impacts identified through the public consultation period.

3.10.5. Regional impact

The *No Species Loss Strategy* will contribute to securing the long-term future of regional economies dependent on terrestrial and marine biodiversity. Individual initiatives may include the need for enhanced and improved engagement and participation in biodiversity conservation and protection initiatives by community, Local Government and regional Natural Resource Management (NRM) Boards. It is considered that this engagement and participation will have longer-term benefits to the terrestrial and marine environments, and the broader community.

No significant regional impacts were identified through the consultation process. DEH will work with relevant stakeholders including Local Government to address any impacts identified through the public consultation period.

3.11. Relevant Government Policy and/or South Australia's Strategic Plan Target

3.11.1. In direct response to South Australia's Strategic Plan 'Attaining Sustainability' objective, the *No Species Loss Strategy* addresses the following South Australia's Strategic Plan targets:

- lose no species (T3.8);
- any clearance of native vegetation being offset by significant biodiversity benefit by 2005 (T3.6); and
- integrate native vegetation/biodiversity management in South Australia's eight NRM regional plans by 2010 (T3.7).

3.11.2. The *No Species Loss Strategy* also contributes directly to South Australia's Strategic Plan target 3.4 'have five well-established biodiversity corridors linking public and private lands across the

state by 2010'. This target is directly linked to the Government's *NatureLinks* initiative, under which the five biodiversity corridors will be established. The *No Species Loss Strategy* will provide the overarching framework for biodiversity protection and conservation initiatives within the *NatureLinks* Biodiversity Corridors.

3.11.3. The *No Species Loss Strategy* builds upon and is integrated with other key Government environmental policies, including *South Australia's State Natural Resources Management (NRM) Plan, Planning Strategy, Estuaries of South Australia: Policy and Action Plan, Wetlands Strategy for South Australia*, and the *Living Coast Strategy for South Australia*.

3.11.4. The *No Species Loss Strategy* encompasses a range of existing and new Government initiatives and programs, setting out the directions that the Government will take as an integrated framework to protect, conserve, and sustainably use South Australia's biodiversity.

3.12. Risk Management Strategy

Integrated and strategic planning and management is required urgently to provide for the long-term protection, conservation, and sustainable use of terrestrial and marine environments and the biodiversity they contain. The consequences of the *No Species Loss Strategy* not proceeding are that there will continue to be a decline in South's Australia's biodiversity. This will be accompanied by decision-making that lacks integration and inadequate protection of species, habitats and ecosystems with associated risks to terrestrial and marine environments.

Risk associated with the implementation of actions guided by the recommendations and targets identified within the *No Species Loss Strategy* is considered low. The *No Species Loss Strategy* has been developed in response to a number of Government commitments. The *No Species Loss Strategy* also builds upon and is integrated with other key Government initiatives listed in 3.11.3.

Target 3.8 "lose no species" will not be met if the *No Species Loss Strategy* is not progressed.

The release of the *No Species Loss Strategy* for a three-month public consultation period will indicate a commitment by the Government to progress actions proposed in the Strategy over the next five to ten years. As priorities may change over this time period, some of these actions may not progress, exposing the Government to some criticism.

3.13. Consultation

The following agencies have been consulted:

3.13.1. Department of Treasury and Finance – has been consulted and advised that no costing comment was required for this submission.

- 3.13.2. Department of the Premier and Cabinet (National Competition Policy Implementation Unit) agree with the assessment of the regulatory impacts. DPC also note that an additional Cabinet submission would be required before the proposed action to implement new legislation could be implemented.
- 3.13.3. Department of Trade and Economic Development (Small Business) agree with the assessment of the small business impacts and supports the submission.
- 3.13.4. Office of Regional Affairs agrees with the assessment of the regional impacts and support the intent of the submission.
- 3.13.5. Department of Families and Communities support the intention of the submission.
- 3.13.6. Department of Water, Land and Biodiversity Conservation support the submission.
- 3.13.7. Environment Protection Authority has no comment on the submission.
- 3.13.8. Zero Waste SA supports the submission.
- 3.13.9. Forestry SA has no comment on the submission.
- 3.13.10. SA Water supports the submission.
- 3.13.11. Department for Primary Industries and Resources supports the submission.

Planning SA supports the submission.

Office of Local Government advised that the Local Government Association should be engaged in the consultation with the Local Government Sector.

- 3.13.12. South Australian Tourism Commission support the submission with a qualification in regard to the stated pressure that tourism places on the environment. DEH recognises that not all forms of tourism have an impact on biodiversity and that through the *Sustainable Tourism Package* the South Australian Tourism Commission is working towards achieving sustainability in the tourism industry.
- 3.13.13. Department of Aboriginal Affairs and Reconciliation support the submission.
- 3.13.14. Department of Further Education, Employment, Science and Technology have no comment on the submission.
- 3.13.15. Department of Education and Children's Services support the Cabinet submission.
- 3.13.16. Department of Transport, Energy and Infrastructure support the submission.
- 3.13.17. This strategy document has been developed in consultation with:

- a Reference Group specifically established to guide the development of the *No Species Loss Strategy*, which included representatives from:
 - Department for Environment and Heritage;
 - Department of Water, Land and Biodiversity Conservation;
 - Environment Protection Authority;
 - Department of Primary Industries and Resources, SA; and
 - Planning SA.
- The Ecosystem Management Committee of the Premier's Round Table on Sustainability

3.13.18. A draft of the *No Species Loss Strategy* has been provided to the Executive Committee of Cabinet.

3.13.19. The *No Species Loss Strategy* has been reviewed by the Environment portfolio Inter-Agency Director's NRM Group, and endorsed by the Environment portfolio Chief Executives NRM Group. Both Groups include representatives from:

- Department for Environment and Heritage;
- Department of Water, Land and Biodiversity Conservation;
- Environment Protection Authority;
- Department of Primary Industries and Resources SA; and
- Forestry SA.

3.14. Implementation Plan

As indicated above, the *No Species Loss Strategy* sets out the State Government's direction for the protection, conservation and sustainable use of South Australia's indigenous terrestrial, aquatic and marine biodiversity for the next five to ten years. Each agency listed within the *No Species Loss Strategy* will be responsible for implementing their respective actions and initiatives, and local government and regional communities will be consulted and involved along the way as part of this process. It is envisaged that there will be regular reporting to Cabinet on progress in implementing actions in the *No Species Loss Strategy*. There will be a major review of progress against the recommendations and targets within the *No Species Loss Strategy* five years after its commencement.

3.15. Communication Strategy

It is proposed that the release of the *No Species Loss Strategy* for public consultation be announced via a Ministerial Statement and media event.

Once the strategy is released for public consultation it will be available on the DEH Website, and also available in hard copy form. Relevant natural resource management agencies, conservation agencies, indigenous stakeholders, and Local Government will be further consulted as part of

the consultation process. Regional bodies, the community, and landholders will be consulted as part of the Regional NRM Board and regional consultation process.

3.16. Executive Council

This proposal does not need the approval of Her Excellency the Governor in Executive Council.

4. RECOMMENDATIONS

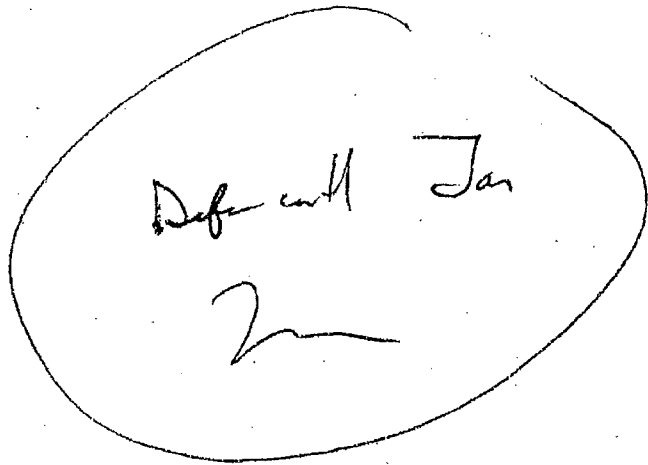
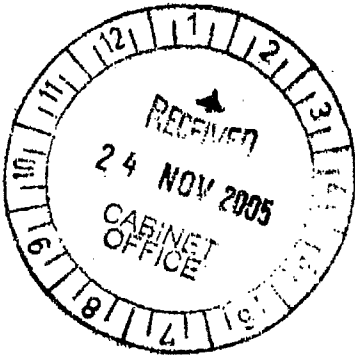
It is recommended that Cabinet:

- 4.1. Approve *No Species Loss – A Biodiversity Strategy for South Australia (No Species Loss Strategy)*.
- 4.2. Approve the release of the *No Species Loss Strategy* for a three month public consultation period
- 4.3. Note that each agency identified within the *No Species Loss Strategy's Recommendation and Target List* is responsible for resourcing their respective initiatives and projects. These initiatives and projects will be met from existing Budget allocations. Resources for initiatives requiring additional Budget allocation will be considered as part of the responsible agency's priority setting and budget processes.



**JOHN HILL
MINISTER FOR ENVIRONMENT AND CONSERVATION**

Date: 23.11.05



A handwritten note enclosed in a hand-drawn circle. The text reads: "Defer until Jan" and "2m".

No Species Loss
A Biodiversity Strategy
for South Australia
2006–2016

DRAFT STRATEGY

Govt of SA
logo

Executive summary

Biodiversity indigenous to SA South Australia's is in decline and, in all likelihood, will continue on that path unless we act now.

Biodiversity is South Australia's biological wealth. Much of the state's economy is based on the use of biological and other resources, and benefits from healthy ecosystems. Our survival depends on natural environments that function well; and the survival of our plants and animals depends on healthy ecosystems.

Our terrestrial, aquatic and marine ecosystems, and the benefits they provide, are under threat. Despite meritorious, continual and locally effective efforts by government, landholders and the community, effective conservation of South Australia's biodiversity will require the setting of conservation objectives at the large scale of landscapes and seascapes and over long time frames. The best of what remains of South Australia's natural systems must be protected; all threatened species and ecological communities must be improved and where possible restored. The effort required to halt the biodiversity decline will require long lasting, strategic and creative partnerships of community, industry and government.

No Species Loss takes such an approach to biodiversity protection, conservation and sustainable management.

It presents a set of objectives, targets and recommendations of relevance to communities and resource managers at regional and local levels, and to regional natural resource management boards. It recognises that these objectives are significantly more likely to be met if a modern legislative framework and a complementary suite of policy mechanisms is in place.

No Species Loss aims to promote strategic thinking for achieving its recommendations and targets, while encouraging ownership, engagement, partnerships and innovative solutions.

The framework for action to achieve the five goals is based in five strategic areas:

Strategic Area I – Conserving South Australia's biodiversity

Strategic Area II – Addressing the impacts of climate change

Strategic Area III – Improving information, knowledge and capacity

Strategic Area IV – Coordinating and integrating within the natural resource management sector

Strategic Area V – Raising community awareness and participation

The timeframe of 25 years for the goals: halt the decline; manage dynamic ecological systems; informed decisions; active and integrated partnerships; and community ownership, allows planning, implementation and monitoring for all targets, and some improvement in the state of South Australia's biodiversity to be realised.

No Species Loss separates the State into three biomes – Arid, Mediterranean and Marine – each representing a greatly simplified but biogeographically unique collation of ecological communities with different patterns of climate, land use, vegetation, habitat (including extent, loss and modification) and threats to biodiversity. It is at this level that actions will be most effective at reversing the decline.

Implementation will be led by government but will be successful only with a committed and coordinated effort from government, community and industry.

Footnote

plants and animals: In the No Species Loss strategy, plants and animals encompasses terrestrial, aquatic and marine plants (vascular, non vascular) and animals (vertebrate, invertebrate).

terrestrial: In the No Species Loss strategy, the term terrestrial encompasses inland aquatic ecosystems, such as rivers and streams, lakes, wetlands, springs, groundwater and groundwater dependent ecosystems, and the indigenous inland aquatic species in these areas.

landscape: In the No Species Loss Strategy, the term landscape encompasses both terrestrial and marine landscapes.

Priority targets for the protection and conservation of South Australia's biodiversity

Note:

- Lead agency and support partner responsibilities will be determined during the consultation process
- Targets in bold are priority targets to be achieved by 2011

Objectives and targets to be addressed by 2016 (unless otherwise stated) within No Species Loss include:

STRATEGIC AREA 1 - Conserving South Australia's biodiversity

To create and manage protected areas (in all biomes)

Target 1 within the protected area network:

- **80% of South Australia's regional ecosystems are represented, by 2011**
- all state and nationally threatened ecosystems are represented

Target 2 19 marine protected areas are created by 2010

Target 3 50% of the protected area network is actively managed for biodiversity conservation

To maintain and improve landscape condition (in all biomes)

Target 4 threats to biodiversity are managed, whereby:

- the introduction and establishment of new threats is prevented
- threats that have the potential to become significant threats are eradicated or contained
- significant existing threats are managed (contained, suppressed), by 2011

To reconstruct landscapes (in the Mediterranean Biome)

Target 5 landscape reconstruction priorities are determined, whereby:

- ecological communities, species and ecological processes that are currently declining are identified
- areas where declining ecological communities, species and ecological processes can be maintained and improved through restoration processes are identified and restoration targets established, by 2011

To protect and conserve declining and threatened species and ecological communities (in all biomes)

Target 6 decline in threatened species and ecological communities is halted

Target 7 recovery plans are implemented for:

- **100% of South Australia's Endangered and Vulnerable threatened species**
- **3 South Australian nationally threatened ecological communities, by 2011**

Target 8 conservation status is determined for South Australia's:

- **terrestrial, aquatic and marine flora (vascular plants) and fauna (vertebrates) species**
- **terrestrial, aquatic and marine ecological communities, by 2011**

Target 9 benchmarks for threatened species and ecological communities in each NRM region are established, by 2011

Target 10 criteria for identifying species and ecological communities that are declining but are not yet threatened are established, by 2011

Target 11 60% of South Australia's endangered and vulnerable threatened plant species are conserved ex situ, by 2010

To facilitate the sustainable harvest of indigenous species (in all biomes)

Target 12 no decline in conservation status of harvested species due to harvesting

Target 13 no decline in conservation status of ecological communities from which harvested species are derived due to harvesting

STRATEGIC AREA II Addressing the impacts of climate change

To improve understanding of the impacts of climate change on biodiversity

Target 14 gaps in knowledge and priority areas for research about climate change impacts on biodiversity are identified and appropriate research supported, by 2011

To increase awareness of climate change impacts and our capacity to respond

Target 15 awareness of the significance of the impacts of climate change on biodiversity is increased

To minimise the impacts of climate change on biodiversity

Target 16 the impacts of climate change on biodiversity are factored into long-term ecological restoration programs, by 2011

To factor the impacts of climate change on biodiversity into natural resource management and land-use planning

Target 17 the impacts of climate change on biodiversity are incorporated into State of Environment reporting, by 2011

STRATEGIC AREA III Improving information, knowledge and capacity

To identify and fill gaps in knowledge about biodiversity and its management

Target 18 a state research program to identify and fill gaps in scientific knowledge and understanding of biodiversity is developed and implemented, by 2011

Target 19 SMART (specific, measurable, achievable, relevant, time bound) indicators are identified and benchmarks determined for a representative sample of ecosystems within key IBRA and IMCRA bioregions, by 2011

Target 20 priority areas of high conservation value within ecosystems for priority IBRA and IMCRA bioregions are identified and mapped at an appropriate scale for biodiversity planning, by 2011

Target 21 systematic surveys are completed, whereby:

- the biological survey of South Australia's plants and animals covers 95% of the State; and existing and pre-European vegetation mapping for the agricultural areas and most of the arid areas of the State is completed, by 2011
- the biological survey of marine plants and animals in 2 of South Australia's IMCRA regions is completed, by 2011
- the survey, definition of environmental water requirements, and assessment of South Australia's Wetlands of National Importance is completed, by 2013
- the survey, habitat mapping, assessment and classification of South Australia's estuaries is completed, by 2011

To build capacity to collect and share information

Target 22 Indigenous knowledge that contributes to biodiversity management is captured, retained, and promoted in consultation with Indigenous communities, by 2011

STRATEGIC AREA IV Coordinating and integrating within the natural resource management sector

To recognise biodiversity conservation as a critical element of South Australia's natural resources and NRM programs

Target 23 biodiversity conservation priorities and targets are integrated into regional NRM plans, by 2007

Target 24 NatureLinks landscape ecological restoration programs are developed and implemented, whereby:

- priority areas for maintaining, improving and reconstructing biodiversity are identified and managed for biodiversity conservation outcomes accordingly
- 5 well established corridors linking public and private lands across the State are identified and managed for biodiversity conservation outcomes accordingly, by 2010

Target 25 biodiversity is considered equally alongside trade and agriculture in the implementation of the State Biosecurity Strategy, by 2006

To provide a contemporary legislative framework for the protection and conservation of South Australia's biodiversity

Target 26 South Australian legislation facilitating the protection and conservation of terrestrial, aquatic and marine biodiversity is developed, by 2010

To ensure the planning and development assessment system is capable of minimising the impacts of development on biodiversity

Target 27 within the planning and development system:

- objectives of regional biodiversity plans and NatureLinks strategies are reflected and promoted in development plans
- recognition of the need to identify and protect areas of biological significance within development plans is increased, by 2011

To use a range of incentive based policy mechanisms to foster engagement and commitment for biodiversity conservation

Target 28 environmental, social and economic values of biodiversity and ecosystem services are determined, and incentive-based policy mechanisms for delivering biodiversity conservation in South Australia are developed, by 2011

Target 29 perverse incentives in government policy instruments that act as barriers to biodiversity protection and conservation are identified and, if appropriate, removed, by 2011

To encourage and build capacity of resource managers

Target 30 landholder duty of care for biodiversity on all land tenures is defined and a baseline to inform public investment decisions established, by 2011

To ensure the effective implementation of No Species Loss

Target 31 No Species Loss priority targets inform the State NRM Plan

Target 32 relevant No Species Loss commitments are incorporated into government, industry and community natural resource management policy, planning and performance agreements, by 2007

Target 33 progress towards achieving No Species Loss targets is reported to the Minister for Environment and Conservation, by 2011

STRATEGIC AREA V Raising community awareness and participation

To raise community awareness

Target 34 landowner, industry, government and community awareness of how they can conserve and sustainably use biodiversity, and the need for stewardship of indigenous biodiversity are increased, by 2011

Target 35 material that supports teaching of and learning about the importance of biodiversity and its conservation in primary and secondary schools is developed, updated and incorporated into education curricula, by 2011

To raise community participation, ownership and decision making

Target 36 landowner, industry, government and community participation in new and existing biodiversity conservation programs is increased, by 2011

Target 37 a statewide biodiversity network for local and community organisations actively engaged in biodiversity conservation to share information and knowledge, and further stimulate local engagement is established

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PART ONE

No Species Loss – A Biodiversity Strategy for South Australia

Why does South Australia need a biodiversity strategy?

Indigenous biodiversity within SA is in decline. The State has one of the highest extinction rates within Australia. The number of threatened species and ecological communities is large and growing – and only a relative few are being managed for recovery. In all likelihood, biodiversity loss will continue unless we act to address the decline now.

Biodiversity is South Australia's biological wealth. As South Australians we share in and enjoy the societal and economic benefits of this wealth. Our quality of life, our sense of place and our cultural identity are intimately linked to the biodiversity that surrounds us. Much of the state's economy is based on the use of biological and other resources, and benefits from healthy ecosystems. Our survival depends on natural environments that function well. The survival of our plants and animals depends on healthy ecosystems.

Our terrestrial, aquatic and marine ecosystems, and the benefits they provide, are under threat. These ecosystems suffer from a suite of impacts including habitat modification, fragmentation of ecological communities and populations, invasive species, altered environmental water flows and fire regimes. Although much has been done to limit degradation of these ecosystems, further capacity, knowledge and time needs to be contributed to protect and conserve and rebuild these ecosystems.

The significant and urgent intervention required to halt this decline will take serious planning and endeavour. The risks to South Australia's future of failing to address the loss of our natural systems is unacceptably high. Ongoing decline will result not only in the loss of species that are culturally and ecologically important to the State, but also lost tourism and lifestyle opportunities, deteriorating water and air quality, and lower soil and marine production capacity.

South Australia must take up the challenge to halt, and where possible, reverse the decline in terrestrial, aquatic and marine biodiversity.

Our current conservation efforts are not sufficient to achieve the conservation and recovery of South Australia's biodiversity. The spatial scale and timeframe of our planning and management needs to change, particularly in the face of climate change. Conservation objectives must be set at the scale of landscapes and seascapes. Terrestrial, aquatic and marine ecological systems and processes must be maintained and improved, the best of what remains of our natural systems must be protected, and threatened species and ecological communities protected and restored. Timelines must reflect the fact that effective ecological restoration can take from a few to hundreds of years.

Changes in planning and management must be underpinned by a rigorous assessment of policy options including the development of a contemporary legislative framework that ensures industry and the community contribute effectively to the implementation of No Species Loss.

The effort required to halt the biodiversity decline will require long lasting, strategic and creative partnerships of community, industry and government.

All South Australians benefit from biodiversity and we are all responsible for the type of environmental future we create. We have an ethical obligation to protect South Australia's ecological future.

Footnote

plants and animals: In the No Species Loss strategy, plants and animals encompasses terrestrial, aquatic and marine plants (vascular plant, non-vascular) and animals (vertebrate, invertebrate).

terrestrial: In the No Species Loss strategy, the term terrestrial encompasses inland aquatic ecosystems, such as rivers and streams, lakes, wetlands, springs, groundwater and groundwater dependent ecosystems, and the indigenous inland aquatic species in these areas.

landscape: In the No Species Loss strategy, the term landscape encompasses both terrestrial and marine landscapes.

Where will No Species Loss make a difference?

No Species Loss – A biodiversity strategy for South Australia enunciates the South Australian Government's policy for halting decline in the state's terrestrial, aquatic and marine biodiversity over the next 10 years. Until now, biodiversity management in South Australia has lacked an overarching strategy.

With *No Species Loss* as a guide, South Australia can meet its international and national policy, legislative and duty of care obligations for biodiversity. The strategy facilitates delivery of targets within the 'Attaining Sustainability' objective of South Australia's *Strategic Plan*.

No Species Loss also helps deliver objects (1(a), 1(b), 1(e), 1(f) and 2) of the *Natural Resources Management Act 2004* for protecting biological diversity and restoring or rehabilitating ecological systems and processes.

With these mandates, *No Species Loss* takes a whole of government approach to biodiversity protection, conservation and sustainable management. Together with South Australia's *Strategic Plan* greenhouse emissions and ecological footprint targets, it lays the foundation for 'Attaining Sustainability'.

No Species Loss builds upon and is integrated with other key government environmental policies: Naturelinks, South Australia's State Natural Resources Management (NRM) Plan (in preparation), Estuaries of South Australia: Policy and Action Plan (draft), *Wetlands Strategy for South Australia* and *Living Coast Strategy for South Australia*.

The strategy allows South Australia to progress the following policy directions required for preventing further loss of species:

- governance arrangements that identify and clarify responsibilities
- collective responsibility and collaborative action for the conservation of biodiversity by all levels of government, industry and community
- landholder duty of care in all land ownership forms
- intergovernmental mechanisms for a state-wide network of conservation lands and ecological linkages
- knowledge creation and social and institutional capacity for effective conservation of biodiversity.

No Species Loss guides investment decisions by government, natural resource management industry and conservation bodies, and the wider community.

How will No Species Loss work?

No Species Loss presents a set of high level objectives and targets of relevance to communities and resource managers at regional and local levels. The priority targets have relevance to and inform the *Planning Strategy for South Australia* and the *State NRM Plan*.

Regional NRM boards can also take their lead from No Species Loss when they develop the biodiversity components of their NRM plans (identified as targets within *South Australia's Strategic Plan*), ensuring approaches are translated consistently from the State down to regional level, and across government, industry and community as biodiversity conservation initiatives are developed and delivered.

No Species Loss aims to promote strategic thinking by government, industry and community about how best to achieve its recommendations and targets. At the same time it is structured to open the door to ownership, engagement, partnerships and innovative solutions that will halt the decline in the State's biodiversity.

Government, industry and community key players are identified and assigned responsibility for delivering recommendations and targets within No Species Loss, to clarify, progress and report against the effectiveness of its implementation.

What are the challenges for South Australia's biodiversity?

There are genuine challenges for South Australia in addressing the underlying causes of its biodiversity decline:

- balancing investment in maintaining and improving landscapes and ecological processes, with the recovery of the threatened ecosystems and species they contain
- building the technical and delivery capacity required for biodiversity management, particularly in the areas of habitat degradation, threatened species recovery, invasive species and climate change
- translating the concept of ecosystem management (which has been well embraced by some but not all land managers) into ecologically sustainable management practices across the landscape
- expanding and making more readily accessible a knowledge base to inform transparent decision making
- integrating biodiversity conservation into all levels of decision making
- improving market recognition of biodiversity
- providing incentives that promote biodiversity conservation
- improving understanding of biodiversity and fostering partnerships in conservation action.

What drives and influences South Australia's biodiversity strategy?

No Species Loss brings together existing policy, legislative and strategic frameworks for natural resource management and biodiversity conservation. Key legislation and policies that relate to No Species Loss and their relevance at international, national, state and regional levels are shown in **Figure 1**.

In direct response to **South Australia's Strategic Plan** 'Attaining Sustainability' objective, No Species Loss addresses the targets: lose no species (T3.8); any clearance of native vegetation being offset by significant biodiversity benefit by 2005 (T3.6); and integrate native vegetation/biodiversity management in South Australia's eight NRM regional plans by 2010 (T3.7).

The strategy also embodies the government's **NatureLinks** policy – a landscape approach to biodiversity conservation driven by sound ecological principles – and addresses the *Strategic Plan*, NatureLinks target of 'have five well-established biodiversity corridors linking public and private lands across the state by 2010' (T3.4).

The *National Strategy for the Conservation of Australia's Biodiversity* seeks to fulfil Australia's **obligations** to the *International Convention on Biological Diversity 1992*. No Species Loss recognises and complements the priorities, strategic areas and objectives of the national strategy and, in doing so, fulfils South Australia's role in implementing Australia's international commitments.

In South Australia, responsibilities for biodiversity management and protection are covered by a number of pieces of **legislation**: Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*; South Australian *National Parks and Wildlife Act 1972* and *Fisheries Act 1982*; and the *Wilderness Protection Act 1992*, *Native Vegetation Act 1991*, *Coast Protection Act 1972*, *Natural Resources Management Act 2004* and others (which contribute to biodiversity protection). Biodiversity decline continues despite these legislative measures.

South Australia needs to undertake a rigorous analysis of the regulatory mechanisms needed to provide for better protection, restoration and sustainable use of biodiversity. Contemporary management focuses largely on ecosystems and is starting to address ecological processes, while legislation historically focuses on single species. A State biodiversity strategy such as No Species Loss establishes the long-term objectives for biodiversity legislative reform.

The *Natural Resources Management Act 2004* establishes the legislative framework for sustainable management and development of South Australia's natural resources, including South Australia's **State NRM Plan**, and incorporates objectives to prevent their degradation. The State NRM Plan seeks to integrate NRM across all public and private lands, in partnership with government, industry and community at a State level. No Species Loss will complement and directly inform the strategic directions and outcomes for biodiversity conservation within the plan at the state level.

South Australia's eight regional NRM boards are already delivering Biodiversity conservation initiatives, but these initiatives lack a broader biodiversity planning and prioritisation framework. A key target of the State NRM Plan is development of **Regional NRM plans** that contain a biodiversity component, each coordinating and

prioritising new and ongoing biodiversity conservation actions at regional and local scales. The overarching framework and specific recommendations and targets of *No Species Loss* will guide development and implementation of the Regional NRM Plans.

The *Development Act 1993* provides the legislative framework for South Australia's **planning and development assessment system**. It establishes the *Planning Strategy for South Australia* and development plans as the mechanisms for guiding development. The strategy sets the South Australian Government's direction for the future physical development of the State. In providing an overview of government priorities for the use of land, it gives direction to local government, the private sector, community and state government agencies. It is intended that the *Planning Strategy* will be consistent with the State NRM Plan and its biodiversity targets, and *South Australia's Strategic Plan*, including its targets for losing no species, and establishing five biodiversity corridors.

Development plans are development assessment documents that contain planning policy for relevant planning authorities to assess development applications against. It is important for the long-term protection of biodiversity that development plan policy is informed by *No Species Loss*, regional NRM plans, regional biodiversity plans and the NatureLinks initiative.

The Natural Resource Management Ministerial Council is working towards a **national approach to biodiversity decline** that will develop targeted and cost effective national actions to counter major system-wide threats to biodiversity, including habitat fragmentation, declining ecosystem function, invasive species and climate change. *No Species Loss* encompasses the relevant priorities and directions set by the council, and directs actions for addressing biodiversity decline at a state level.

The South Australian Premier's **Round Table on Sustainability** contributes to overseeing implementation of *South Australia's Strategic Plan*, providing expert, independent advice to the State Government on long-term issues relating to environmental sustainability. *No Species Loss* specifically addresses the challenges set within the Round Table's *3 Challenges, 4 Principles, 5 Actions for a Sustainable Future* report, including the urgent need to halt the loss; understand and manage our natural systems for ecological sustainability, and factor the impacts of climate change into biodiversity management.

Vision

'No Species Loss' is a statement of aspiration – species decline and become extinct naturally. This aspiration reflects the foresight, mindset and commitment needed by all South Australians if we are to conserve biodiversity for future generations. The 100-year vision for No Species Loss is:

The people of South Australia supporting their native plants, animals and ecosystems to survive, evolve and adapt to environmental change.

Goals

The timeframe of 25 years for these goals should allow planning, implementation and monitoring for all targets, and some improvement in the state of South Australia's biodiversity to be realised.

1. **Halt the decline** – halt and where possible reverse the decline of South Australia's terrestrial, aquatic and marine biodiversity
2. **Manage dynamic ecological systems** – minimise the risks to biodiversity and changing ecological systems from human impacts
3. **Informed decisions** – better understand South Australia's biodiversity, make information more readily available and underpin decision making with knowledge
4. **Active and integrated partnerships** – manage biodiversity through active partnerships of community, government and industry within the natural resource management sector, and factor biodiversity sustainability into their decision making
5. **Community ownership** – have urban, rural and indigenous communities that are more aware, and that better value and share the responsibility for, and enjoy the benefits of, South Australia's biodiversity

Principles

The underlying values, premises and approaches of following principles are fundamental to the conservation of South Australia's biodiversity. They guide how goals, objectives and targets of the strategy might be achieved, and the strategy implemented.

The principles focus on ecology and conservation biology, and emphasise ecological restoration at a landscape scale.

1. **Shared responsibilities** – All South Australians depend on biodiversity and have a responsibility for its conservation and sustainable use beyond their immediate needs; this extends to the needs of future generations and to other species and ecosystems that have intrinsic value and warrant respect.
2. **Governance** – Government is responsible for direction, leadership and providing relevant mechanisms for the conservation and sustainable use of South Australia's biodiversity.
3. **Working together** – The conservation and sustainable use of South Australia's biodiversity needs community, government and industry to work together in a coordinated way, to be involved in inclusive and transparent decision making, to share knowledge, costs and benefits, to be clear about their different roles and responsibilities, and to contribute capabilities and resources to biodiversity conservation.
4. **Knowledge** – Biodiversity conservation activities should be underpinned by relevant and best available ecological knowledge.
5. **Precautionary** – Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
6. **Outcome focused management** – Action to conserve biodiversity must take a clear focus on delivering biodiversity conservation outcomes and assessing cost effectiveness, and incorporate an adaptive management approach.
7. **In situ conservation** – Biodiversity is best conserved *in situ* where ecosystems and ecological processes maintain species in their natural habitats. Complementary *ex situ* management and research may also be required.
8. **Indigenous values** – Aboriginal heritage, knowledge and indigenous cultural values must be integrated with and integral to the conservation and sustainable use of biodiversity.
9. **Landscape planning** – Biodiversity conservation activities should be planned at a landscape scale, according to comprehensive, adequate and representative conservation principles.
10. **Long time frames** – Ecological restoration should be planned and delivered over appropriate time scales.
11. **Landscape restoration** – Habitat should be restored at large spatial scales.
12. **Metapopulations** – Separated populations of the same species in fragmented landscapes should be managed as subpopulations that need to be linked by the movement and dispersal of individuals across the landscape.
13. **Sustainable use** – Conserving biodiversity is a priority but does not preclude its use, where the use is ecologically sustainable for the long term.

What is biodiversity?

Life on earth is extraordinarily diverse and complex. Biological diversity, or 'biodiversity', is the variety of life in all its forms – the different plants, animals, fungi, bacteria and other micro-organisms, the genes they contain, and the ecosystems of which they form a part.

The biodiversity 'hierarchy' comprises three levels: *

- *genetic diversity* – the variety of genetic information contained in all individual living things, and varying within and between populations of organisms that comprise single species or wider groups
- *species diversity* – the variety of species on the earth
- *ecosystem diversity* – the variety of habitats, biotic communities and ecological processes.

Genes, species and ecosystems can also be described in terms of their attributes:

- *components* – the identity and variety of the genes, species and ecosystems
- *patterns* – the spatial organisation of a system, from habitat complexity within communities through to patterns of patches within a landscape
- *processes* – ecological and evolutionary processes through which genes, species and ecosystems interact with one another and with their environment (see **Figure 2**).

Landscapes provide another level within the biodiversity hierarchy, sitting above ecosystems. They represent the variety and arrangement of landforms, communities and land uses.

Within this hierarchy, each level contains more elements of biodiversity than in the level below. In general, management focuses on the compositional diversity, rather than patterns and ecological processes. The importance of ecological processes and their critical role in ecosystem and landscape function has not been fully appreciated.

Footnote - National Strategy for the Conservation of Australia's Biological Diversity 1996

Why is biodiversity important?

Biodiversity is South Australia's biological wealth. Much of South Australia's economy is based upon the use of biological resources. The goods and services that drive our economy and support our social systems stem largely from a healthy and functioning environment and the services it provides. Most of these 'ecosystem services' are the result of complex relationships and processes of the components of biodiversity – genes, species and ecosystems working together.

We rely on these services to provide the basics of life – food, water, shelter, clothing and clean air – and to regulate our climate, decompose organic wastes, pollinate plants, and inspire our societies and cultures.

Yet, we tend to take these services for granted because they are provided free of charge by nature and are always there. For the most part we are unaware of the complex relationships involved, and the long-term effects of our actions on these relationships and functions.

The necessary actions for halting the decline in South Australia's biodiversity are believed to be achievable, if they are backed by the community and supported by industry leaders. Timely and strategic conservation and management of biodiversity will help to maintain the flow of ecosystem services, which will in turn yield both immediate and long term dividends to South Australia's wellbeing.

Ecosystem services supporting human wellbeing*

Provisioning	Regulating	Cultural
Goods produced or provided by ecosystems: <ul style="list-style-type: none"> • food • water • wood • fibre • biochemicals • genetic resources 	Benefits from regulation of ecosystem processes: <ul style="list-style-type: none"> • climate regulation • disease regulation • pest regulation • water regulation • detoxification 	Non-material benefits of ecosystems: <ul style="list-style-type: none"> • intrinsic • spiritual • recreational • aesthetic • inspirational • educational • symbolic
Supporting Services necessary for production of other ecosystem services: <ul style="list-style-type: none"> • soil formation • nutrient cycling • primary production 		

*Adapted from Mainka et al. (2005)

What has South Australia achieved so far?

South Australia has a history of significant and critical progress in limiting biodiversity decline through government, industry and community initiatives. It has:

- progressed the establishment of a state system of public and private reserves set aside as core areas for protecting natural biodiversity (South Australia has the highest percentage of land area protected of any mainland state)
- established quarantine and threat abatement practices to minimise the introduction and impact of invasive and destructive pests, diseases and weeds
- regulated use, trade and development impacts on South Australia's biodiversity
- worked collaboratively to continually improve knowledge and understanding of South Australia's biodiversity (e.g. State Herbarium, Biological Survey of SA, South Australian Museum)
- researched, educated and extended biodiversity knowledge through public institutions, and teaching and learning networks
- developed significant biodiversity conservation policy that integrates landscape management (e.g. *Wetlands Strategy for South Australia*, *Living Coast Strategy for South Australia*)
- developed legislative frameworks and State and regional strategies that assist in protecting biodiversity outside conservation areas and fostered ecologically sustainable development and management across land tenures (e.g. *Native Vegetation Act 1991*, regional biodiversity plans, regional NRM plans)
- planned, progressed and implemented recovery planning and landscape restoration management regimes to reverse the decline in critically threatened species and ecological communities (e.g. NatureLinks)
- established a comprehensive framework to address the impacts of climate change on biodiversity
- engaged regional communities in integrating biodiversity planning and management into natural resource management decisions (e.g. regional NRM planning)
- engaged industry and landholders in management practices sympathetic to protecting biological systems within production environments (e.g. kangaroo harvesting industry).

PART TWO

Biodiversity decline

South Australia's biomes

The Interim Biogeographic Regionalisation for Australia (IBRA) and Interim Marine and Coastal Regionalisation for Australia (IMCRA) have divided Australia into biogeographic regions for planning national terrestrial and marine reserve systems. The unique combination of biological and physical elements of each bioregion provide a context for planning biodiversity management (see **Figure 3**).

The IBRA and IMCRA bioregions are combined into the Arid, Mediterranean and Marine biomes in this strategy (see **Figure 4**). Each biome represents a greatly simplified but biogeographically unique collation of ecological communities with different patterns in climate, land use, vegetation, habitat, extent, destruction and modification) and threats to biodiversity (see **Figure 5, 6 and 7**). They thus give a broad, user-friendly context for discussing biodiversity conservation and management issues.

The biomes represent discrete spatial units but they are dynamic: they connect with each other, and species and ecological processes interact across them. It is critical to conserve connectivity, both within and between biomes, through appropriate landscape planning.

Describing the habitat destruction and modification patterns of the Marine Biome is problematic. Human activities may have altered seascapes, however the spatial structure and spatial extent of impacts of South Australia's marine habitats are poorly known and understood. This lack of knowledge restricts comparisons with the Arid and Mediterranean biomes. Defining the habitat destruction and modification patterns of the Marine Biome is clearly a priority for action if effective and appropriate biodiversity priorities are to be established, and management delivered accordingly.

Although the native vegetation cover of the Arid Biome appears to be intact, total grazing pressure has significantly modified its composition and structure.

State and trends in biodiversity

Intensive and ongoing census work, primarily by the South Australian State Herbarium, the Biological Survey of South Australia and the South Australian Museum, has provided an extensive although incomplete listing of the plant and animal species present in South Australia.

Information on species presence, distribution and endemism is constantly being updated. Vertebrates and vascular plants are the best known of all the major groups but our knowledge of them is still far from complete. The marine environment is particularly poorly understood.

Loss of South Australia's native plant and animal species since the arrival of European settlers has been significant. At least 23 mammals, 2 birds, and 26 plants have already become extinct.

Today about one quarter (over 1000 species) of all of the terrestrial vascular plants and vertebrate animals in South Australia are considered to be threatened – 63% of the state's mammals and 22% of the state's vascular plants are formally listed as threatened at the state level (see **Figure 8**).

Many species and communities, while still relatively secure across the state, are threatened with extinction at the regional level. Other species and communities are declining at rapid rates but do not yet meet state or national criteria for listing as threatened. Identifying and managing these species before they decline to critical levels is a priority.

The Australian Government recognises the need to protect threatened ecological communities through enabling their listing under the *Environment Protection and Biodiversity Conservation Act 1999*. Three South Australian communities threatened with extinction have been listed to date: the Buloke woodlands of the Murray-Darling and Riverina bioregions; communities dependent on Great Artesian Basin water; and the swamps of the Fleurieu Peninsula.

South Australian legislation has no provision for officially rating and listing the state's threatened ecological communities. A draft compilation of threatened ecosystems lists 33 of South Australia's ecological communities in the Mediterranean Biome and 9 in the Arid Biome.

The conservation status of South Australia's marine species and ecological communities is largely unknown. A list of marine species of conservation concern in South Australia is being developed. The composition and ecology of South Australia's invertebrate fauna, fungi and soil flora are much less documented, little appreciated and poorly understood.

A greater proportion of species and ecological communities are threatened within the Mediterranean Biome than in the Arid Biome. Most of South Australia's recovery efforts are directed towards Mediterranean Biome species.

At a state level, more species and ecological communities are threatened with extinction than are being managed for recovery. If this deficit in recovery effort

continues into the future, the loss of South Australia's threatened species and ecological communities is certain.

Recovery is being planned or managed for some state and nationally listed plant and animal species but not for all threatened or declining species. Some plant and animal communities are benefiting from multi-species recovery approaches. Not all recovery actions are formalised in recovery plans; some are a planned consequence of integrated threat management programs.

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PART THREE

Biodiversity conservation in South Australia

Five elements

The complexity of biodiversity dictates that actions for conservation and management must vary to suit the circumstances. Each of the five management examples below serves a slightly different strategic purpose, delivers different outcomes and is, in some ways, limited in its capacity to conserve all attributes (components, patterns and processes) of the biodiversity hierarchy (genes, species and ecosystems).

No Species Loss aims for improved coordination and integration between these five elements to optimise biodiversity conservation outcomes at the state level.

South Australia's protected area network

A comprehensive, adequate and representative reserve system (CARRS) of protected areas on private, public and indigenous land specifically established and managed to protect indigenous biodiversity includes a full range of ecosystems (comprehensive), maintains viability of species and ecosystems (adequate), and reflects the biodiversity of the ecosystems (representative).

South Australia is using CARRS principles to establish a network of formally protected areas to contribute to the conservation of indigenous biodiversity in situ, in accordance with the National Reserve System (see **Figure 9**). The network, while incomplete, is providing an ecological core to ecological conservation and restoration initiatives (in accordance with NatureLinks). Because of their differing sizes, protected areas vary significantly in their ability to conserve ecological processes and so cannot adequately protect all biodiversity. Recognition that South Australia's network of terrestrial protected areas on its own cannot ensure the conservation of all of South Australia's biodiversity stimulated development of the NatureLinks landscape scale ecological restoration approach.

South Australia is committed to developing 19 marine protected areas that will protect and conserve marine biodiversity, while providing for the ecologically sustainable use of our marine resources within a multiple-use system.

Key threatening process management

Caulerpa taxifolia infestation is a key threatening process for the South Australian marine environment. The weed can form dense communities excluding and smothering other marine life and poses a significant threat to South Australia's marine ecosystems and fishing industry.

Control of *Caulerpa* in the Port River–Barker Inlet area has been based on physical removal by suction, salt treatment and smothering with black plastic. The weed has been eradicated in West Lakes by reducing the level of salinity in the lake system with stormwater from the River Torrens.

A range of management strategies is available for *Caulerpa* – prevention, eradication and long-term control (containment, suppression and acceptance). Choice of management strategy varies with the degree of threat, which itself depends on the phase of weed invasion (from emerging to complete) and infestation coverage.

Control strategies are prioritised and targeted to protect key biodiversity and fisheries resources. Tailoring management to suit local conditions allocates resources efficiently and deals strategically with the risks of weed infestation to biodiversity and industry. Survey, research and public awareness programs have also been important in managing and controlling this weed.

Landscape management

Bounceback is a major ecological restoration program operating at a regional scale in the semi-arid Flinders and Olary bioregion of South Australia. The combined threats of excessive grazing, weed infestation and introduced predators have degraded habitats, and seen the extinction of small mammals and a decline in the yellow-footed rock-wallaby (*Petrogale xanthopus*).

Threat abatement programs focus on these threats and operate both on and off reserves. Monitoring aids understanding of the ecological response of the landscape to management and directs future management activities. Ecological recovery is a slow process but Bounceback has made significant strides, for example the recovery of populations of yellow-footed rock-wallabies and of broadscale habitats.

The cooperative partnerships with landholders, and exchange of management advice and ideas, are critically important in this success story. The project epitomises the NatureLinks landscape approach to integrated design and implementation of conservation programs.

Threatened ecosystem management

Great Artesian Basin discharge spring wetlands on its northern, western and southern margins support unique communities of indigenous species which are listed nationally as Endangered. A plan is currently being drafted for recovery of the spring groups to which the relevant states – Queensland, New South Wales and South Australia – will be signatories. The areas of Lake Eyre, Lake Frome and Dalhousie Springs in South Australia contain discharge spring wetlands.

The springs are threatened by aquifer drawdown from drilled bores, spring excavation, weeds, and disturbance from stock, feral animals and tourism. Recovery actions against these threats will engage many interstate stakeholders, particularly landholders, at many levels. Recovering the GAB spring complex can only succeed with a multi-level approach. Restoring ecosystem function must be planned and carried out at a landscape scale (e.g. by managing water extraction across the basin to ensure spring flows do not decrease) and be supported by local ecological communities being restored at springs.

Threatened species management

The South Australian subspecies of the glossy black-cockatoo (*Calyptorhynchus lathami halmaturinus*) has disappeared from the South Australian mainland and is restricted to Kangaroo Island where its population has increased from about 195 to 300 individuals over the last 10 years. It is listed nationally as an Endangered species. The gradual recovery has been achieved by implementing recovery plan actions.

Regular monitoring of feeding and breeding habitats, nest performance and adult survival has identified and assessed threats (e.g. nest predation by possums, competition for hollows and habitat loss) and helped prioritise threat mitigation activities (e.g. protecting nesting and feeding habitat).

Conservation of glossy black-cockatoo habitat on Kangaroo Island has also benefited a number of other species that are declining on the mainland including the southern stone curlew, beautiful firetail, bassian thrush and scarlet robin.

Community involvement in recovery of the glossy black-cockatoo is a crucial factor in the bird's recovery. The program, while focusing on a single species, has raised public awareness of and engagement in broader biodiversity conservation issues.

PART FOUR

Protecting and conserving South Australia's biodiversity

The framework for action to achieve the 5 goals of *No Species Loss* is based in 5 strategic areas:

- **Strategic Area I** – Conserving South Australia's biodiversity
- **Strategic Area II** – Addressing the impacts of climate change
- **Strategic Area III** – Improving information, knowledge and capacity
- **Strategic Area IV** – Coordinating and integrating within the natural resource management sector
- **Strategic Area V** – Raising community awareness and participation

For each strategic area, a scope defines the context for objectives, targets and recommendations for that strategy.

Desired outcomes translate the goals of *No Species Loss* and are set for 2030. This timeframe allows for a change in trajectory of the decline in South Australia's biodiversity, and for time to evaluate and refine strategies.

Targets and recommendations have a 10 year timeline, by 2016, unless otherwise stated. Recommendations are identified where a lack of knowledge significantly restricts the capacity to set meaningful targets. For Strategic Area I, the targets and recommendations are to be achieved at the scale of the biome where stated.

The targets and recommendations will guide actions over the next 10 years but will not be sufficient in themselves. Many focus on gaps and inadequacies in current management that need to be bridged to halt the decline in South Australia's biodiversity. Therefore they should trigger actions additional to current effective management activities.

Many of the targets and recommendations focus on enhancing existing programs rather than creating new initiatives. Priority targets (in bold) are identified because:

- some will contribute relatively more towards biodiversity goals than others
- not all actions can be implemented at once
- some actions need to precede others.

Priority targets are the most likely to best position South Australia in the short term (the next 5 years) to achieve the longer-term goals of *No Species Loss*.

Responsibility for progressing and contributing to targets and recommendations is spread across a number of government agencies, industry and community. Key players are identified as those with a 'lead agency' (LA) role or those with a 'support partner' (SP) role for each target and recommendation.

Performance information reflects the focus of the objective and the direction to be followed in meeting the target.

The principles of No Species Loss (see Part One) underpin the values, premises and approaches fundamental to delivery against targets and of recommendations.

Note:

Lead Agency (LA) and Support Partner (SP) responsibilities will be determined during the consultation process.

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Strategic Area I – Conserving South Australia's biodiversity

Scope

South Australia's landscapes, including natural and modified ecosystems and communities within and outside of protected areas, rural production and urban environments, and the ecosystems and indigenous species within these areas

Inland aquatic ecosystems (an integral part of South Australia's terrestrial landscapes and their connection through coastal to marine landscapes), such as rivers and streams, lakes, wetlands, springs, groundwater and groundwater dependent ecosystems, and the indigenous species in these areas

Coastal and marine landscapes, including estuaries, inshore coastal and offshore areas within South Australia's jurisdiction, including natural and modified ecosystems and communities, within and outside of protected areas, and the resident and migratory marine species inhabiting these areas

Desired outcomes for 2030

Landscape based conservation planning and biodiversity management based on sound ecological principles by government, industry and community in partnership

Species, ecosystems and landscapes maintained, improved and restored over long time frames

A net gain in extent and condition of biodiversity where:

- priority degraded habitats are restored, increased in area, improved in ecological condition and better connected
- ecological connectivity is maintained or restored across some important landscapes
- a representative range of habitats and ecosystems is protected and adequately managed on public and private lands
- habitat is not further degraded and no extinctions are human induced
- genetic diversity is maintained, and in situ conservation of indigenous genetic resources is complemented by ex situ means, where required
- species are accessed and harvested in an informed, managed and ecologically appropriate manner
- no new threats are introduced and existing threats are mitigated effectively
- biodiversity is managed for economic, social and environmental sustainability

A landscape approach to biodiversity conservation

Implicit within the biodiversity hierarchy is the notion that there are more biodiversity elements contained within landscapes than there are in their ecological communities, than there are in species. Managing biodiversity within a landscape context therefore provides the most efficient and effective means of conserving most ecosystems and the species they contain. This logic underpins the NatureLinks approach to ecological restoration and biodiversity management.

The South Australian approaches to biodiversity management (Part Three) clearly demonstrate the need coordination and integration at a state level, with a flow on of more efficient and effective management at regional levels.

Management should be planned at the landscape scale, encompassing both private and public lands, and should recognise and facilitate the ecological connectivity of the biomes. There is a clear need to identify a comprehensive (includes a full range of ecosystems), adequate (maintains viability of species and ecosystems) and representative (reflects the biodiversity of the ecosystems) array of ecosystems, their ecological processes and most of the species they contain, and prioritise them for both protection and conservation management.

Some ecosystems and species (e.g. those that are harvested, have specialised habitat requirements or are threatened) that are inadequately provided for under the landscape planning and management approach will require individual management to ensure their conservation.

The differing patterns in habitat destruction and modification of the three biomes will dictate the type of management actions for those biomes. A series of conservation actions consistent with the NatureLinks approach and delivered at a local scale will support landscape scale planning in:

- maintaining habitats currently in good condition by preventing, removing and controlling threats (a priority in less altered landscapes)
- improving habitats to achieve good condition by removing, controlling and reducing threats
- reconstructing habitats, using restoration and reintroduction techniques, where it helps improve the condition of adjacent relic habitats (primarily in the Mediterranean Biome).

Strategic Area I focuses on protecting, maintaining, improving and reconstructing ecosystems and ecological processes within landscapes, and recovering threatened ecological communities and species. For the Marine Biome, there is the additional focus on defining habitat loss and modification patterns.

STRATEGIC AREA I	Conserving South Australia's biodiversity	
OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R) by 2016 (unless noted otherwise)*	PERFORMANCE INFORMATION
To create and manage protected areas (in all biomes)	<p>T1 within the protected area network:</p> <ul style="list-style-type: none"> 80% of South Australia's regional ecosystems are represented, by 2011 all state and nationally threatened ecosystems are represented <p>LA= ; SP=</p> <p>T2 19 marine protected areas are created by 2010</p> <p>LA= ; SP=</p> <p>T3 50% of the protected area network is actively managed for biodiversity conservation</p> <p>LA= ; SP=</p> <p>R1 identify all terrestrial, aquatic and marine ecosystems that are a priority for protection and determine state and regional conservation targets and priorities for CARRS</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> Proportion of ecosystems represented in the protected area network Number of protected areas created Proportion and area of protected areas where biodiversity condition has improved as a result of management plan development and implementation
To maintain and improve landscape condition (in all biomes)	<p>T4 threats to biodiversity are managed, whereby:</p> <ul style="list-style-type: none"> the introduction and establishment of new threats is prevented threats that have the potential to become significant threats are eradicated or contained significant existing threats are managed (contained, suppressed), by 2011 <p>LA= ; SP=</p>	<ul style="list-style-type: none"> Change in threat status Proportion of threatened or declining species whose conservation status is improved by controlling threatening processes Area of land or sea where biodiversity condition is improved by controlling threatening processes Number of threat abatement plans (for both species and ecological processes) in place

<p>To reconstruct landscapes (in the Mediterranean Biome)</p>	<p>T5 landscape reconstruction priorities are determined, whereby:</p> <ul style="list-style-type: none"> • ecological communities, species and ecological processes that are currently declining are identified • areas where declining ecological communities, species and ecological processes can be maintained and improved through restoration processes are identified and restoration targets established, by 2011 <p>LA= ; SP=</p>	<ul style="list-style-type: none"> • Critical gaps in knowledge identified • Areas for restoration mapped and targets established
<p>To protect and conserve declining and threatened species and ecological communities (in all biomes)</p>	<p>T6 decline in threatened species and ecological communities is halted</p> <p>T7 recovery plans are implemented for:</p> <ul style="list-style-type: none"> • 100% of South Australia's Endangered and Vulnerable threatened species • 3 South Australian nationally threatened ecological communities, by 2011 <p>LA= ; SP=</p> <p>T8 conservation status is determined for South Australia's:</p> <ul style="list-style-type: none"> • terrestrial, aquatic and marine flora (vascular plants) and fauna (vertebrates) species • terrestrial, aquatic and marine ecological communities, by 2011 <p>LA= ; SP=</p> <p>T9 benchmarks for threatened species and ecological communities in each NRM region are established, by 2011</p> <p>LA= ; SP=</p> <p>T10 criteria for identifying species and ecological communities that are declining but are not yet threatened are established, by 2011</p> <p>LA= ; SP=</p> <p>T11 60% of South Australia's endangered and vulnerable threatened plant species are conserved ex situ, by 2010</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> • Proportion of species moved to a lower level of threat status category according to National Parks and Wildlife Act 1972 criteria • Proportion of species/communities where conservation status is assessed • Proportion of species for which benchmarks are known (range, abundance, area occupied, trends) • Proportion of ecological communities for which benchmarks are known (diversity, pattern, condition, trends) • Proportion of threatened plant species in accessible, long term seed conservation collections

To facilitate the sustainable harvest of indigenous species (in all biomes)

<p>T12 no decline in conservation status of harvested species due to harvesting LA= ; SP=</p>	<ul style="list-style-type: none"> conservation status of harvested species and the ecological communities they come from
<p>T13 no decline in conservation status of ecological communities from which harvested species are derived due to harvesting LA= ; SP=</p>	
<p>R2 support the development of livelihoods based upon the sustainable use of biodiversity and promote fair and equitable sharing of benefits arising from the use of biodiversity LA= ; SP=</p>	

* Targets in bold are priority targets to be achieved by 2011 at the latest

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Strategic Area II – Addressing the impacts of climate change

Scope

Minimisation of the risks and impacts to biodiversity from human induced climate change

Desired outcomes for 2030

Priority research and monitoring programs in place, significantly enhancing understanding of how biodiversity will respond to the combined impacts of climate change and other threats to biodiversity

South Australians understanding the impacts of climate change on biodiversity and engaged in actions to maximise options for adaptation

Adaptation strategies in place to manage the risks from climate change to our indigenous biodiversity

A precautionary approach taken in managing climate change impacts on biodiversity

Climate change management effectively coordinated across government, industry and community, and an integral part of natural resource management

Environmental change

South Australia's biodiversity is now challenged by human induced climate change. Predictions suggest that South Australia will experience a 1–6°C increase in mean temperature by 2070, warming more inland than near the coast. The expected higher annual rainfall in the north will be accompanied by a 25–30% decline in rainfall in the Mediterranean Biome by 2070, mainly in winter and spring falls. Weather patterns will be more extreme: environmental water flows will decrease, and on the increase will be drought and storm frequency, risk of flood and bushfire, sea levels, and storm surges in some coastal areas.

The projected increase in water temperature in marine and coastal environments, and increase in sea level will drown some coastal habitats, and change water current patterns and possibly nutrient upwellings – all of which threaten existing patterns in distribution and extent of many marine communities and habitats.

Impacts

How South Australia's species and ecosystems respond to these climatic changes is uncertain. Species might change in distribution and abundance, population dynamics, life history patterns and reproductive cycles; vulnerable species might be at increased risk of extinction; invasive species might gain more opportunities for establishing in wider areas. Ecological processes could well change.

No Species Loss is aligned with the directions set by the *National Biodiversity and Climate Change Action Plan 2004–2007*. It also complements and builds on the biodiversity strategies within South Australia's Greenhouse Strategy (in preparation). The challenge is to set a path that ultimately helps the natural adaptation of species to climate change, and protects species that are particularly vulnerable to climate change while not diverting resources to species that are unlikely to survive the transition.

Strategic Area II focuses on increasing our understanding of climate change, minimising the impacts of climate change on biodiversity, and incorporating knowledge and harm-minimisation strategies into natural resource and land use management strategies.

STRATEGIC AREA II	Addressing the impacts of climate change	
OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R) by 2016 (unless noted otherwise)*	PERFORMANCE INFORMATION
To improve understanding of the impacts of climate change on biodiversity	<p>T14 gaps in knowledge and priority areas for research about climate change impacts on biodiversity are identified and appropriate research is supported, by 2011</p> <p>LA= ; SP=</p> <p>R3 improve the capacity to model and predict the impacts of climate change on biodiversity</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> • Critical gaps in knowledge identified and investigated (e.g. identifying species, and ecological communities and processes vulnerable to climate change, and the cumulative effects of other threatening processes whose impacts on biodiversity will be exacerbated by climate change)
To increase awareness of climate change impacts and our capacity to respond	<p>T15 awareness of the significance of climate change impacts on biodiversity is increased</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> • Proportion of natural resource managers, land use planners and community who understand the impacts of climate change on biodiversity
To minimise the impacts of climate change on biodiversity	<p>T16 the impacts of climate change on biodiversity are factored into long term ecological restoration programs by 2011</p> <p>LA= ; SP=</p> <p>R4 factor the impacts of climate change on biodiversity into programs for identifying and selecting reserves with the potential to act as refuges and areas for assisting movement across future bioclimatic gradients for vulnerable biodiversity</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> • Proportion of programs where climate change impacts are considered

To factor the impacts of climate change on biodiversity into natural resource management and land-use planning

T17 the impacts of climate change on biodiversity are incorporated into State of Environment reporting, by 2011

LA= ; SP=

R5 incorporate the impacts of climate change on biodiversity (based on modelled projections) into species and ecological community monitoring programs, and use these to establish and revise management and adaptation strategies

LA= ; SP=

R6 review the potential for land-use and reserve planning policies, strategies, programs and planning instruments to take the current and future impacts of climate change on biodiversity into account

LA= ; SP=

- The impact of climate change on biodiversity is a reporting requirement within State of Environment Report

*.Targets in bold are priority targets to be achieved by 2011 at the latest

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Strategic Area III – Improving information, knowledge and capacity

Scope

South Australia's need to collect, improve and share information, knowledge and experience; to build capacity to more effectively manage and, where appropriate, use its biodiversity; to monitor and learn from past experience; and to incorporate the knowledge into future biodiversity management

Desired outcomes for 2030

Biodiversity conservation targets in place and guiding natural resource management

A bioregional and landscape approach to biodiversity management supported by a complete inventory and survey of South Australia's species and ecosystems in all environments; and significant progress in understanding ecological processes and the impact of human activities upon them

Biodiversity conservation and management activities underpinned by sound ecological knowledge

Monitoring against biodiversity conservation targets indicating positive trends in biodiversity condition and management effectiveness

Decisions that affect South Australia's biodiversity based on adequate information delivered in a timely manner, underpinned by an expanding knowledge base that draws upon indigenous and other local knowledge

A precautionary approach to decision making when knowledge is insufficient

Technological break-throughs in biodiversity management that are ecologically appropriate, socially acceptable and of practical use to natural resource managers produced by partnerships in applied research

Information widely accessible in appropriate forms to community, government and industry

Biodiversity managers with the capacity to effectively share their skills and experiences with others

A prerequisite

Improved knowledge and understanding of biodiversity is needed. It is essential to good planning, decision-making and management across government, industry and community. Knowledge of the extent and condition of South Australia's terrestrial, aquatic and marine biodiversity is incomplete. Only with continued development and application of knowledge about the biodiversity hierarchy and its attributes, can patterns and trends be detected and South Australia's biodiversity be sustainably managed. Building capacity across government, community and industry will be fundamental to the collection, dissemination and sharing of knowledge and information.

Conservation indicators and targets

South Australia does not have appropriate measures and indicators that reflect the components, patterns and processes of species and ecosystems. There is an urgent need to identify criteria for, and then set, conservation indicators against which to measure the progress of our biodiversity management, particularly in the marine environment. Development of ecologically meaningful targets is a critical first step towards integrating sustainable biodiversity management into South Australia's natural resource management framework.

Research partnerships

Research partnerships with a foundation in both new and existing biodiversity management programs will need to be established to progress the development of conservation benchmarks (or baselines) and targets. South Australia's understanding of biodiversity is largely focused on component and pattern attributes (see **Figure 2**): Research is needed into: how ecosystems function; the role of human and natural disturbance in maintaining ecosystem function; how ecosystems react to disturbance and recover over a range of spatial and temporal scales; what determines and how to improve the resilience of ecosystems; and how ecosystems make transitions between various states of degradation and condition.

This knowledge is essential for determining management regimes and their likely impacts. Understanding ecological processes and developing targets that reflect their state and trends is pivotal to predicting the impacts of human activity, and the requirements for maintaining, improving, recovering and reconstructing landscapes, ecological communities and species.

Monitoring

Better systems, based upon a consistent platform of biodiversity measures and indicators, are required to ensure monitoring methods are consistently applied across issues and jurisdictions, and to coordinate information sharing. For these systems to build capacity, clear accountabilities for collecting, analysing and interpreting, managing and sharing that information must be assigned at state, regional and local levels.

Strategic Area III focuses on the processes needed to address: issues in acquiring, managing and converting data to knowledge; methods of transferring that knowledge; and ultimately use of knowledge. Failure in any of these processes hinders South Australia's ability to use information for adaptive management.

STRATEGIC AREA III Improving information, knowledge and capacity

OBJECTIVES

To identify and fill gaps in knowledge about biodiversity and its management

TARGETS (T) and RECOMMENDATIONS (R) by 2016 (unless noted otherwise)*

PERFORMANCE INFORMATION

T18 a state research program to identify and fill gaps in scientific knowledge and understanding of biodiversity is developed and implemented, by 2011

LA= ; SP=

T19 SMART (specific, measurable, achievable, relevant, time bound) indicators are identified and benchmarks determined for a representative sample of ecosystems within key IBRA and IMCRA bioregions, by 2011

LA= ; SP=

T20 priority areas of high conservation value within ecosystems for priority IBRA and IMCRA bioregions are identified and mapped at an appropriate scale for biodiversity planning, by 2011

LA= ; SP=

T21 systematic surveys are completed, whereby:

- the biological survey of South Australia's plants and animals covers 95% of the state; and existing and pre-European vegetation mapping for the agricultural areas and most arid areas of the state completed, by 2011

LA= ; SP=

- the biological survey of marine plants and animals in 2 of South Australia's IMCRA regions completed, by 2011

LA= ; SP=

- the survey, definition of environmental water requirements, and assessment of South Australia's Wetlands of National Importance completed, by 2013

LA= ; SP=

- the survey, habitat mapping, assessment and classification of South Australia's estuaries

- Critical gaps in knowledge identified and investigated (focusing on: biodiversity components, patterns and processes; impacts of invasive species and climate change; restoration and recovery of species, and ecological communities and processes)
- Proportion of ecosystems and area covered by SMART indicators (that reflect state and trends in ecosystem condition and detect changes in response to management) with benchmarks
- Proportion of area covered by GIS and information databases
- Proportion of taxa described
- Proportion of area of land/inland aquatic/sea covered by comprehensive biological inventories (including assessment of habitat loss and modification, and of habitats most sensitive to harvesting and other disturbances)

<p>To monitor and share information on changes in biodiversity</p>	<p>completed; by 2011 LA= ; SP=</p>	
	<p>R7 establish a statewide monitoring, evaluation and reporting capability, using SMART indicators to provide information and a spatial understanding of terrestrial, aquatic and marine biodiversity and associated threats; and the effectiveness of measures to avoid, remedy or mitigate the adverse effects of activities on biodiversity LA= ; SP=</p> <p>R8 use monitoring results to report local, regional and state perspectives (including State of Environment) on condition and trends in South Australia's indigenous biodiversity, to report on progress towards halting biodiversity decline, reviewing and refocusing management action, and to inform research to fill critical information gaps LA= ; SP=</p>	
<p>To build capacity to collect and share information</p>	<p>T22 Indigenous knowledge that contributes to biodiversity management is captured, retained and promoted in consultation with Indigenous communities, by 2011 LA= ; SP=</p> <p>R9 develop and strengthen systems for consolidating and sharing new and existing information on trends in biodiversity condition and responses to management so that government, industry and community can make decisions and take action to support the conservation and sustainable use of biodiversity LA= ; SP=</p> <p>R10 improve systems for providing relevant and timely information on areas of ecological significance to inform the development planning system LA= ; SP=</p> <p>R11 develop a nationally networked information system on existing invasive species, providing access to information on their identification, their invasiveness and current national and international distributions, by 2008 LA= ; SP=</p>	<ul style="list-style-type: none"> • Information systems developed • Proportion of people sharing information on biodiversity conservation and management issues

* Targets in bold are priority targets to be achieved by 2011 at the latest

Strategic Area IV – Coordinating and integrating within the natural resource management sector

Scope

The role of government in establishing state biodiversity directions, goals and priorities, identifying roles and responsibilities in biodiversity management, providing guidance, and coordinating policies and programs for the conservation and sustainable use of South Australia's biodiversity

Desired outcomes for 2030

Clearly defined and understood government, industry and community roles and responsibilities for the conservation and sustainable use of South Australia's biodiversity

Government leading the integration and coordination of biodiversity conservation policy and management initiatives, and involving statewide, regional and local industries and communities

Clearly identified South Australian priorities for conserving and sustainably using its biodiversity

Strong alignment of the state's biodiversity conservation goals across government, industry and community sectors

Priority biodiversity conservation programs determined and adequately resourced for delivery

Legislation with stronger provision for protecting and conserving biodiversity

Resource and land use planning and decision making that fully considers biodiversity conservation

All natural resource and land use managers understanding and adopting ecologically sustainable development principles

Policy based mechanisms with significant incentives for landholders to conserve habitats and ecosystems important for biodiversity on land outside of protected areas

Conservation and management of biodiversity an integral part of natural resource management

Environmental legislation

South Australia's environmental legislation and policy framework provides a foundation for the conservation and sustainable use of biodiversity. However, gaps within this framework, and its ineffective and inconsistent implementation, continue to confound South Australia's ability to manage biodiversity sustainably.

This is in part due to the absence of a biodiversity strategy. However, legislation with stronger provision for protecting and conserving biodiversity would increase attention on biodiversity conservation in resource and land use planning and decision making, and integrate biodiversity considerations into other policies and legislation.

Regional roles, responsibilities, capacity

Numerous state and local government agencies, industry groups and the community share biodiversity management functions. The recent establishment of regional NRM boards under the *Natural Resources Management Act 2004* has further progressed coordination of biodiversity management delivery.

Regions have made impressive and significant gains in biodiversity management. They are in need of support to continue to grow in effectiveness and accountability, and the roles and responsibilities of some state and local agencies and their relationships to each other still need to be clarified.

Ecologically sustainable development and industry policy

Biodiversity sustainability could be better integrated within natural resource management policy. Incorporation and adoption of ecologically sustainable development principles into industry policy would be a significant move towards better aligning the strategic directions for biodiversity management of government, industry and community.

Increasing private land conservation capacity

South Australia's protected area network cannot alone ensure the long term sustainability of South Australia's biodiversity; private land conservation initiatives are critical to halting its decline. The engagement and commitment of rural land managers is critical for protecting and conserving South Australia's biodiversity.

If landholders are to be effectively engaged, current initiatives and support mechanisms must be extended. New incentive-based policy mechanisms must be developed and evaluated if habitats and ecosystems important for biodiversity are to be conserved on land outside of protected areas.

Planning systems

Development planning currently varies significantly in the way that it deals with biodiversity considerations in decision-making. Better integration of biodiversity outcomes into planning will require improved systems for identifying areas of ecological significance, and timely provision of appropriate and up to date knowledge into planning and development assessment processes.

A set of policy modules for use in council development plans is being prepared by Planning SA through the Better Development Plans project. The modules will encourage more consistency in the natural resource management content of

development plans where natural resource management policy affects development.

Strategic Area IV focuses on the coordination and integration of biodiversity conservation within the natural resource management sector, including establishing the commitment and structures needed to implement South Australia's biodiversity strategy are also covered.

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STRATEGIC AREA IV Coordinating and Integrating within the natural resource management sector

OBJECTIVES

To recognise biodiversity conservation as a critical element of South Australia's natural resources and NRM programs

TARGETS (T) and RECOMMENDATIONS (R) by 2016 (unless noted otherwise)*

PERFORMANCE INFORMATION

T23 biodiversity conservation priorities and targets are integrated into regional NRM plans, by 2007

LA= ; SP=

T24 NatureLinks landscape ecological restoration programs are developed and implemented, whereby:

- **priority areas for maintaining, improving and reconstructing biodiversity are identified and managed for biodiversity conservation outcomes accordingly**
- **5 well-established corridors linking public and private lands across the state identified and managed for biodiversity conservation outcomes accordingly, by 2010**

LA= ; SP=

R12 expand and modify existing funding mechanisms to protect and conserve habitats and ecological communities important for biodiversity

LA= ; SP=

T25 biodiversity is considered equally alongside trade and agriculture in implementation of the State Biosecurity Strategy by 2006

LA= ; SP=

R13 develop a state plan for the potential use of indigenous biodiversity genetic resources with a management agreement that ensures conservation of biodiversity and appropriate returns to the state in improved knowledge of the biota and increased capacity for its conservation

LA= ; SP=

- Proportion of NRM regions that have NRM plans that incorporate regional biodiversity conservation priorities and targets

- Area covered that shows an improvement in biodiversity condition as a result of ecological restoration programs

- Number of new threats to biodiversity introduced

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To provide a contemporary legislative framework for the protection and conservation of South Australia's biodiversity

T26 South Australian legislation facilitating the protection and conservation of terrestrial, aquatic and marine biodiversity is developed, by 2010

LA= ; SP=

- Legislation mechanisms created

To ensure the planning and development assessment system is capable of minimising the impacts of development on biodiversity

R14 ensure planning policy and development processes are informed by ecological investigation and impact assessment specific to the affected area and its biodiversity

LA=DEH, Local Govt; SP= PIRSA, PLNSA, DWLBC

R15 continue to implement and improve environmental impact assessment processes to ensure minimal impact on biodiversity by resource extractive and development projects, and that the full cost is borne by the developer

LA= ; SP=

T27 within the planning and development system:

- objectives of regional biodiversity plans and NatureLinks strategies are reflected and promoted in development plans
- recognition of the need to identify and protect areas of biological significance within development plans is increased, by 2011

LA= ; SP=

- Proportion of development plans amended to include biodiversity policies

To use a range of incentive based policy mechanisms to foster engagement and commitment for biodiversity conservation

T28 environmental, social and economic values of biodiversity and ecosystem services are determined, and incentive-based policy mechanisms for delivering biodiversity conservation in South Australia are developed, by 2011

LA= ; SP=

- Biodiversity value estimates using a range of methods
- Proportion of area where biodiversity condition is improved as a result of legislative and economic instruments (including market, financial, information and property-based mechanisms and instruments)
- Number of perverse

<p>To facilitate the integration of western and Indigenous approaches to achieve mutually agreed biodiversity outcomes</p> <p>To encourage and build capacity of resource managers</p>	<p>T29 perverse incentives in government policy instruments that act as barriers to biodiversity protection and conservation are identified and, if appropriate, removed, by 2011</p> <p>LA= ; SP=</p>	incentives removed
	<p>R16 review existing incentives for bringing about biodiversity management on Indigenous lands and put in place an incentive scheme where investment is aimed primarily at maintaining and recovering biodiversity</p> <p>LA= ; SP=</p>	
	<p>T30 landholder duty of care for biodiversity on all land tenures is defined and a baseline to inform public investment decisions established, by 2011</p> <p>LA= ; SP=</p> <p>R17 in collaboration with industry, review, strengthen and implement biodiversity considerations into industry-based environmental management policies, operational practices, performance standards and codes of practice, with a focus on the agriculture, forestry, horticulture, fisheries, aquaculture, mining and tourism sectors</p> <p>LA= ; SP=</p> <p>R18 develop indicators, monitoring and reporting protocols for industries that rely upon the sustainable use of biodiversity</p> <p>LA= ; SP=</p>	<ul style="list-style-type: none"> Criteria for landholder biodiversity protection and conservation responsibilities

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To ensure the effective implementation of No Species Loss

T31 *No Species Loss* priority targets inform the State NRM Plan

LA= ; SP=

T32 **relevant No Species Loss commitments are incorporated into government, industry and community natural resource management policy, planning and performance agreements, by 2007**

LA= ; SP=

T33 progress towards achieving *No Species Loss* targets is reported to the Minister for Environment and Conservation, by 2011

LA= ; SP=

R19 establish a state biodiversity council and mechanisms to implement and monitor the implementation of *No Species Loss* and to facilitate the resolution of conflicts and issues that may arise during that implementation

LA= ; SP=

- Number of targets adopted
- Proportion of state, regional and local government and industry policies, strategies and plans that have regard for and adopt *No Species Loss* biodiversity priorities and targets
- Review of strategy 5 years after adoption
- 5 yearly review report

* Targets in bold are priority targets to be achieved by 2011 at the latest

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Strategic Area V – Raising community awareness and participation

Scope

The understanding and involvement of all South Australians across community (urban, indigenous and rural), government and industry in conserving and sustainably using biodiversity

Desired outcomes for 2030

South Australians:

- better understanding species, habitats and ecosystems
- recognising the intrinsic and instrumental values of biodiversity
- embracing the vision for conserving and sustainably using biodiversity
- taking responsibility for the conservation and sustainable use of biodiversity

Government, industry and community having a clear understanding of each other's roles and responsibilities for biodiversity conservation and management

Enhancing capacity

People are the agents of change. The individual and collective decisions and actions of South Australians and the sharing of responsibility are critical to the conservation and sustainable use of the state's natural resources, and to the success of No Species Loss.

A range of government, and non-government organisations and industry programs are promoting the need for biodiversity conservation and facilitating community involvement: Department for Environment and Heritage interpretation programs, habitat restoration initiatives (Bushcare, Rivercare, Coastcare), local and state environmental education programs, and private sponsorship of threatened species programs, are some examples.

Levels of appreciation and experience with biodiversity will always differ and so there will always be a need to inform, consult, involve and empower community. Communities work best when they can see that they are making a difference at a personal and local level. The recent development of regional NRM boards has increased levels of biodiversity management across the state, and thus increased demands for community involvement in state and local biodiversity issues. Government recognition that the community has a finite capacity for engagement, and accordingly supporting them, is essential for long-term community involvement. Government and NRM board processes for community engagement must be articulate, well directed and outcome focused.

Education

There is a need to connect all communities – urban, rural and indigenous – with their environments to maintain the long-term commitment required. Connection and participation starts with relevant education. In general there is a lack of community understanding of broad biodiversity concepts, the impacts of human activities on biodiversity, and what community can do to reverse the current decline in South Australia's biodiversity. An increase in access to, and dissemination of, relevant, high quality and locally based information through appropriate sources is essential.

There is a need to develop better mechanisms for including information in education curricula and community education programs, and for teaching students about the breadth and complexity of biodiversity and natural resource management issues. Both will contribute to greater and life long awareness at a community level of the need for the conservation of South Australia's biodiversity.

Volunteer programs for community participation are a crucial means of achieving locally based conservation initiatives. Volunteers collect information, promote education and awareness of local biodiversity issues, and carry out on-ground works. Volunteer participation should be encouraged and improved by better recognising current programs and volunteer efforts, engaging them in decision-making processes, strengthening existing programs, and developing new programs.

A reason to engage

For landholders and industry leaders, better incentive and investment mechanisms to bring about conservation on private lands would have the flow-on effects of clarifying the roles and responsibilities associated with duty of care. Similarly, there is untapped potential in developing incentive and investment mechanisms for better engagement of industry and the private sector. Biodiversity conservation should be recognised as good business practice and embraced as an opportunity rather than a barrier to economic development.

Strategic Area V focuses on improving and broadening individual, community and industry understanding of biodiversity (by informing, consulting, involving and empowering), increasing participation in the conservation and sustainable use of biodiversity; and encouraging landholders and industry to adopt steps to conserve and sustainably use biodiversity.

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STRATEGIC AREA V	Raising community awareness and participation	
OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R) by 2016 (unless noted otherwise)*	PERFORMANCE INFORMATION
To raise community awareness	<p>T34 landowner, industry, government and community awareness of how they can conserve and sustainably use biodiversity, and the need for stewardship of indigenous biodiversity are increased, by 2011 LA= ; SP=</p> <p>T35 material that supports teaching of and learning about the importance of biodiversity and its conservation in primary and secondary schools is developed, updated and incorporated into education curricula, by 2011 LA= ; SP=</p> <p>R20 make information about biodiversity readily and widely available and relevant to local environments to inform decisions and prompt action to support the conservation and sustainable use of biodiversity LA= ; SP=</p>	<ul style="list-style-type: none"> • Proportion of people who recognise and appreciate the need for biodiversity conservation and management
To raise community participation, ownership and decision making	<p>T36 landowner, industry, government and community participation in new and existing biodiversity conservation programs is increased, by 2011 LA= ; SP=</p> <p>T37 a statewide biodiversity network for local and community organisations actively engaged in biodiversity conservation to share information and knowledge, and further stimulate local engagement is established</p> <p>R21 develop schemes that promote, acknowledge and reward the actions of community-based groups actively working to conserve biodiversity LA= ; SP=</p> <p>R22 develop and enhance existing partnerships to improve Indigenous participation in management of species and ecological communities at regional and local levels LA= ; SP=</p>	<ul style="list-style-type: none"> • Proportion of biodiversity conservation programs with community involvement • Improvement in the condition of biodiversity managed through collaborative based projects • Knowledge shared through formal networks

* Targets in bold are priority targets to be achieved by 2011 at the latest

PART FIVE

Implementation, monitoring and review of performance

No Species Loss is a leadership document. It aims to facilitate coordination of actions across the state, which will be implemented through the coordinating and support responsibilities of various agencies, guided by statutory mechanisms. Only a committed and coordinated effort from government, community and industry will see *No Species Loss* successfully implemented.

The Department for Environment and Heritage will take the lead role and work closely with Department of Water, Land and Biodiversity Conservation, Department of Primary Industries and Resources, South Australia, and Planning SA in monitoring the implementation of *No Species Loss*. Department for Environment and Heritage will report to the Minister for Environment and Conservation on progress every five years. Performance, measured against targets and recommendations, will indicate progress towards achieving the objectives and goals of *No Species Loss*.

This reporting will coincide with and inform the update of the State NRM Plan and the State of Environment Report, and ongoing implementation of the Planning Strategy.

The South Australian NRM Council will monitor and evaluate the effectiveness of the biodiversity component of the State NRM Plan, which is informed by *No Species Loss*. The council will also ensure that regional NRM plans are, where possible, informed by and consistent with *No Species Loss*.

The South Australian Government will support regional NRM boards and local government to continue to deliver their responsibilities outlined in *No Species Loss*. Regional NRM boards have a key role in coordinating and implementing *No Species Loss* at the regional level. Of course, planning cycles and resource availability will influence the biodiversity component in any particular regional NRM plan. Biodiversity components should be reviewed when NRM plans are reviewed.

Government, industry and community natural resource management sectors with responsibilities for targets and recommendations will also be responsible for monitoring and reporting against them.

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Glossary

adaptive management A systematic process for continually improving management policies and practices by learning from the outcomes of operational programs.

aquaculture Commercial growing of marine or freshwater animals and plants in water under controlled conditions.

biodiversity The variety of life forms: the different plants, animals, fungi, bacteria and other microorganisms, the genes they contain, and the ecosystems they form. Biodiversity is usually described at the genetic diversity, species diversity, ecosystem diversity and landscape levels. Genes, species and ecosystems can also be described in terms of their attributes: components – the identity and variety of the genes, species and ecosystems; patterns – the spatial organisation of a system, from habitat complexity within communities, through to patterns of patches within a landscape; processes – ecological and evolutionary processes through which genes, species and ecosystems interact with one another and with their environment.

biome A major biotic community broadly characterised by the dominant vegetation forms, patterns of ecological characteristics and climate, and often described in terms of agricultural land systems.

biosecurity The protection of people and natural resources, including biodiversity, from unwanted organisms capable of causing harm.

biota All of the organisms at a particular locality.

comprehensive, adequate and representative reserve system (CARRS) A reserve system typified by: inclusion of the full range of ecosystems recognised at an appropriate scale within and across each bioregion (comprehensiveness); maintenance of the ecological viability and integrity of populations, species and communities (adequacy); and the principle that those areas selected for inclusion in reserves reasonably reflect the biotic diversity of the ecosystems from which they derive (representativeness).

connectivity The extent of interconnectedness between habitat units and subpopulations in a landscape.

conservation The protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.

dispersal The movement of organisms between locations, especially relating to the movement from birth site or breeding sites.

duty of care With respect to preventing environmental harm, each person taking all reasonable and practicable steps to avoid causing foreseeable harm to another person, their land (of which biodiversity is a significant part), or their use and enjoyment of that land.

ecological community A naturally occurring assemblage of interacting species adapted to particular conditions of soil, topography, water availability and climate.

ecological processes Dynamic interactions among and between biotic and abiotic components of the biosphere.

ecological restoration Assisting the recovery of ecological systems to a state in which the viability of species and ecological communities, and ecosystem function, are improved.

ecologically sustainable development The use, conservation, development and enhancement of natural resources in a way, and at a rate, that will enable people and communities to provide for their economic, social and physical wellbeing while: sustaining the potential of natural resources to meet the reasonably foreseeable needs of future generations; safeguarding the life-supporting capacities of natural resources; and avoiding, remedying or mitigating any adverse effects of activities on natural resources.

ecosystem A dynamic complex of plant, animal, fungal and microorganism communities and the associated non-living environment interacting as an ecological unit.

ecosystem diversity The variety of ecosystems and their biological communities that interact with one another and their non-living physical environments.

ecosystem services The full suite of benefits that human populations gain from a particular type of ecosystem, such as maintenance of climates; provision of clean water and air; pollination of crops and native vegetation; fulfillment of people's cultural, recreational, spiritual, intellectual needs; and provision of options for the future, for example through maintaining biodiversity.

endemic Restricted to a specified region or site.

ex situ conservation The conservation of species outside their natural habitat.

feral A domesticated species that has escaped the ownership, management and control of people and is living and reproducing in the wild.

fire regime The intensity, frequency and season of fire.

fragmentation/fragmented landscapes The division or separation of natural areas by the clearance of native vegetation for human land uses, isolating remnants and species and affecting genetic flow.

gene The functional unit of heredity; the part of the DNA molecule that encodes a single enzyme or structural protein unit.

genetic diversity The variability in the genetic make up among individuals and populations within a single species.

genetic resources Genetic material of plants, animals or microorganisms that has value as a resource for people or future generations.

habitat The physical place or type of site where an organism, species or population naturally occurs together with the characteristics and conditions that render it suitable to meet the lifecycle needs of that organism, species or population.

healthy ecosystem An ecosystem which is sustainable, maintaining its organisation (components, patterns and ecological processes) and autonomy over time and its resilience to stress.

IBRA and IMCRA biogeographic regions Interim Biogeographic Regionalisation for Australia (IBRA) is a framework for conservation planning and sustainable resource management within a bioregional context. IBRA regions represent a landscape based

approach to classifying the land surface from a range of continental data on environmental attributes. Similarly, Interim Marine and Coastal Regionalisation for Australia (IMCRA) provides a broad planning framework around ecosystem-level Regionalisation of Australia's coastal and marine environments.

in situ conservation Conserving species and ecological communities within their natural surroundings.

indicator A measure against which some aspects of performance can be assessed.

indigenous species A plant or animal species which occurs naturally in South Australia.

introduced species A species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities (including exotic organisms, genetically modified organisms and translocated species).

invasive species An animal pest, weed or disease that can adversely affect indigenous species and ecosystems.

landscape A heterogeneous area of local ecosystems and land uses that is of sufficient size to achieve long term outcomes in the maintenance and recovery of species or ecological communities, or in the protection and enhancement of ecological and evolutionary processes.

market-based instruments (MBIs) Incentive mechanisms or instruments that provide or increase financial or productivity rewards for changes that help achieve environmental outcomes.

metapopulation A group of spatially separated populations of the same species, which interact through the movement and dispersal of individuals.

Millennium Seed Bank Project The Millennium Seed Bank Project is a global conservation program managed by the Seed Conservation Department at the Royal Botanic Gardens, Kew, which aims to collect and conserve 10% of the world's seed-bearing flora.

natural resource management Sustainable management of natural resources (land, soil, geological features, water, vegetation, animals, other organisms and ecosystems, the cultural heritage or amenity of an area) that incorporates economic, social and environmental values and involves the community, industries and governments in planning and decision making. Integrated natural resource management includes coordinating policies, programs, plans and projects, and coordination in the exercise and performance of administrative and statutory powers and functions by government agencies, statutory authorities, local government bodies, and the broader community, relevant to the management of the state's natural resources.

perverse incentives A policy or program not directly linked to biodiversity objectives but which has an unintended and adverse effect on the conservation of biodiversity.

precautionary principle Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

protected area An area of land and/or sea specifically dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

protected area network A network or system of protected areas.

Ramsar Convention An international convention to protect internationally important wetlands. Ramsar sites are Wetlands of International Importance, created under the convention.

recovery plans Documents that detail management and research actions necessary to stop and reverse the decline of listed threatened species or threatened ecological communities. The aim of a recovery plan is to maximise the long term survival in the wild of a threatened species or ecological community.

remnant Areas (generally small) of native plant communities that are found in otherwise cleared landscapes.

resilience The ability of an ecosystem to withstand and recover from environmental stresses and disturbances.

restoration The active intervention and management of degraded biotic communities, landforms and landscapes in order to restore biological character, ecological and physical processes and their cultural and visual qualities.

species A group of organisms capable of interbreeding freely with each other but not with members of other species.

species diversity The variety of species on the earth, usually expressed as an index calculated from the number of species and the evenness with which individuals are spread among those species.

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).

taxon (pl. taxa) Scientifically recognised species, subspecies, variety or form of organism.

threat abatement Eliminating or reducing a threat.

threatened species and/or ecological communities Species or ecological community classified as being threatened by extinction and listed as either Vulnerable, Endangered, Critically Endangered or Presumed Extinct.

threatening process Processes that threaten or may threaten the survival, abundance or evolutionary development of components of native biodiversity.

vascular plants Plants with a vascular system for the internal transport of water and nutrients, including ferns, flowering plants and trees, but not mosses and liverworts.

Abbreviations

CARRS complete, adequate and representative reserve system
DAARE Department for Aboriginal Affairs and Reconciliations
DECS Department of Education and Children's Services
DEH Department for Environment and Heritage
DWLBC Department of Water, Land and Biodiversity Conservation
EPA Environment Protection Authority
Forestry SA Forestry South Australia
IBRA Interim Biogeographic Regionalisation for Australia
IMCRA Interim Marine and Coastal Regionalisation for Australia
LA Lead Agency
Local govt local government
MSB Millennium Seed Bank
NRM natural resource management
NRMB Natural Resource Management Boards
PIRSA Department of Primary Industries and Resources, South Australia
PLNSA Planning SA
R Recommendation
SA Water South Australia Water
SATC South Australian Tourism Commission
SMART specific, measurable, achievable, relevant, time bound
SP Support Partner
T Target
Transport SA Transport South Australia

Figure 2. Attributes (components, patterns and processes) of the biodiversity hierarchy.

(Source: Peck 1998)

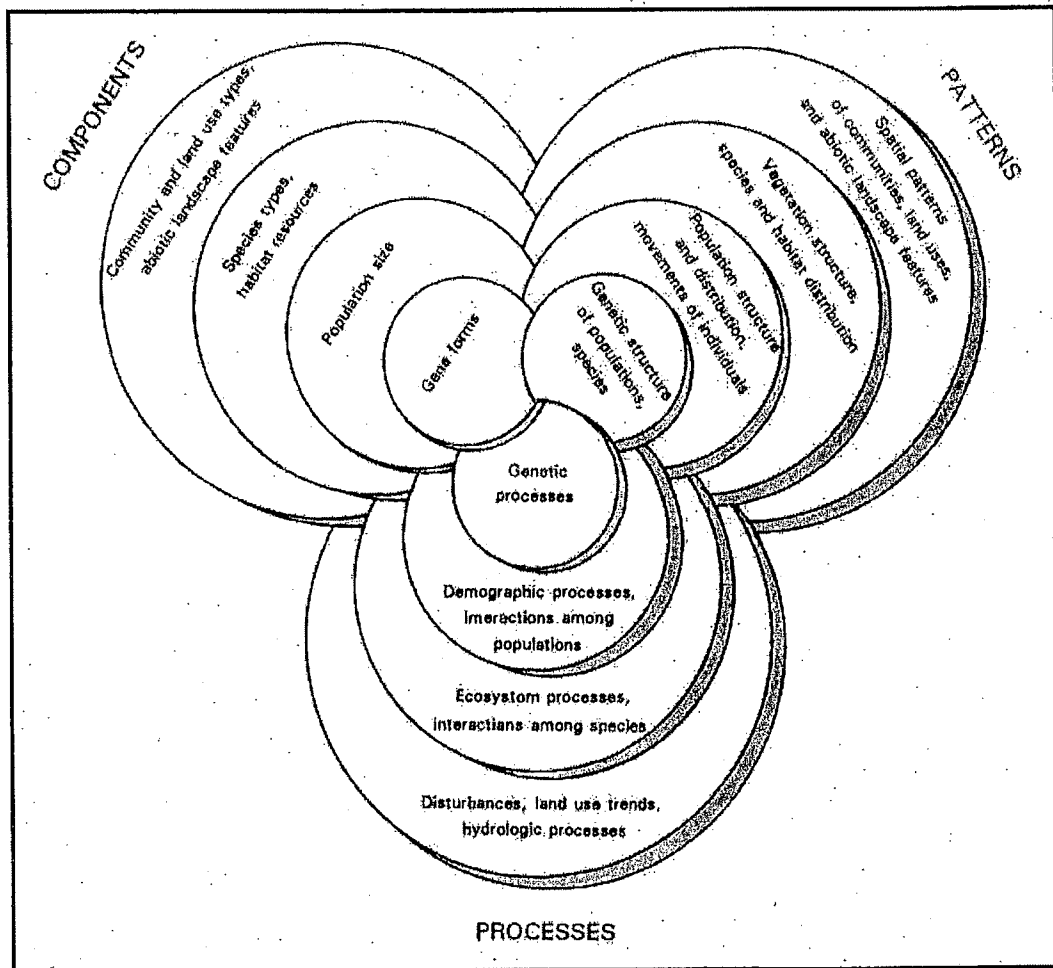


Figure 3. Biogeographic regions of South Australia according to the Interim Biogeographic Regionalisation for Australia (IBRA) and Interim Marine and Coastal Regionalisation for Australia (IMCRA).

(Produced by Land Administration Branch, Department for Environment and Heritage 2005)

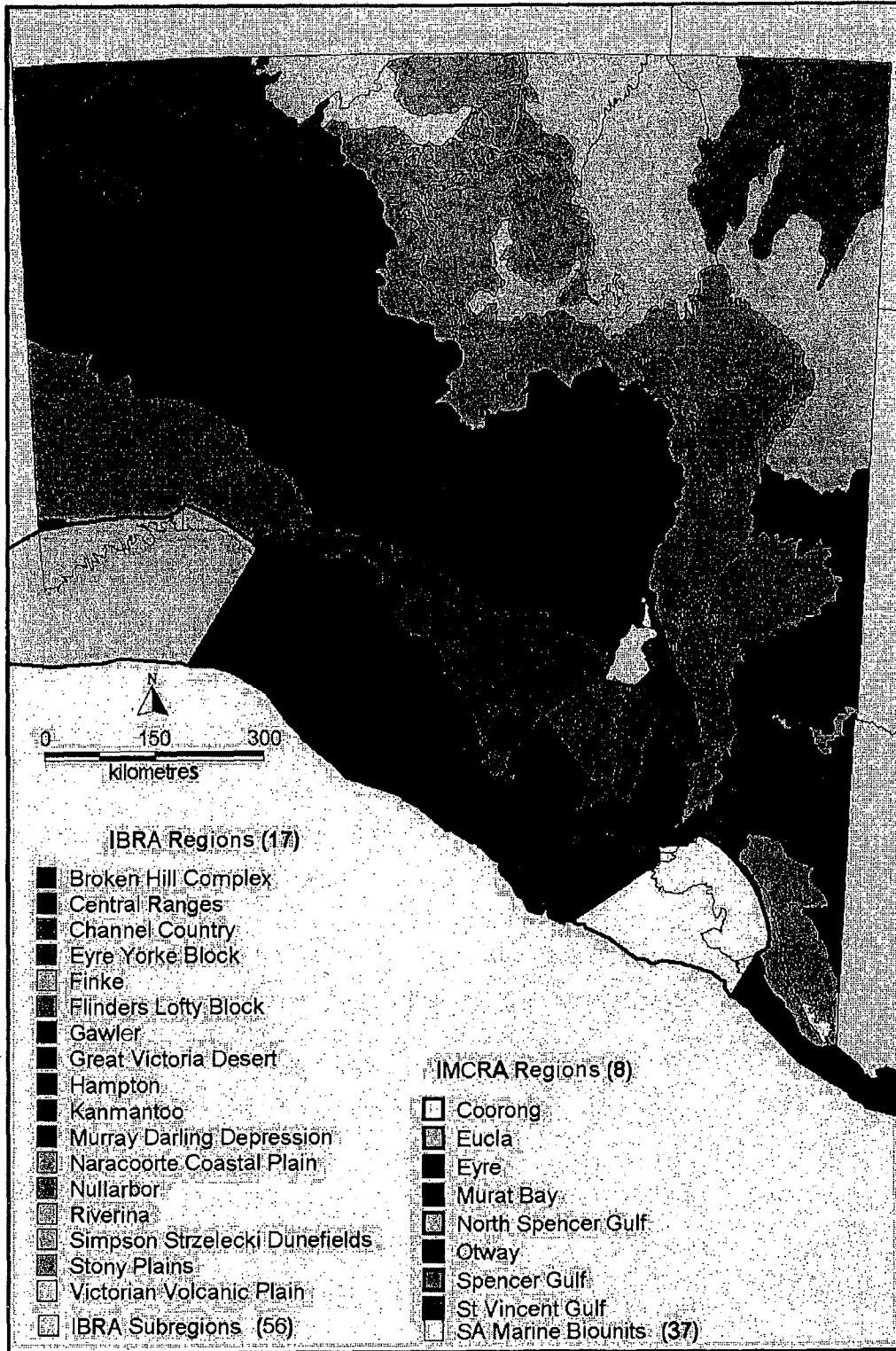


Figure 4. Arid, Mediterranean and Marine biomes of South Australia. The Arid and Mediterranean biomes combine bioregions according to patterns in climate, vegetation and landscape alteration and modification (adapted from Hobbs and McIntyre 2005). The Marine Biome comprises all South Australian IMCRA bioregions.

(Produced by Land Administration Branch, Department for Environment and Heritage 2005)

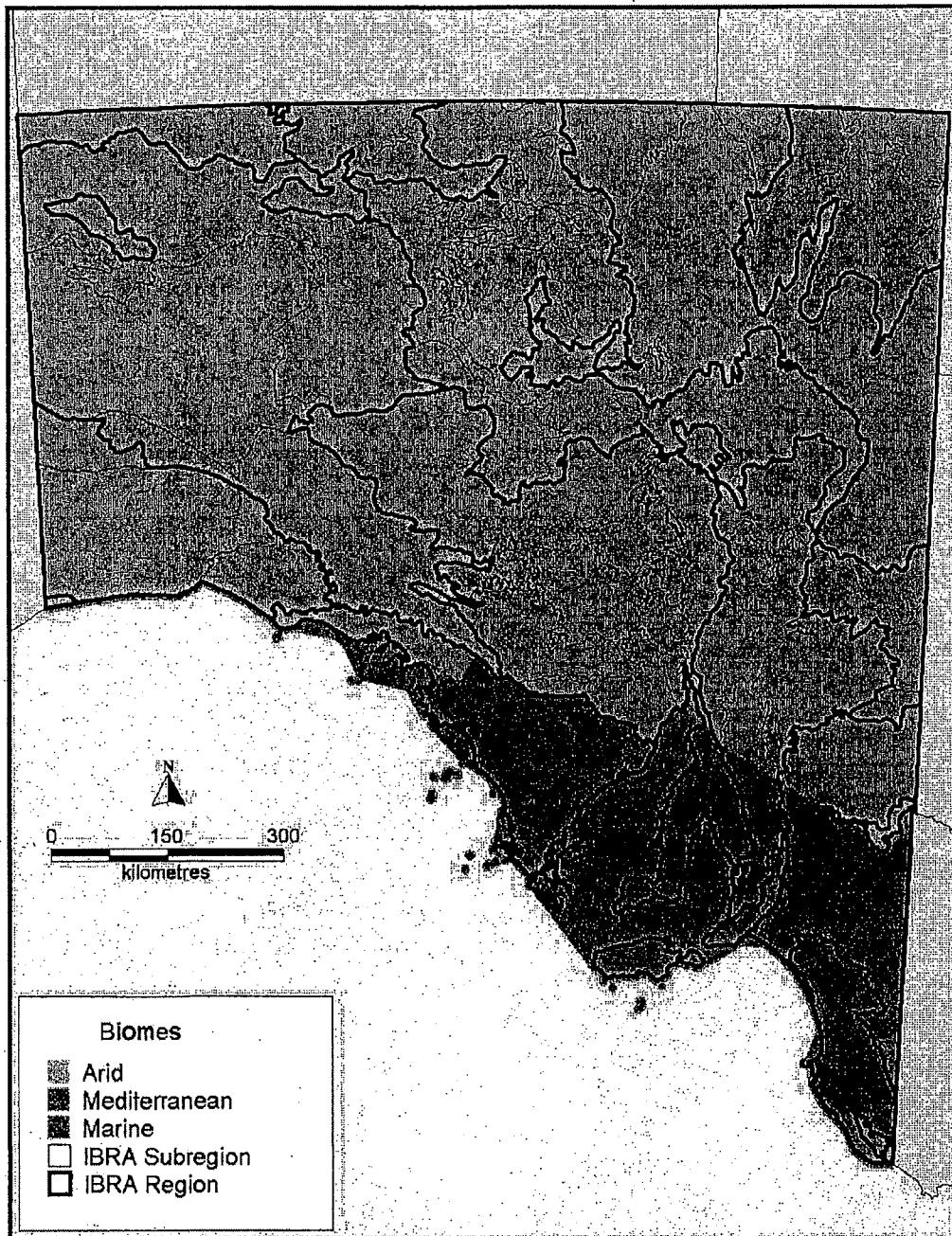
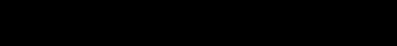

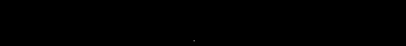
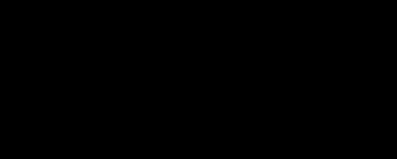


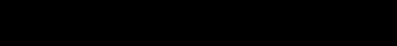

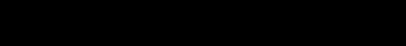



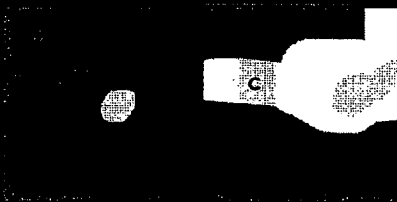
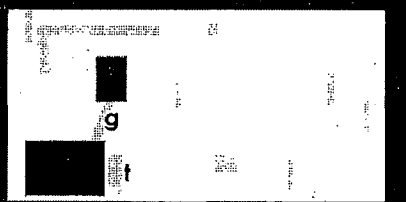
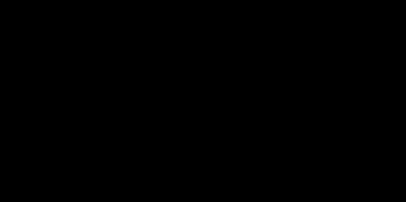
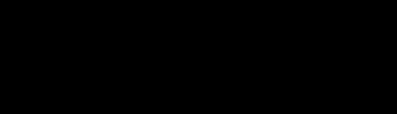

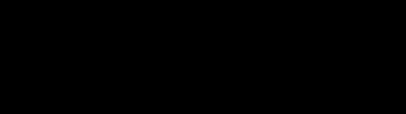
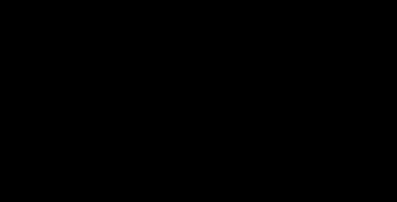

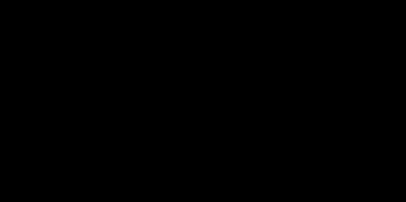


Figure 5. Landscape patterns, characteristics, threats and trends of the Arid, Mediterranean and Marine biomes [*adapted from McIntyre and Hobbs 2000]

Arid	Mediterranean	Marine
Protected areas		
  		
Landscape patterns *		
Habitat destruction patterns		
  		
Habitat modification patterns		
  		
Predominant landscape vegetation components		
  		
Visual representation of habitat destruction and modification patterns		
   <div data-bbox="167 1456 981 1579"> <p> Unmodified habitat Highly modified habitat </p> <p> Modified habitat Destroyed habitat </p> </div>		
Environmental influences		
  		
Biome characteristics		
  		

[Redacted text]

Land use

[Redacted text]

Biodiversity and threat trends

[Redacted text]

Threats to biodiversity

[Redacted text]

Figure 6. Natural cover (includes vegetation, lakes, wetlands) in South Australia in 1998, showing the extent of habitat destruction through land cover clearance. Although little habitat has been cleared in the Arid Biome rangelands, it is considered to be highly modified because of grazing from rabbits, sheep, cattle, camels, goats, horses and kangaroos which modifies vegetation community composition and structure.

(Produced by Land Administration Branch, Dept for Environment and Heritage 2005)

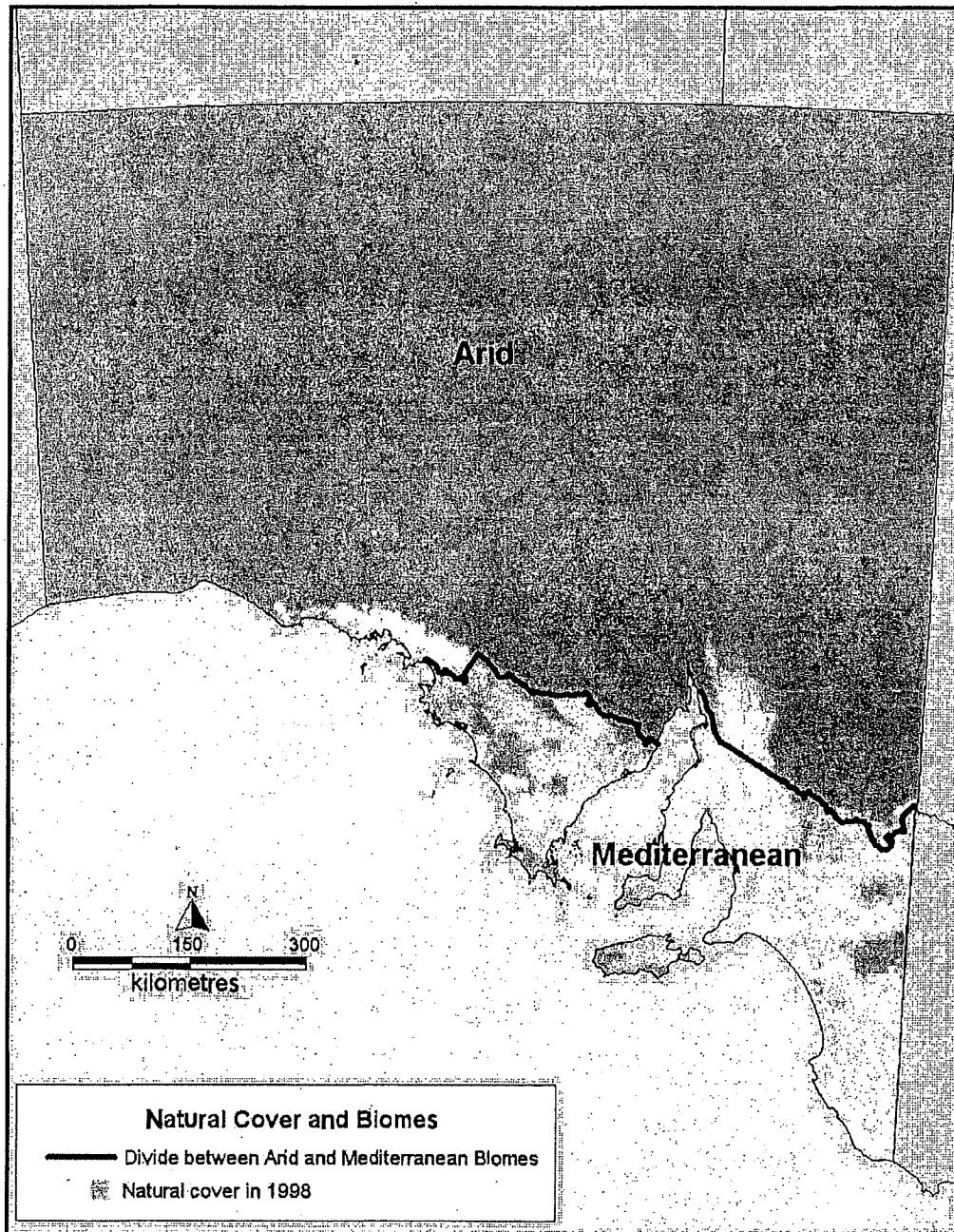


Figure 7. Total grazing pressure in the Arid Biome modifies vegetation composition and structure creating a mosaic of vegetation condition. Although little habitat has been cleared in the Arid Biome, it is considered to be highly modified by grazing from rabbits, sheep, cattle, camels, goats, horses and kangaroos. Natural watercourses and introduced watering points influence the distribution of herbivores across all land tenures and therefore the patchiness of total grazing pressure across the Arid Biome. Vegetation species composition and structure will vary depending on exposure to grazing pressure.

This map illustrates the percentage of each IBRA subregion that is greater than 6 km (sheep) and greater than 9 km (cattle) from watering points. These distances reflect the maximum distance that stock will graze out from watering points. Subregions are assigned as 'sheep' or 'cattle' based on stock type over the majority of the subregion. Watering points include both artificial (bores, dams, troughs) and natural (ephemeral and permanent water holes and springs) watering points.

[Produced by Knowledge and Information Division, Dept of Water, Land and Biodiversity Conservation 2005]

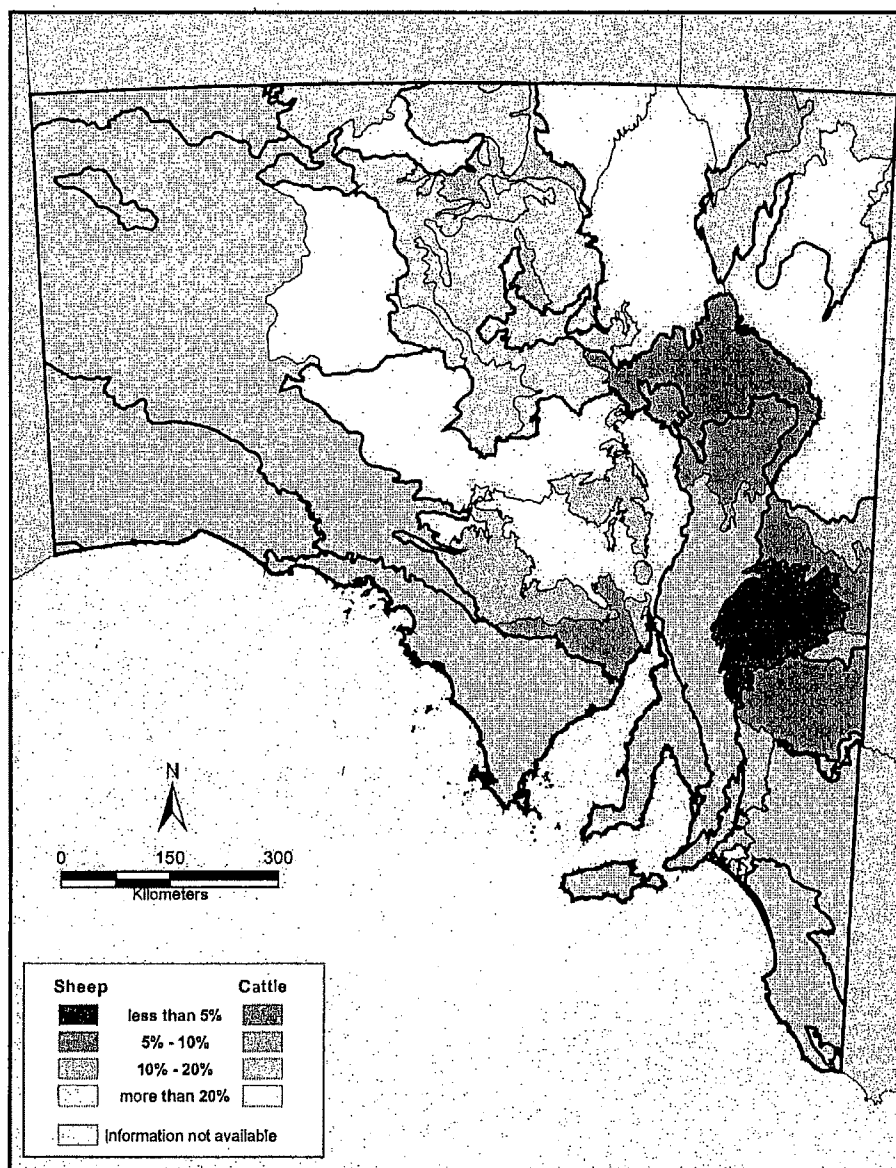


Figure 8a. Evidence for the decline in South Australia's biodiversity. A summary of conservation status and recovery planning efforts of South Australia's species and ecological communities in the Arid, Mediterranean, and Marine biomes (n.a. = not available, n.r. = not-relevant).

	Status	Animals						Plants					Ecological communities	
		Vertebrates					Invertebrates	Vascular	Non-vascular					
		Mammals	Birds	Reptiles	Amphibians	Fish			Mosses	Liverworts	Lichens	Fungi		Macroalgae
Arid biome	Total no. described ¹	76	350	211	24	25	n.a.	2320	n.a.	n.a.	n.a.	n.a.	n.r.	n.a.
	Total threatened ^{2,3}	36	79	26	1	1	n.a.	349	n.a.	n.a.	n.a.	n.a.	n.r.	9
Mediterranean biome														
Marine biome														
South Australia total	Total no. described ^{1,4,5}	140	460	227	26	n.a.	n.a.	3378	218	102	320	1240	n.a.	n.a.
	Total threatened ²	88	127	39	2	n.a.	n.a.	785	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Total introduced species ⁵	17	14	n.a.	n.a.	9	n.a.	1288	n.a.	n.a.	n.a.	n.a.	n.a.	n.r.

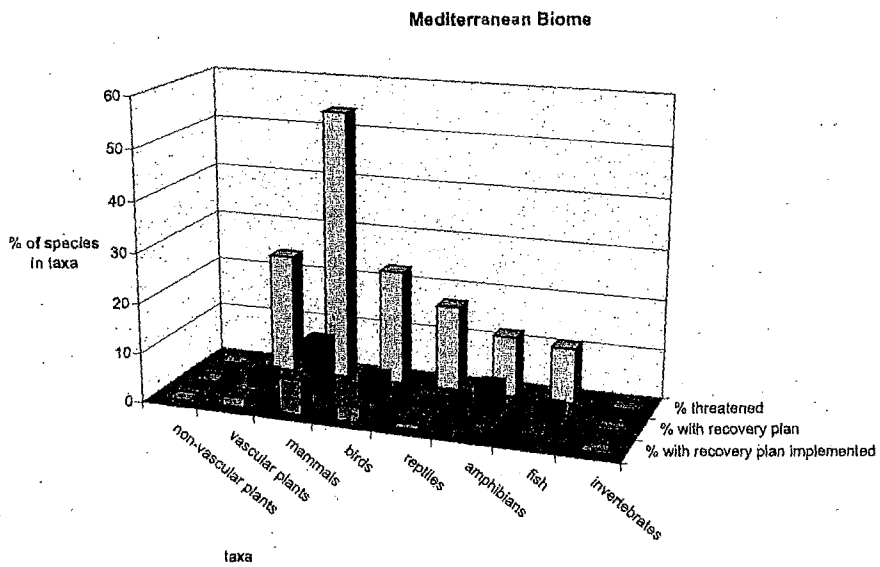
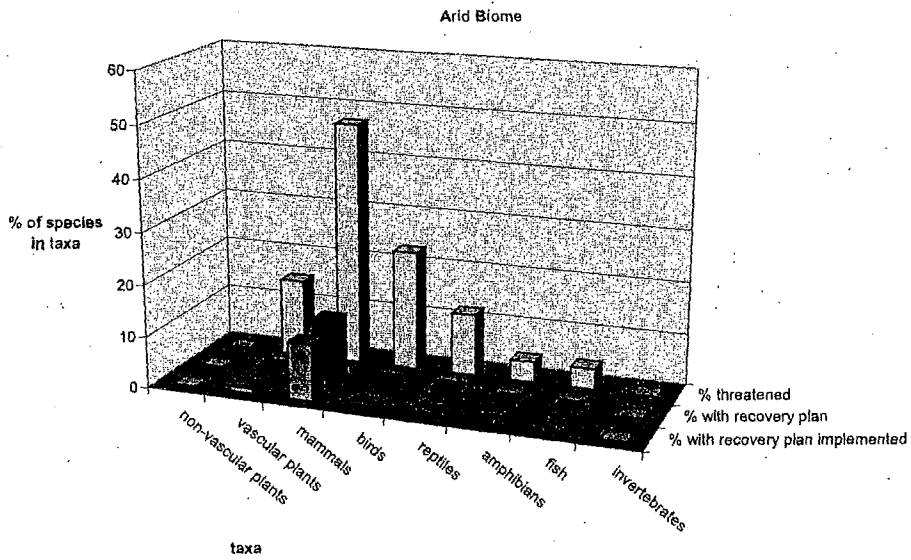
Total number of threatened species is according to the threatened status categories of the National Parks and Wildlife Act 1972.

Status category	Code	Category definition
Extinct	EX	Not definitely located in the wild during the past 50 years, or not found in recent years despite thorough searching
Endangered	E	In danger of extinction if the causal factors continue to operate
Vulnerable	V	Likely to move into the Endangered category in the near future if the causal factors continue to operate
Rare	R	Occurs in small populations that are not at present Endangered" or Vulnerable but are at some risk due to their rarity (ie, low numbers). This may include naturally scarce species that may require conservation consideration to ensure that they do not become "Endangered" or "Vulnerable"

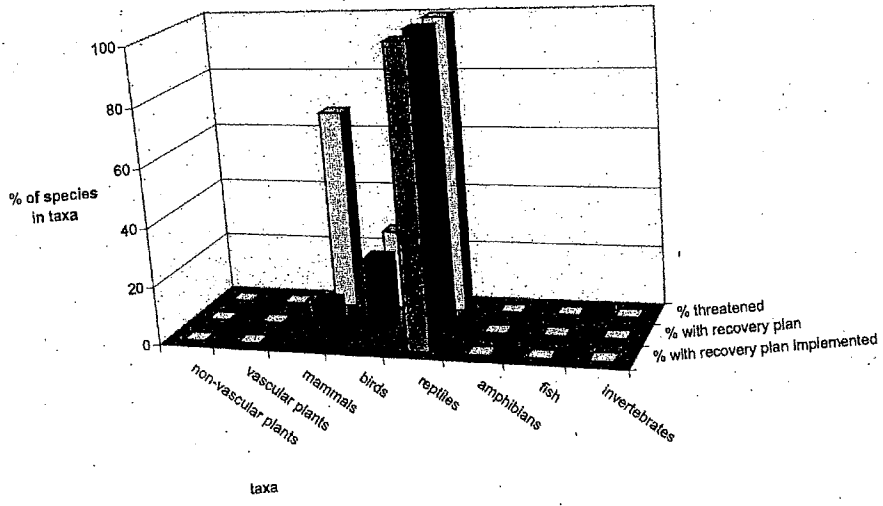
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Figure 8b. Proportions of species in each taxon that: are threatened; have a recovery plan written; and have a recovery plan in place, for the Arid, Mediterranean, Marine biomes, and for South Australia overall.



Marine Biome



South Australia Total

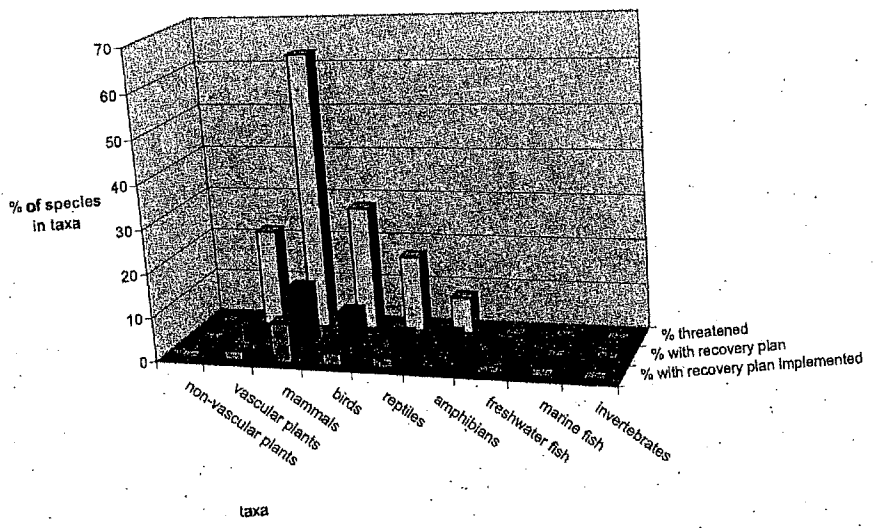


Figure 9. Protected areas of South Australia

(Produced by Land Administration Branch, Department for Environment and Heritage 2005)

