Department for Environment and Heritage

No Species Loss

A Nature Conservation Strategy for South Australia 2007–2017

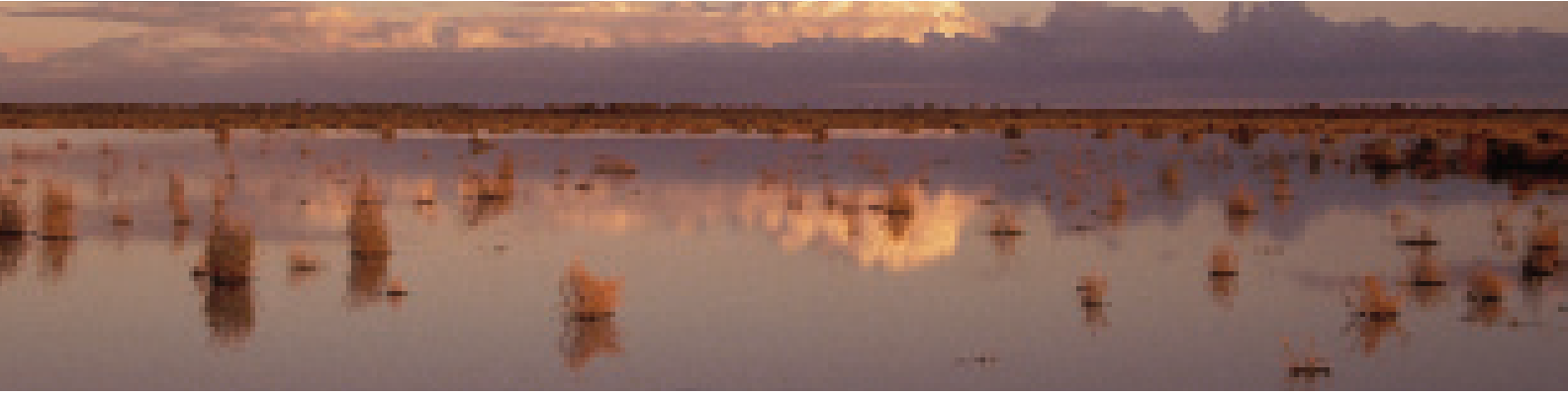
Government of South Australia

www.environment.sa.gov.au

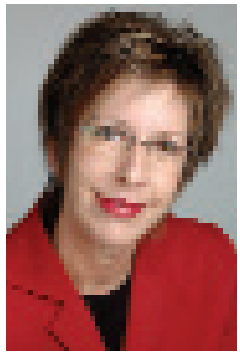
'No Species Loss' is a statement of aspiration. Species decline and become extinct naturally. This aspiration reflects the foresight, mindset and commitment needed by all South Australians if we are to prevent further loss of our known native species from human impacts, and if we are to conserve biodiversity for future generations.
The 100-year vision for *No Species Loss* is:

Vision

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



Foreword



Healthy natural environments provide for South Australia's cultural, social, economic and environmental wellbeing.

Many of our vascular plant and vertebrate animal species are threatened with extinction. This situation exists even with the significant efforts of government, industry and community to stop the degradation of South Australia's species, ecosystems and landscapes, and the ecological services and economic and social benefits they provide.

No Species Loss – A Nature Conservation Strategy for South Australia 2007–2017 is the first statewide nature conservation strategy in South Australia.

The vision of *No Species Loss* is a bold and aspirational one: the people of South Australia actively supporting their native plants, animals and ecosystems to survive, evolve and adapt to environmental change.

With this view, the aim of *No Species Loss* is to halt and where possible reverse the decline in the State's terrestrial, aquatic and marine biodiversity over the next 10 years. The Strategy forms a framework with realistic timeframes to achieve this aim.

Climate change will significantly alter the way that we manage our biodiversity to ensure that it persists into the future.

No Species Loss maps the strategic direction required of industry, Indigenous, rural and urban communities, government and NRM boards for the conservation and sustainable management of South Australia's biodiversity.

The Strategy is a direct, whole of government partnership response to *South Australia's Strategic Plan* target of 'lose no species'. *No Species Loss* also provides an overarching framework for developing the 5 NatureLinks corridor areas and the 19 marine protected areas identified in the Strategic Plan.

The State Government is pleased to present *No Species Loss – A Nature Conservation Strategy For South Australia 2007–2017*.

Hon Gail Gago MLC
Minister for Environment and Conservation

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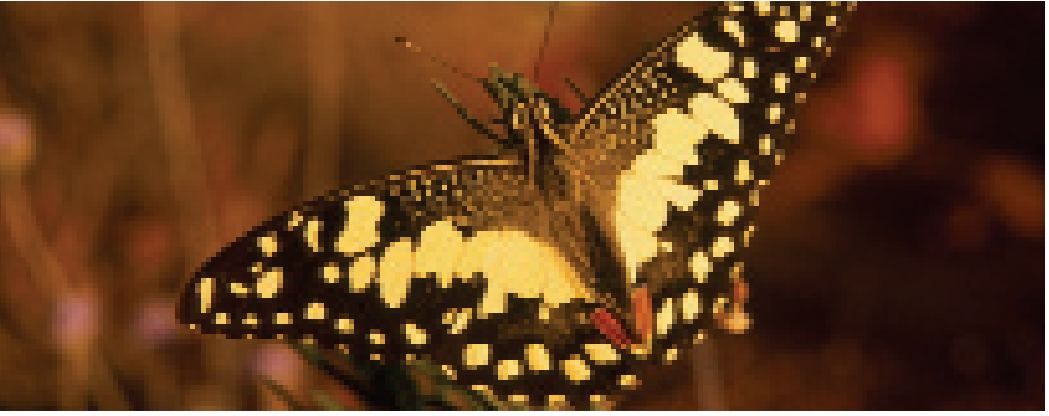


Abbreviations

AARD	Aboriginal Affairs and Reconciliation Division
CARRS	comprehensive, adequate and representative reserve system
DECS	Department of Education and Children's Services
DEH	Department for Environment and Heritage
DFEEST	Department of Further Education, Employment, Science and Technology
DPC	Department of the Premier and Cabinet
DTED	Department of Trade and Economic Development
DTEI	Department for Transport, Energy and Infrastructure
DWLBC	Department of Water, Land and Biodiversity Conservation
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESD	ecologically sustainable development
Forestry SA	SA Forestry Corporation
GAB	Great Artesian Basin
IBRA	Interim Biogeographic Regionalisation for Australia
IMCRA	Interim Marine and Coastal Regionalisation for Australia
LA	Lead Agency
LG	Local Government
MBI	market-based instrument
MNES	Matters of National Environmental Significance
MSB	Millennium Seed Bank
NAPSWQ	National Action Plan for Salinity and Water Quality
NHT	Natural Heritage Trust
NRM	natural resources management
NRMB	Natural Resources Management boards
NRMC	Natural Resources Management Council
PIRSA	Department of Primary Industries and Resources, South Australia
PLNSA	Planning SA
R	Recommendation
SA Water	South Australian Water Corporation
SATC	South Australian Tourism Commission
SBB	significant biodiversity benefit
SEB	significant environmental benefit
SMART	specific, measurable, achievable, relevant, time bound
SP	Support Partner
T	Target
UFBP	Urban Forest Biodiversity Program

***No Species Loss* sets the scene for nature conservation in South Australia. Nature conservation can be defined as:**

societies' actions focused on sustaining life on earth…

Executive Summary

South Australia's native plants and animals are in decline and will continue on that path unless we act now

***No Species Loss* promotes strategic and creative thinking.**

No Species Loss aims to promote strategic and creative thinking by government, industry and urban, rural and Indigenous communities about how best to achieve biodiversity conservation and sustainable management in South Australia over the next 10 years.

It seeks to open the door to ownership, engagement, partnerships and innovative solutions that will foster and enhance stewardship for biodiversity.

We need to manage our threatened species and ecological communities with a sense of urgency.

South Australia now has over 1000 known vascular plant and vertebrate animal threatened species. Our terrestrial, aquatic and marine ecosystems and landscapes, along with the ecological services and economic and social benefits they provide, are under threat, despite meritorious, continual and locally effective efforts by government, industry and the rural, Indigenous and urban communities.

No Species Loss looks to recognise and guide the efforts of those on both public and private lands and at sea in their endeavours to halt the decline in the State's biodiversity.

Climate change is now adding further challenges and often unknown complexity to how we might manage current threats, and restore ecosystems in the future.

No Species Loss complements and integrates with *Tackling Climate Change: South Australia's Greenhouse Strategy*.

A far reaching framework with realistic timeframes addresses the decline.

The Strategy is a direct response to the *South Australia's Strategic Plan* target of 'lose no species' (T3.1). *No Species Loss* also provides the overarching framework for the delivery of the 5 NatureLinks corridor areas (T3.2) identified in the Strategic Plan.

No Species Loss presents a vision, goals, objectives, targets and recommendations that have relevance for government, industries, and rural, Indigenous and urban communities at State, regional and local levels.

A set of principles – underlying values, premises and approaches – guides how the Strategy might be implemented.

Desired outcomes that translate the goals of *No Species Loss* are set for 2010–2030. This timeframe allows for some changes that need to happen relatively quickly, and for the longer term change in the trajectory of South Australia's biodiversity decline, with time to evaluate and refine strategies.

Coordinated leadership and support is essential.

Government Lead Agencies (LA) will take responsibility for the delivery of targets and recommendations within *No Species Loss*, ensuring clear responsibilities for implementation of the Strategy.

Government agencies, Natural Resources Management (NRM) boards, industry and community Support Partners (SP) will also assist Lead Agencies in the delivery of targets and recommendations.

The targets and recommendations within the Strategy also have direct relevance to and inform the goals and strategies of the State NRM Plan and the *Planning Strategy for South Australia*.

***No Species Loss* has regional relevance.**

Regional NRM boards, which have a key role in coordinating and implementing *No Species Loss* at the regional level, can take their lead from *No Species Loss* when developing their NRM plans – and conservation approaches will thus be translated consistently from the State down to regional level, across government, industry and community as they are developed and delivered.

The Department for Environment and Heritage will take the lead role in progressing the implementation of *No Species Loss*, and reporting on progress towards targets every 5 years.

The NRM Council will be responsible for monitoring and evaluating the actions of Lead Agencies and Support Partners that contribute to the State NRM Plan, as they implement *No Species Loss*.

Government will support regional NRM boards, local government, industry and community to continue to deliver their roles and responsibilities outlined in *No Species Loss*.

In the *No Species Loss* strategy, the term:
plants and animals encompasses terrestrial, aquatic and marine plants (vascular, non-vascular) and animals (vertebrate, invertebrate)
terrestrial encompasses inland aquatic ecosystems, such as rivers, streams, lakes, wetlands, springs, groundwater and groundwater dependent ecosystems, and the indigenous inland aquatic species in these areas
landscape encompasses both terrestrial landscapes and marine seascapes.

No Species Loss – A strategic framework for nature conservation in South Australia

Note:

- *Government agencies taking lead responsibility and partners supporting them in delivery of targets and recommendations are presented in Part Five of this Strategy.*
- *Objectives, targets and recommendations are to be addressed by 2017 at the latest.*

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

GOAL 1 – Conservation of South Australia's biodiversity

conservation of South Australia's terrestrial, aquatic and marine genes, species, and ecosystems and their ecological processes, within healthy and sustainable natural, production, urban and public landscapes

Objectives

1.1 To create public and private land protected areas

1.2 To maintain, improve and reconstruct landscapes

1.3 To maintain, improve and reconstruct species and ecological communities

1.4 To facilitate the sustainable use and management of native species

1.5 To facilitate effective management of the impacts of abundant or impact-causing species

with 15 ***Targets***

GOAL 2 – Community ownership and stewardship for biodiversity

informed, motivated, empowered and engaged urban, rural and Indigenous communities, governments and industries that better value and share the responsibility for, and enjoy the benefits of, South Australia's terrestrial, aquatic and marine biodiversity

Objectives

2.1 To raise community awareness of the need for biodiversity conservation

2.2 To raise community capacity, stewardship and decision making for biodiversity conservation

with 7 ***Targets*** *and 1* ***Recommendations***

GOAL 3 – Ecological knowledge that can influence decision making

knowledge of terrestrial, aquatic and marine biodiversity that can inform and influence the decision making of South Australian urban, rural and Indigenous communities, governments and industries

Objectives

3.1 To identify and fill key gaps in knowledge to influence biodiversity management

3.2 To build capacity to collect and share information to inform biodiversity management

with 11 ***Targets*** *and 2* ***Recommendations***

GOAL 4 – Adjustment to the impacts of climate change

terrestrial, aquatic and marine ecological systems with an enhanced capacity to adjust to climate change impacts

Objectives

4.1 To improve understanding of the impacts of climate change on biodiversity conservation

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

4.3 To minimise the impacts of climate change on biodiversity conservation

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

with 8 ***Targets*** *and 1* ***Recommendation***

GOAL 5 – Active and integrated natural resources management partnerships

urban, rural and Indigenous communities, governments and industries that use active and integrated partnerships to manage terrestrial, aquatic and marine biodiversity within ecologically sustainable limits

Objectives

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

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

5.3 To ensure the planning and development assessment system facilitates sustainable development that minimises the impacts of development on biodiversity

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

5.5 To facilitate ecologically sustainable development

5.6 To encourage and build the capacity of natural resource managers

5.7 To ensure the effective implementation of *No Species Loss*

with 14 ***Targets*** *and 7* ***Recommendations***

PART ONE. Understanding the structure of *No Species Loss*

How will *No Species Loss* work?

No Species Loss sets the scene for nature conservation in South Australia. Nature conservation is defined as: *societies' actions focused on sustaining life on earth.*

A partnership among community, industry and government can conserve biodiversity.

No Species Loss – A nature conservation strategy for South Australia 2007–2017 enunciates the South Australian Government's policy for reversing decline in the State's terrestrial, aquatic and marine biodiversity over the next 10 years.

No Species Loss (also referred to as the Strategy) is a direct response to the target of 'lose no species' (T3.1) in *South Australia's Strategic Plan*. The targets within the Strategy also have relevance to and inform the *State Natural Resources Management Plan* (State NRM Plan) and the *Planning Strategy for South Australia.*

No Species Loss aims to promote strategic and creative thinking by government, industry, and rural, Indigenous and urban communities about how best to achieve biodiversity conservation and sustainable management.

At the same time it is structured to open the door to ownership, engagement, partnerships and innovative solutions that will foster and enhance stewardship for biodiversity.

Importantly, it seeks to recognise and guide the efforts of those on both public and private lands in their endeavours to halt the decline in the State's biodiversity.

A strategic approach ensures that State directions are meaningful at a regional level.

The Strategy presents a vision, and a set of goals, objectives, targets and recommendations for rural, Indigenous and urban communities, and natural resources managers at regional and local levels (see Figure 1).

A set of principles provides the underlying values, premises and approaches that guide how the Strategy might be implemented.

Desired outcomes translate the goals of *No Species Loss* and are set for 2010–2030. This timeframe allows for some changes that need to happen relatively quickly, and for the longer term change in trajectory of the decline in South Australia's biodiversity, with time to evaluate and refine strategies.

Regional NRM boards can also take their lead from *No Species Loss* when they develop the biodiversity components of their NRM plans. This will help ensure 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.

Government, community and industry have leadership roles.

Government agencies are assigned the role of Lead Agency and government, industry, NRM board and community stakeholders are assigned the role of Support Partner (see Part Five), ensuring clear responsibility for the delivery of the recommendations and targets within *No Species Loss*, and to clarify and progress its implementation.

***No Species Loss* complements *Tackling Climate Change: South Australia's Greenhouse Strategy*.**

No Species Loss directs one of its five goals to climate change and has been written to complement *South Australia's Greenhouse Strategy*.

In the *No Species Loss* strategy, the term:
plants and animals encompasses terrestrial, aquatic and marine plants (vascular, non-vascular) and animals (vertebrate, invertebrate)
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landscape encompasses both terrestrial landscapes and marine seascapes.

Figure 1.

The structure of *No Species Loss*
Vision, goals and objectives form the strategic framework for the targets and recommendations of *No Species Loss*. The timeframe of just under 25 years for these goals should allow planning, implementation and monitoring for all targets, and for the state of South Australia's biodiversity to be significantly improved.

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

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GOAL 5 – Active and integrated natural resources management partnerships

urban, rural and Indigenous communities, governments and industries that use active and integrated partnerships to manage terrestrial, aquatic and marine biodiversity within ecologically sustainable limits

Objectives

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

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

5.3 To ensure the planning and development assessment system facilitates sustainable development that minimises the impacts of development on biodiversity

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

5.5 To facilitate ecologically sustainable development

5.6 To encourage and build the capacity of natural resource managers

5.7 To ensure the effective implementation of *No Species Loss*

with 14 ***Targets*** *and 7* ***Recommendations***

Principles

The underlying values, premises and approaches of the following principles are fundamental to the conservation of South Australia's biodiversity. They guide how goals, objectives and targets of the Strategy can be achieved, and *No Species Loss* implemented.

Biodiversity must be conserved.

1. **In situ conservation** – Biodiversity is best conserved in situ where landscapes, ecosystems and ecological processes maintain species in their natural habitats. Complementary ex situ conservation activities should support in situ conservation if required.
2. **Outcome focused** – Priorities for action are based on the need to achieve biodiversity conservation outcomes.
3. **Appropriate planning** – Biodiversity conservation activities are planned at the appropriate biological, spatial and temporal scales in consultation with government, industries, and urban, rural and Indigenous communities.
4. **Managing the cause** – It is essential to prevent the introduction of new threats and deal with existing threats at their root cause.
5. **Prevention** – Preventing the loss of biodiversity by dealing with threats is preferable to reconstruction and treating symptoms.
6. **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.
7. **Sustainable use** – Conserving biodiversity is a priority but its conservation does not preclude use that is ecologically sustainable for the long term.

People are the solution.

8. **Sharing responsibilities** – All South Australians (government, industries and urban, rural and Indigenous communities) benefit from biodiversity and have a responsibility for its conservation and their share of the costs for managing it sustainably.
9. **Working together** – Government, industries and urban, rural and Indigenous communities must work together with inclusive and transparent decision making to ensure protection, management and sustainable use of biodiversity.
10. **Indigenous values** – Indigenous heritage, knowledge and cultural values should be integrated with the conservation and sustainable use of biodiversity.

Knowledge provides a platform.

11. **Developing knowledge** – It is essential to develop and share knowledge, and seek and value the wisdom of government, industries, and urban, rural and Indigenous communities.
12. **Best available knowledge** – The best available biodiversity knowledge should be used in a precautionary way as part of a risk management approach to informed decision making.
13. **Adaptive management** – Biodiversity management must incorporate an adaptive approach that is flexible and inclusive, continually improves by testing and learning, and is based on science where appropriate.

Sustainable outcomes must underpin efforts.

14. **Ecological capacity** – The use of our natural resources in response to social and economic pressures must work within ecologically sustainable limits to maintain their life supporting capacity and conserve biodiversity.
15. **Ecosystem approach** – Biodiversity management will be most effective when we adopt an ecosystem approach that recognises and integrates all components (genes, species, ecosystems) and attributes (components, patterns, processes) of the biodiversity hierarchy, and manages these at appropriate spatial and temporal scales.

PART TWO. Understanding South Australia's biodiversity

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' has 3 levels*:

- **genetic diversity** – the variety of genetic information contained in all individual living things, and varying within and between populations of organisms that make up 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 by their attributes (Figure 2):

- **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.

Landscapes add another level to 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 the level below.** To date, management has focused on the compositional diversity, rather than patterns and ecological processes. The importance of ecological patterns and processes and their critical role in ecosystem, landscape and seascape function has not been fully appreciated by government, community and industry.

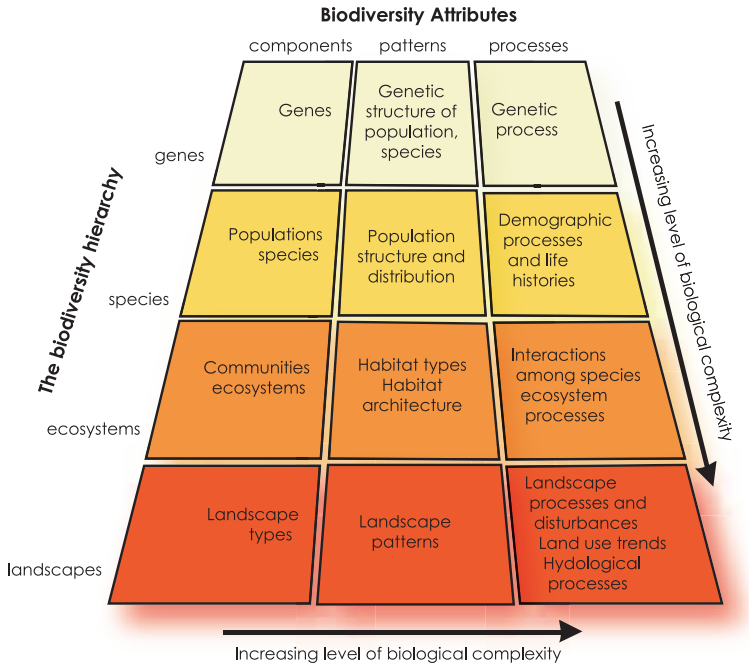
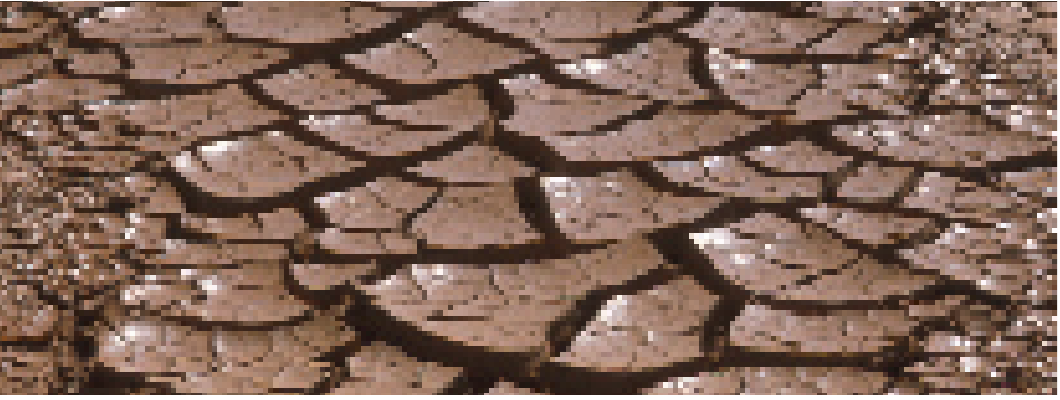


Figure 2.
Attributes (components, patterns and processes) of the biodiversity hierarchy (adapted from Peck 1998)

* After the *National Strategy for the Conservation of Australia's Biological Diversity* (Department of the Environment, Sport and Territories 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.

Ecosystem services provide the basics of life.

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, stabilise our soils, pollinate plants, and inspire our societies and cultures (Figure 3).

Yet, many of us 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, particularly human-induced climate change, on these relationships and functions.

Biodiversity provides ecosystem services.

The decline in South Australia's biodiversity can be reversed, it is believed, if the necessary actions are backed by government, and supported by landholders, community and 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.

Figure 3.

Ecosystem services supporting human wellbeing*

Provisioning	Regulating	Cultural
Goods produced or provided by ecosystems	*Benefits obtained from regulation of ecosystem processes*	*Non-material benefits of ecosystems*
Food	Climate regulation	Intrinsic
Water	Disease regulation	Spiritual
Wood	Pest regulation	Recreational
Fibre	Water regulation	Aesthetic
Biochemicals	Detoxification	Inspirational
Genetic resources		Educational
		Symbolic

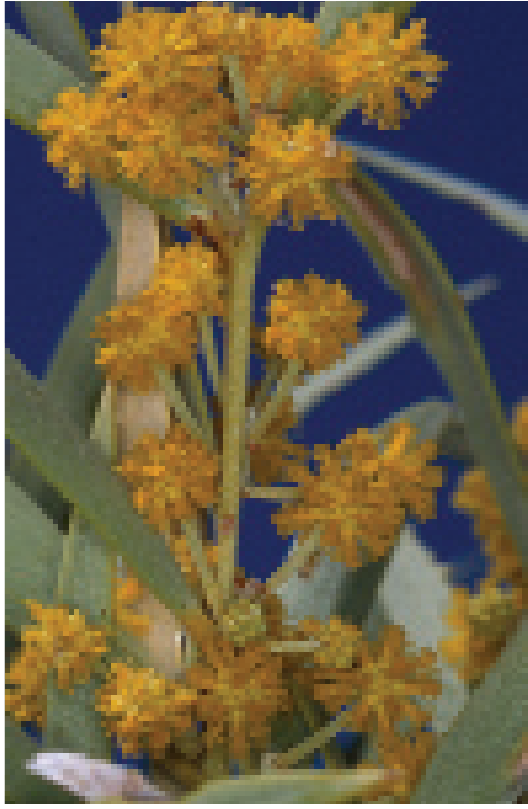
Supporting

Services necessary for production of other ecosystem services

soil formation, nutrient cycling, primary productivity

* Adapted from Mainka et al. (2005)






Why does South Australia need a nature conservation strategy?

We have altered landscapes.

South Australia's species, ecosystems and landscapes have changed significantly since European settlement.

Many human practices have resulted in the need for management of some of our native species – because they are now threatened, because they are now used for production, or because they have become over-abundant or impact-causing.

Climate change will only add to the need to manage these species, and in ways that at this stage are unclear.

Our biodiversity is declining.

Native biodiversity within South Australia is in decline. The State has one of the highest extinction rates in Australia. The number of threatened species and ecological communities is large and growing, and only a relative few are being managed for recovery.

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 further degradation of these ecosystems, additional capacity, knowledge and time needs to be contributed to protect and conserve, and rebuild, these ecosystems. Research will also be a critical factor.

In all likelihood, biodiversity loss will continue unless we act to address the decline now.

Biodiversity sustains our natural and production landscapes and the industries that use them.

As South Australians we share in and enjoy the societal and economic benefits of the biological wealth of biodiversity.

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 resources – tourism and recreation, nature conservation, pastoralism, agriculture, horticulture, forestry, aquaculture, fishing (referred to as 'industry' throughout the Strategy) all benefit from healthy ecosystems.

Our primary production systems require biodiversity for pest control, soil production and stabilisation, pollination, salinity amelioration, and water purification.

Our survival depends on natural environments that function well. The survival of our plants and animals depends on healthy ecosystems.

We must intervene if we are to have healthy and sustainable landscapes.

The intervention required to halt our biodiversity decline will take dedicated planning, innovation and endeavour. The risks to South Australia's future are high if we fail to address the loss of our biodiversity in our production and natural systems. Ongoing decline will see not only 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 primary production capacity in terrestrial, aquatic and marine production environments.

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

The spatial scales and timeframes of management need to change.

Our current conservation efforts are not sufficient to conserve and recover South Australia's biodiversity. In addition, the spatial scale and timeframe of our planning and management need to change, particularly in the face of climate change.

Conservation objectives must be set at the spatial scale of landscapes. Terrestrial, aquatic and marine ecological systems and processes must be maintained and improved; what remains of our natural systems must be protected and expanded; and threatened species and ecological communities must be protected and restored. Timelines should reflect the fact that effective ecological restoration can take from a few years to hundreds of years.

Strategic partnerships must be creative.

The effort required to halt the biodiversity decline will require long lasting, innovative, strategic and creative partnerships of urban, rural and Indigenous communities, industry and government.

The benefits we South Australians gain from biodiversity, and our responsibility for the type of environmental future we create, oblige us to protect South Australia's ecological future.

Private landholders play a critical role.

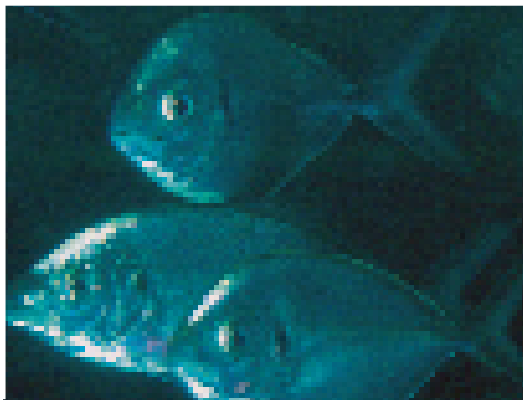
Private landholders manage and have stewardship over much land, and its biodiversity, in South Australia.

Therefore, *No Species Loss* must blend the dual priorities of sustainable production and nature conservation.

Landholders can make a significant contribution to conservation of the State's biodiversity through this Strategy if they view biodiversity as a key asset worth protecting, and a factor in improving farm productivity outcomes.

A key challenge to improving private land biodiversity will be to consider the impacts of conservation outcomes on farm business. Land manager participation in biodiversity conservation will be determined by whether real biodiversity improvements can go hand in hand with positive outcomes for farm productivity.

Government, community and industry will need to recognise and support landholder conservation efforts. Additional effort by all South Australians will be required to achieve the extent of private land biodiversity conservation that is critical to halting the decline in the State's biodiversity.



What are the challenges for nature conservation in South Australia?

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

- **balancing investment** in maintaining and improving landscapes and ecological processes, with restoring the **threatened ecosystems and species** they contain
- recognising that our current suite of threatened species equates to an **'extinction debt'**, and that we must act with a **sense of urgency** if we are to clear this debt, by implementing threatened species recovery actions, and reconnecting habitats and landscapes, particularly in the face of climate change
- appreciating the issues associated with **overabundant and 'impact-causing' native species,** and the need to manage these species responsibly and sustainably, while remaining cognisant of the seriousness of their impacts and the need to mitigate them where possible while **adhering to governance and legislative frameworks**
- maintaining sustainable populations of **harvested species** and the sustainable ecosystems that these species come from
- **bridging the gap** between urban and rural populations on the need to manage and invest in biodiversity management
- **engaging people and harnessing the resources** to achieve the private land conservation required to halt the decline in South Australia's biodiversity
- building the **scientific, technical and delivery capacity** required for biodiversity management, particularly in the areas of habitat restoration threatened species recovery, invasive species and climate change
- expanding and making more readily accessible a **knowledge base** to inform transparent decision making
- increasing **recognition of those less tangible biodiversity attributes** that are inherently difficult to price
- integrating precautionary, adaptive management, risk assessment and uncertainty approaches into biodiversity management and planning **decision-making processes** (and using scientific and experimental methods whenever possible to support these approaches)
- **integrating** biodiversity conservation into all levels of decision making
- **achieving ecologically sustainable management** practices across landscapes and seascapes
- increasing understanding of the **role of biodiversity in underpinning sustainable landscapes**
- developing systems that allow primary producers to **integrate the conservation of biodiversity and ecosystem services into profitable farming systems.**

What drives and influences South Australia's nature conservation strategy?

***No Species Loss* sits within an extensive policy framework.**

No Species Loss brings together existing policy, legislative and strategic frameworks for natural resources 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 4.

The policy relationships of the State NRM Plan to *No Species Loss* and other State policies is shown in Figure 5. The policy relationships of *No Species Loss* to other State and regional policies is shown in Figure 6.

Key policies have many links at a range of levels. At a high level *No Species Loss* links with the State NRM Plan and the *Planning Strategy for South Australia*, and with specialist integrating plans, in particular, *Tackling Climate Change: South Australia's Greenhouse Strategy, Biosecurity Strategy for SA, Wetlands Strategy for South Australia,* and *Living Coast Strategy for South Australia.*

Regional management strategies and plans, including NatureLinks, are also informed by the Strategy.

The Strategy has a whole of government approach.

The *No Species Loss* strategy facilitates delivery of targets within the 'Attaining Sustainability' objective of *South Australia's Strategic Plan.*

It is in concert with the objects of the *Natural Resources Management Act 2004* for protecting biological diversity and restoring or rehabilitating ecological systems and processes.

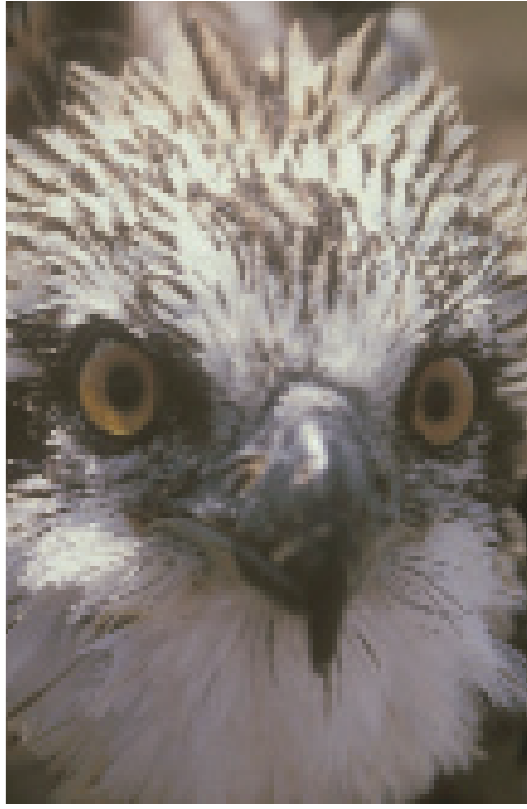
With these mandates, *No Species Loss* takes a whole of government approach to biodiversity protection, conservation and sustainable management.

***South Australia's Strategic Plan* lays a sustainability foundation.**

Together with *South Australia's Strategic Plan* greenhouse emissions and ecological footprint targets, the Strategy lays the foundation for 'Attaining Sustainability'.

In direct response to the 'Attaining Sustainability' objective, *No Species Loss* addresses the following targets:

- Lose no species: Lose no known native species as a result of human impacts (T3.1)
- Land biodiversity: By 2010 have five well-established biodiversity corridors aimed at maximising ecological outcomes particularly in the face of climate change (T3.2)
- Marine biodiversity: By 2010 create 19 marine parks aimed at maximising ecological outcomes (T3.4)



The State NRM Plan provides overarching direction.

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, and promote their recovery and restoration.

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* is aligned with the State NRM Plan.**

No Species Loss objectives and targets complement and inform the goals, milestones, strategic directions and resource condition targets for biodiversity conservation within the State NRM Plan. The degree to which the targets contribute to the State NRM Plan is presented in the Appendix.

***No Species Loss* is aligned with *Tackling Climate Change*.**

Adaptation to the impacts of climate change will be a major challenge for South Australia's biodiversity. *Tackling Climate Change: South Australia's Greenhouse Strategy 2006–2020* is the State's overarching policy framework that will guide our efforts to respond to climate change. As provided by the *Climate Change and Greenhouse Emissions Reduction Bill 2006, Tackling Climate Change* outlines strategies and government actions to improve the ability of species and ecosystems to adapt to the inevitable impacts of climate change. *No Species Loss* builds on the broad policy directions and actions outlined in *Tackling Climate Change* to enhance the capacity of ecological systems to adjust to climate change impacts.

NatureLinks is part of *No Species Loss*.

No Species Loss embodies the State Government's NatureLinks policy – a landscape approach to biodiversity conservation within 5 key landscapes (or 'corridors') strategically located across the State.

The Strategy therefore addresses *South Australia's Strategic Plan,* NatureLinks target of 'have five well-established biodiversity corridors aimed at maximising ecological outcomes particularly in the face of climate change, by 2010' (T3.2).

We have international obligations.

The *National Strategy for the Conservation of Australia's Biodiversity* seeks to fulfill 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.

Legislation will help to deliver our aspirations.

No Species Loss establishes long-term objectives for biodiversity legislative reform.

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* (EPBC Act); and South Australian *National Parks and Wildlife Act 1972, Fisheries Act 1982, Wilderness Protection Act 1992, Native Vegetation Act 1991, Coast Protection Act 1972, Natural Resources Management Act 2004* and others that contribute to biodiversity protection.

Although they are making a vital contribution, the current suite of legislative instruments is not delivering our aspirations and stopping the biodiversity decline.

***No Species Loss* informs the planning and development assessment system.**

The *Development Act 1993* forms the legislative framework for South Australia's planning and development assessment system and establishes the *Planning Strategy for South Australia* and development plans as the mechanisms for guiding development.

The *Planning 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* and its targets for losing no species and establishing 5 biodiversity corridors.

Development plans are the development assessment documents that contain planning policy against which relevant planning authorities assess development applications. The long-term protection of biodiversity needs development plan policy informed by *No Species Loss*, existing knowledge and information, regional NRM plans, regional biodiversity plans and the NatureLinks initiative.

***No Species Loss* guides regional NRM plans.**

South Australia's 8 regional NRM boards are already delivering biodiversity conservation initiatives, but without 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* directly inform the goals, milestones, strategies and biodiversity resource condition targets of the State NRM Plan (see Appendix). Additional detail in the Strategy will guide the development and implementation of the regional NRM plans.

The Strategy is aligned with the national approach to biodiversity decline.

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.

No Species Loss is also tied to the national biodiversity decline agenda through the Matters of National Environmental Significance (MNES) identified within the EPBC Act framework. MNES include threatened species, ecological communities, migratory species, and Ramsar wetlands of international importance. Recovery plans for South Australian nationally threatened species are recognised through the EPBC Act and so may be funded at a commonwealth level, thereby addressing national conservation priorities.

Biodiversity does not recognise State borders.

Biomes and the biodiversity they contain have a biogeographic basis and cannot recognise nor adhere to the policy frameworks constrained within our State borders.

Thus South Australia should actively seek to develop planning and management synergies with other jurisdictions, align priorities and investment between jurisdictions and take a lead role to this effect through input into national frameworks such as ministerial councils and the Council of Australian Governments. Establishing links with interstate conservation agencies and groups and fostering cross-border partnerships is critical to conservation, particularly for threatened species.

Round Table on Sustainability provides independent advice.

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

Figure 4.

Policy context for *No Species Loss*

Core or primary relevance documents drive or provide immediate and direct obligations and expectations on Australia and South Australia in biodiversity conservation and management. Partial or secondary relevance documents influence or provide more indirect obligations, mainly by promoting principles of ecologically sustainable development.

	International	National	
Core relevance (driver)	**Conventions** • Asia-Pacific Migratory Waterbird Conservation Strategy: 2001–2005 • Convention on Biological Diversity 1992 • Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979) • Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975) • Convention on Wetlands of International Importance (Ramsar Convention 1971) • Local Agenda 21 (1992) **Agreements** • Agreement on the Conservation of Albatrosses and Petrels (2001) • Wildlife Conservation Plan for Migratory Shorebirds • China Australia Migratory Bird Agreement (CAMBA 1988) • Japan Australia Migratory Bird Agreement (JAMBA 1981)	• *Native Title Act 1993* • *Environment Protection and Biodiversity Conservation Act 1999* • *Natural Heritage Trust of Australia Act 1997* • National Biodiversity and Climate Change Action Plan 2004–2007 • Biodiversity Conservation Research: Australia's Priorities (2001) • Directions for the National Reserve System: A Partnership Approach (2005) • Native Fish Strategy for the Murray-Darling Basin 2003–2013 • National Framework for Management and Monitoring of Australia's Native Vegetation (2001)	• National Greenhouse Strategy (1998) • National Land and Water Resources Audit • National Objectives and Targets for Biodiversity Conservation 2001–2005 • National Strategy for the Conservation of Australia's Biological Diversity (1996) • Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (1997) • Strategic Plan of Action for the National Representative System of Marine Protected Areas (1999) • Wetlands Policy of the Commonwealth Government of Australia (1997)
Partial relevance (influence)	• World Heritage Convention 1972	• Australia's Oceans Policy (1998) • Commonwealth Coastal Policy (1995) • National Action Plan for Salinity and Water Quality • National Forest Policy Statement (1992) • Australia's National Framework for Environmental Management Systems in Australian Agriculture (2002)	• National Local Government Biodiversity Strategy (1999) • National Principles and Guidelines for Rangeland Management (1999) • National Strategy for Ecologically Sustainable Development (1992) • National Water Quality Management Strategy (1992) • National Weeds Strategy (1997)

State

No Species Loss – A nature conservation strategy for South Australia

- *Coast Protection Act 1972*
- *Crown Lands Act 1929*
- *Development Act 1993*
- *Adelaide Dolphin Sanctuary Act 2005*
- *Environment Protection Act 1993*
- *National Parks and Wildlife Act 1972*
- *Native Vegetation Act 1991*
- *Natural Resources Management Act 2004*
- *River Murray Act 2003*
- *Wilderness Protection Act 1992*
- Marine Planning Framework for South Australia
- Planning Strategy for South Australia
- South Australian Tourism Plan
- Responsible Nature-based Tourism Strategy 2004–2009
- Strategy for Aboriginal Managed Lands in SA
- A Weed Strategy for South Australia
- Wetlands Strategy for South Australia
- Blueprint for the South Australian Representative System of Marine Protected Areas
- Living Coast Strategy for South Australia
- Environment Flows for the River Murray
- NatureLinks
- State Natural Resources Management Plan 2006
- South Australia's Strategic Plan
- State of Environment reporting
- Tackling Climate Change: South Australia's Greenhouse Strategy

- *Aboriginal Heritage Act 1988*
- *Aquaculture Act 2001*
- *Fisheries Act 1982*
- Getting it Right Policy
- Interstate Agreements:
  – Murray-Darling Basin
  – Lake Eyre Basin
  – Great Artesian Basin
- *Local Government Act 1999*
- *Mining Act 1971*
- *Pastoral Land Management and Conservation Act 1989*
- *Petroleum Act 2000*
- Biosecurity Strategy for SA
- SA Dryland Salinity Management Strategy
- *South Australian Water Corporation Act 1994*
- SA River Murray Salinity Strategy
- *Water Conservation Act 1936*

Regional

- Water allocation plans
- Development plans
- Marine plans
- Natural resources management plans
- Regional biodiversity plans
- Reserve management plans (under the *National Parks and Wildlife Act 1972* and the *Wilderness Protection Act 1992)*

Core relevance (driver)

- Regional tourism plans
- Local action plans
- Industry plans

Partial relevance (influence)

Figure 5.

Relationship of the State NRM Plan to *No Species Loss* and other government policies
Note that for clarity not all relationships between policies are shown.

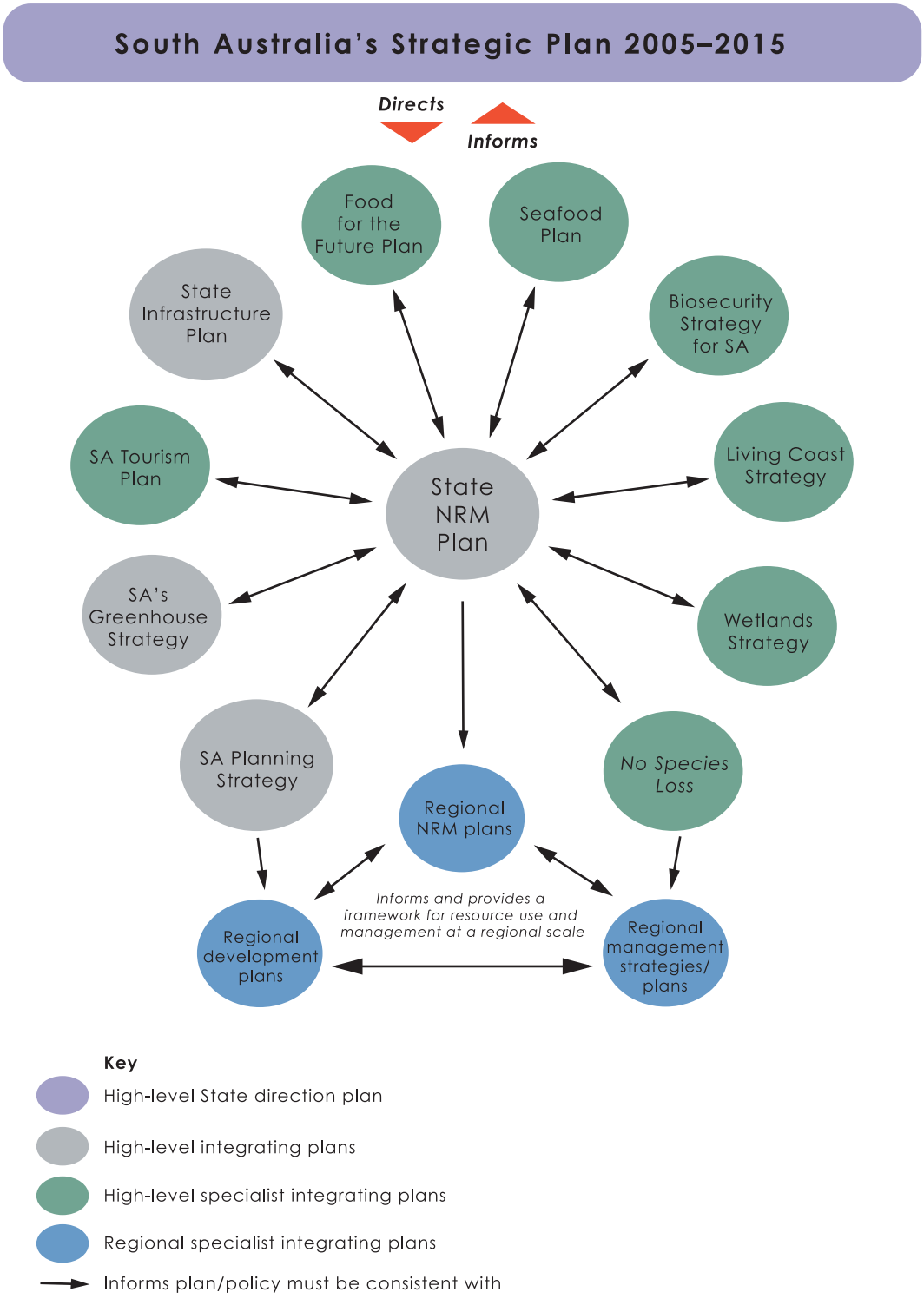
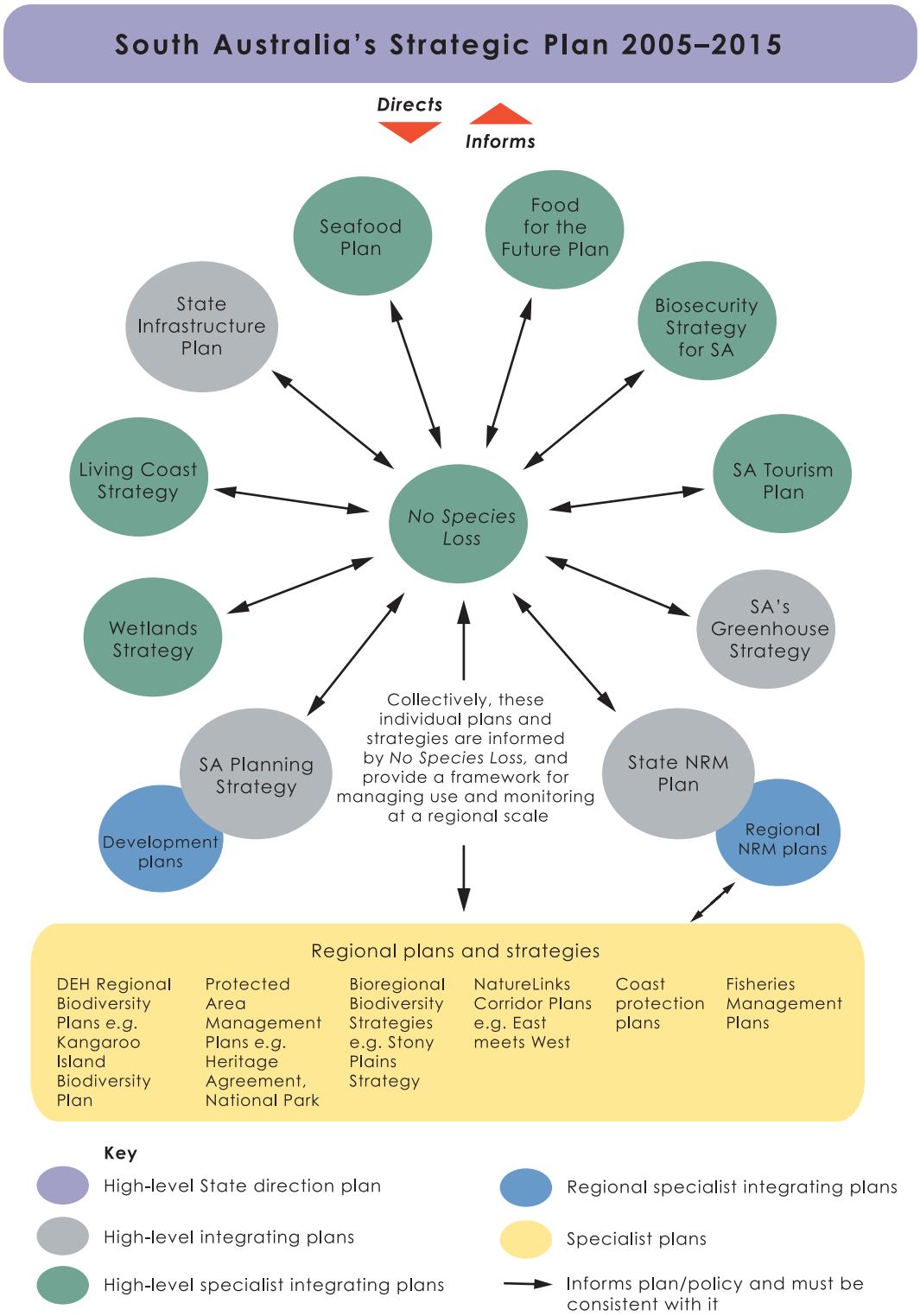


Figure 6.

Relationship of *No Species Loss* to other government policies
Note that for clarity not all relationships between policies are shown.



PART THREE. A report on the decline in biodiversity

Where are South Australia's biomes?

The Arid, Mediterranean and Marine biomes are unique and altered.

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 (Figure 7). The unique combination of biological and physical elements of each bioregion provide a context for planning biodiversity management.

The IBRA and IMCRA bioregions are combined into the Arid, Mediterranean and Marine* biomes in this Strategy (Figure 8). Each biome represents a greatly simplified but biogeographically unique collation of ecological communities with different patterns of climate, land use, vegetation, habitat (extent, destruction and modification) and threats to biodiversity (Figures 9, 10 and 11). They thus give a broad, user-friendly context for discussing biodiversity conservation and management issues.

Biomes highlight patterns in landuse, trends and threats.

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 and seascape planning.

Describing the habitat destruction and modification patterns of the Marine Biome is problematic.

Human activities may have altered seascapes, but 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 (Figure 9), grazing pressures from feral animals, stock and native animals have significantly modified its composition and structure in many areas.

* The Marine Biome includes coastal, estuarine and marine environments.

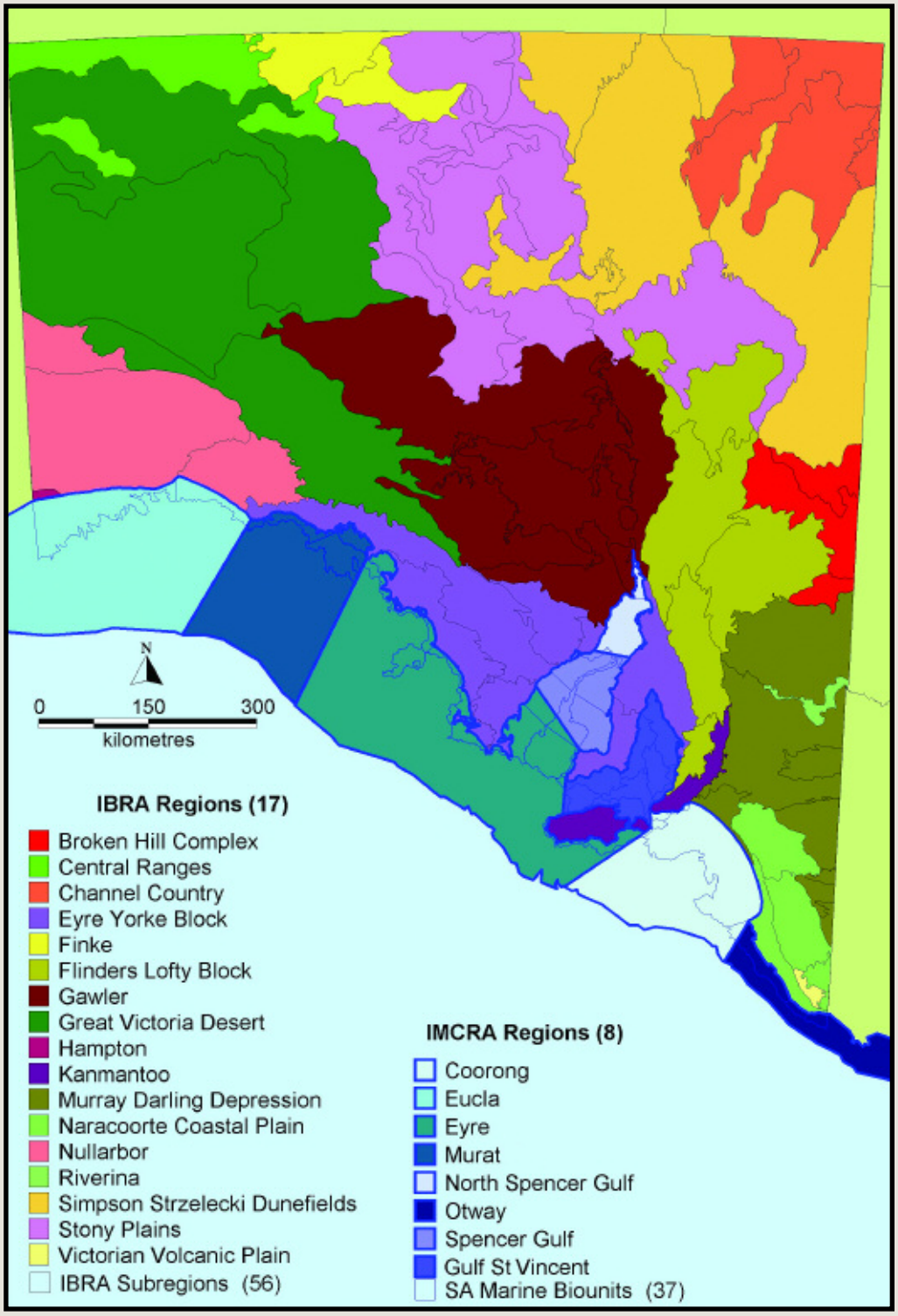


Figure 7.

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 8.

South Australian biomes

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)

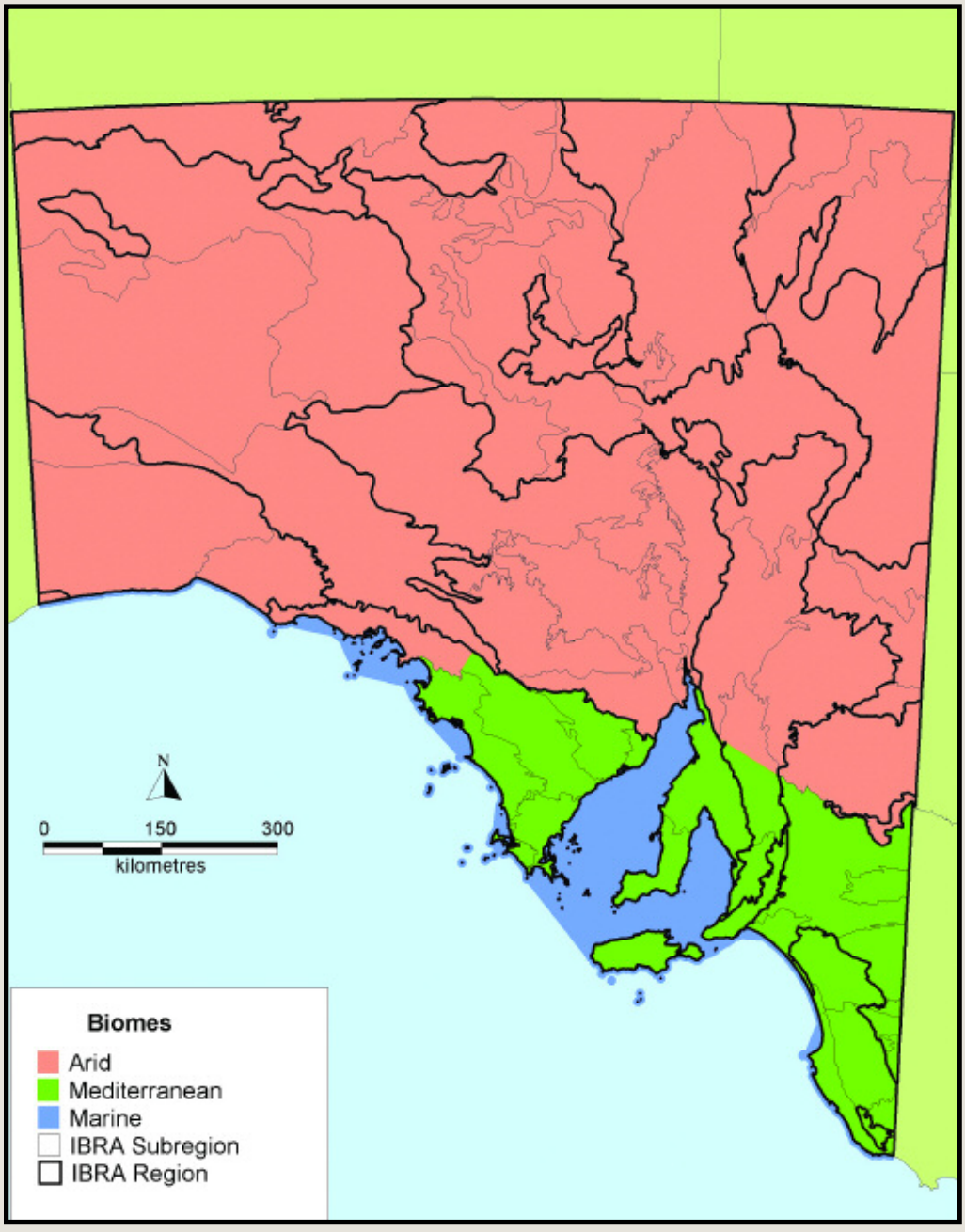


Figure 9.

Natural cover (includes vegetation, lakes, wetlands) in South Australia in 1998, showing the extent of habitat destruction through land cover clearance

Although little habit 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, Department for Environment and Heritage 2005)

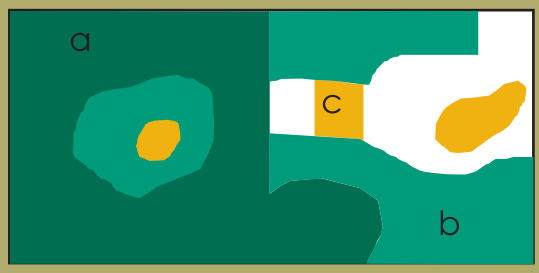
Figure 10.

Landscape patterns, characteristics, threats and trends of the Arid, Mediterranean and Marine biomes

*Protected areas consist of public and private lands.

**Adapted from McIntyre and Hobbs 2000

Arid

Protected areas*	87% of South Australia of which 28% is protected
Landscape patterns**	
Habitat destruction patterns	Intact (<10% destroyed) to variegated (10–40% destroyed) 98% of natural cover remains
Habitat modification patterns	Low to high levels of modification
Predominant landscape vegetation components	Predominantly intact habitat (a), and adjacent buffer areas (b), with some connecting areas (c) (see below)
Visual representation of landscape destruction and modification patterns	
Environmental influences	• a warm to hot and dry climate with low and erratic rainfall; mostly winter rains in the south and summer rains in the north
Biome characteristics	• rocky hills, volcanic and quartzite ranges, stony, gibber and sand plains, dune fields, spinifex hummock and tussock grasslands, chenopod shrublands, open and low mallee, eucalypt woodlands • river systems with enormous variability in flow • wetlands of international and national importance, sites of national importance for migratory shorebirds • salt lakes, floodplains and wetlands, with major ephemeral watercourses drain towards Lake Eyre • Great Artesian Basin underlies about 50% of this biome to the east
Land use	• Aboriginal homelands and rangeland • nature conservation • Indigenous cultural site conservation • pastoralism – sheep and cattle • mining and exploration • tourism and recreation • some irrigated horticulture • some inland aquaculture
Biodiversity and threat trends	• threatened species and ecosystems increasing • disease spreading • weeds increasing • pests stable (where managed intensively) to increasing • health of rivers, streams and wetlands declining • water use increasing • water quality decreasing
Threats to biodiversity	• climate change • combined grazing impact (total grazing pressure) primarily from sheep, cattle, rabbits, goats, horses, camels and kangaroos • wildfire, inappropriate fire regimes • invasive weeds, pests and diseases • over-abundant native species • urban native species in conflict • groundwater extraction • decline in maintaining and passing on of traditional knowledge (e.g. traditional patch burning) and responsibility for biodiversity conservation

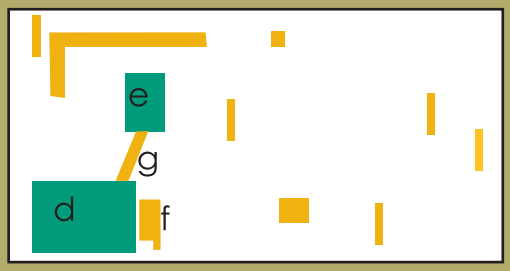
Mediterranean	Marine
13% of South Australia of which 14% is protected	Equivalent to 6% of South Australian land area of which 5% is protected
Fragmented (40–90% destroyed) to relictual (>90% destroyed)	Uncertain, but probably intact (<10% destroyed) to variegated (10–40% destroyed)
30% of natural cover remains	Uncertain of the natural cover remaining
Low to mostly high levels of modification	Uncertain but probably low to high levels of modification
Predominantly large (d) to small (e) fragments with adjacent buffer (f) areas, and extensive connecting areas (g) (see below)	Uncertain but probably predominantly intact habitat with adjacent buffer and connecting areas
	Uncertain but probably similar to pattern in Arid Biome
• a cool to warm climate; tending to winter rains	• variable and diverse currents with low nutrient sheltered salty gulf waters; warmer waters of the bight; and cooler nutrient rich waters of the south east
• undulating plains and foothills, low ranges, steep rocky gorges and creeklines, chenopod shrublands, native grassland, sedgelands, samphire shrublands, native grassland, open mallee, eucalypt woodlands, sand dune fields • watercourses and rivers, ephemeral to permanent • Kangaroo Island uniquely fox and rabbit free • significant seabird nesting habitat on offshore islands • wetlands of international and national importance, sites of national importance for migratory shorebirds • only 30% of wetlands remain	• internationally unique, biologically diverse with very high levels of endemism • rough-water rocky shores and subtidal reef systems, sandy beaches, marine wetlands, extensive calm water mud flats, kelp forests, intertidal sandy flats, estuarine wetlands and sand dunes, seagrass, salt marsh and mangrove forest habitats
• agriculture • horticulture • forestry • mining and exploration • inland aquaculture • urban development • tourism and recreation • nature conservation	• urban development • shipping • recreational fisheries • research • commercial fisheries and aquaculture • tourism and recreation • mining and exploration • nature conservation
• threatened species and ecosystems increasing • disease spreading • weeds increasing • pests stable (where managed intensively) to increasing • water use increasing • water quality declining • health of rivers, streams and wetlands declining • residential land use increasing • intensity of production land use increasing	• seagrass and mangrove habitats declining • coastal development increasing • fisheries are fully exploited and likely to remain so
• climate change • selective broad scale clearance of vegetation and the direct loss of habitat • inappropriate fire regimes • invasive weeds, pests and diseases • grazing and trampling • overabundant native species • urban settlement and development • wetland drainage, water interception, altered flow regimes, rising saline groundwater • pollution	• climate change • intensive commercial and recreational use • coastal development and overuse • pollution • sedimentation • invasive weeds, pests and disease • tourism and recreation • over-abundant native species • urban native species in conflict

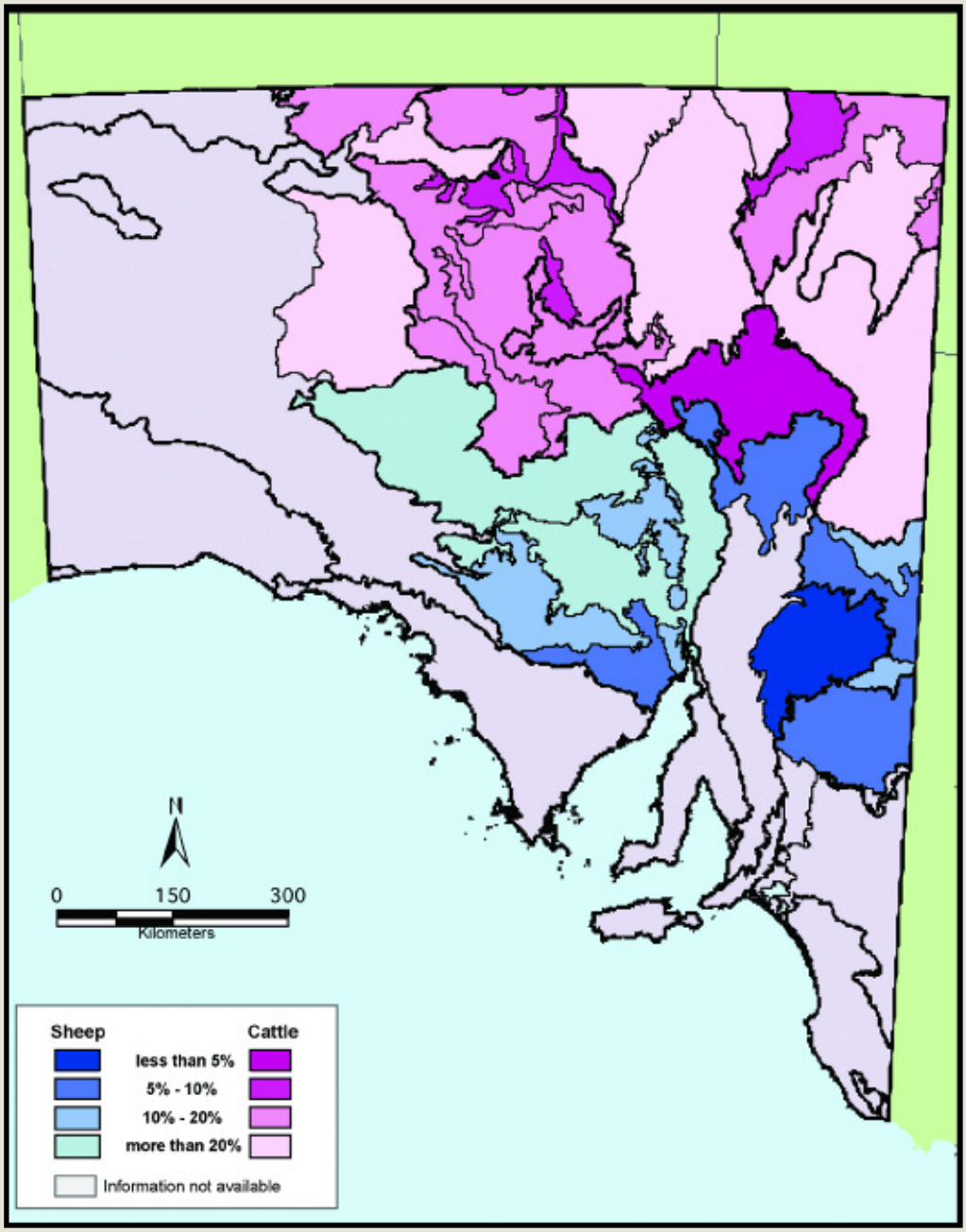
Figure 11.

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. Land more distant from water remains subject to uncontrolled rabbit grazing throughout most of 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 – the approximate maximum distances 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, Department of Water, Land and Biodiversity Conservation 2005)



What are the state of and trends in threatened species and ecological communities?

Our extinction debt is over 1000 threatened species.

Intensive and ongoing census work, primarily by the South Australian State Herbarium, the Biological Survey of South Australia, the South Australian Museum, and naturalists, has provided an extensive, though incomplete, inventory 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 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 12).

Identifying species before they decline makes common sense.

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. For other species we have insufficient information to demonstrate that they fall into a threatened species category but because of our knowledge of threats we have reason to believe that they could be listed as threatened. Research to fill information gaps on these species is a high priority. A large number of terrestrial and marine species qualify for recognition in this category and are therefore of conservation concern.

Ecological communities are also threatened.

The Australian Government recognises the need to protect threatened ecological communities by 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.

Survey and research are desperately needed.

The conservation status of South Australia's marine species and ecological communities is largely unknown (apart from land-based marine mammals, reptiles, pelagic birds). A list of marine fish, shark and ray species of conservation concern in South Australia is being developed. Development and implementation of recovery actions is a priority for threatened marine species (e.g. Australian sea-lions)

The composition and ecology of South Australia's invertebrate fauna, non-vascular plants and soil flora are much less documented, little appreciated and poorly understood.

The extinction debt is growing.

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

At a State level, more species and ecological communities are threatened with extinction than are being managed for recovery – leaving us with an 'extinction debt'. If we do not manage this debt with a sense of urgency then extinction of South Australia's threatened species and ecological communities is likely. Clearing the debt requires urgent implementation of threatened species recovery actions, and the reconnection of habitats and landscapes, particularly in the face of climate change.

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.

Figure 12a.

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).

*Total number of threatened species according to the threatened status categories of *National Parks and Wildlife Act 1972* (see list to right of table)

	Status	Animals						Plants						Ecological communities
		Vertebrates					Invertebrates	Vascular	Non-vascular					
		Mammals	Birds	Reptiles	Amphibians	Fish			Mosses	Liverworts	Lichens	Fungi	Macroalgae	
Arid Biome	Total number described [5]	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.	348	n.a.	n.a.	n.a.	n.a.	n.r.	9
Medit'n Biome	Total number described [5]	85	485	144	17	36	n.a.	2658	n.a.	n.a.	n.a.	n.a.	n.r.	n.a.
	Total threatened * [2,3]	46	106	24	2	4	n.a.	636	n.a.	n.a.	n.a.	n.a.	n.r.	33
Marine Biome	Total number described [5]	37	37	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Total threatened * [2]	25	10	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Australian Total	Total number described [1,2,4]	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.

Data sources

1. Barker, WR, Barker, RM, Jessop, JP and Vonow, HP (Eds). 2005. Census of South Australian Vascular Plants. (5th ed). *Journal of the Adelaide Botanic Gardens*, Supplement 1.
2. Department for Environment and Heritage. 2000. *Current List of Threatened Vertebrates and Vascular Plants. National Parks and Wildlife Act 1972* Threatened Species Schedules (2000).
3. Department for Environment and Heritage. June 2003. Unpublished list of threatened ecosystems of South Australia.
4. Department for Environment and Heritage. October 2005. Unpublished list of non-vascular plants of South Australia.
5. Robinson, AC, Casperson, KD and Hutchinson, MN (Eds). 2000. *A List of the Vertebrates of South Australia* (3rd ed). Department for Environment and Heritage, and South Australian Museum, Adelaide.

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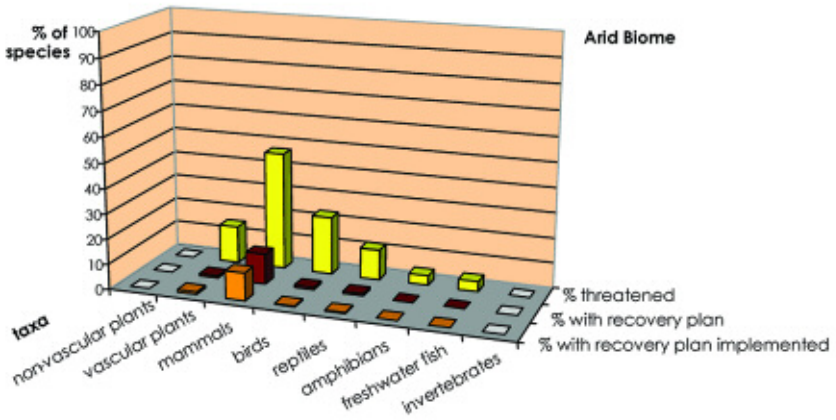
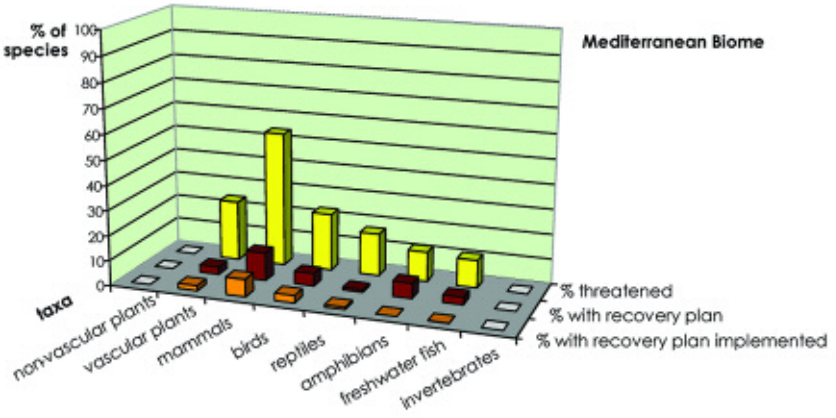
Figure 12b.

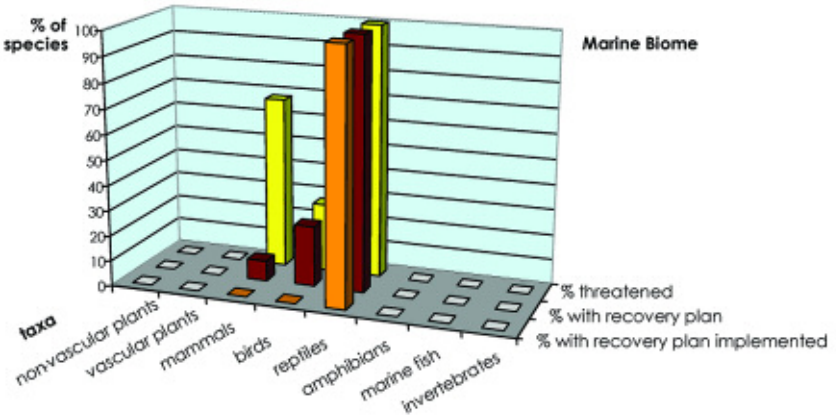
Proportions of species in each taxon that: are threatened; have a recovery plan written; and have a recovery plan in place, for the Arid, Mediterranean, Marine biomes, and for South Australia overall (for raw data for % threatened species see Figure 12a)

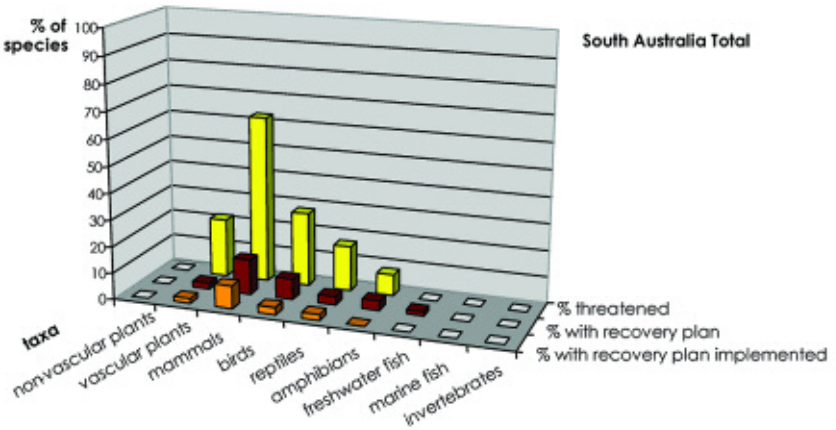
No marine fish, invertebrates, vascular plants and non-vascular plants are listed as threatened because of a lack of data.

*Total number of threatened species according to the threatened status categories of National Parks and Wildlife Act 1972 (see list below)









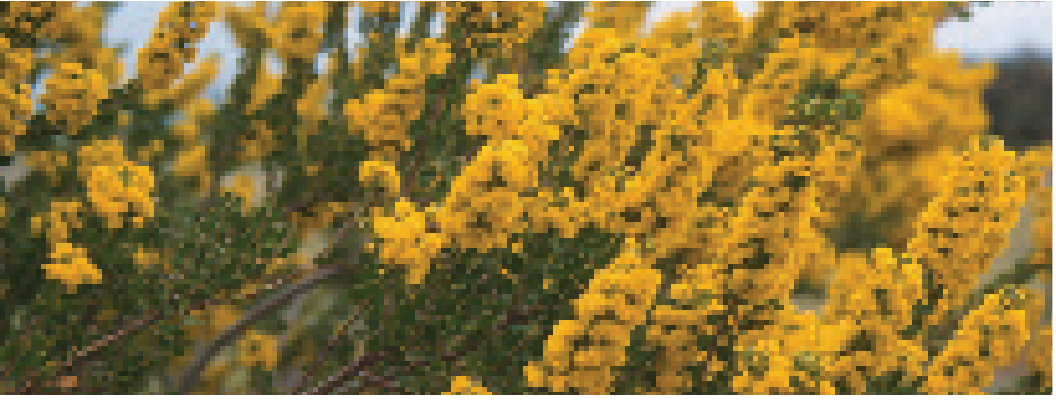
* Threatened status category	Code	Category definition
Extinct	EX	Not definitely located in the wild during the past 50 years, or not found in recent years despite thorough searching
Endangered	E	In danger of extinction if causal factors continue to operate
Vulnerable	V	Likely to move into the Endangered category in the near future if 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 (i.e. low numbers); may include naturally scarce species that may require conservation consideration to ensure that they do not become Endangered or Vulnerable

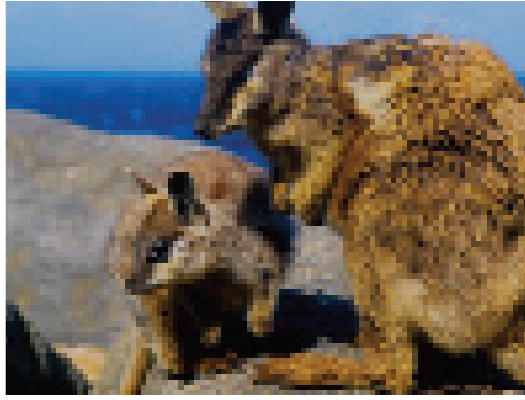
PART FOUR. Nature conservation achievements and approaches

What has South Australia achieved so far?

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

- progressed the establishment of a State system of public and private **protected area reserves** set aside as core areas for protecting native biodiversity (South Australia has the highest percentage of land area protected of any mainland State)
- planned, progressed and implemented recovery planning and **landscape restoration management** regimes to halt the decline in threatened species and ecological communities (e.g. NatureLinks, threatened species recovery plans)
- planned and implemented policy and management regimes to deal with the impacts of native **overabundant and impact-causing species** (e.g. little corellas, common brush-tailed possums)
- engaged industry and landholders in management practices sympathetic to protecting biological systems within **production environments** (e.g. kangaroo harvesting industry)
- established the **Heritage Agreement Scheme** for the conservation of biodiversity on private lands, making a significant contribution to the matrix of protected areas acoss South Australia
- worked collaboratively with landholders to achieve significant **private land conservation** (e.g. uptake of Heritage Agreeement scheme, vegetation restoration, pest and weed management, salinity amelioration through NHT, NAPSWQ)
- progressed community participation in biodiversity conservation through the activities of **local volunteer groups** (e.g. Friends of Parks, Landcare, Threatened Plant Action Group)
- progressed the development of **urban biodiversity environments** in collaboration with the community (e.g. Urban Forest Biodiversity Program)
- established quarantine and threat abatement practices to **minimise the introduction and impact** of invasive and destructive pests, diseases and weeds
- worked collaboratively to continually **improve knowledge and understanding** of South Australia's biodiversity (e.g. State Herbarium, Adelaide and Monato Zoos, Biological Survey of SA, South Australian Museum)
- **researched, educated and extended** biodiversity knowledge through public institutions, and teaching and learning networks
- **invested** in management and **understanding** of South Australia's biodiversity (e.g. Wildlife Conservation Fund, Native Vegetation Council Fund)
- established a comprehensive framework to begin to address the impacts of **climate change** on biodiversity
- 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. *State Natural Resources Management Plan 2006, Native Vegetation Act 1991*, regional biodiversity plans, regional NRM plans; see Figure 4)
- developed significant biodiversity **conservation policy** that integrates landscape and seascape management (e.g. *Wetlands Strategy for South Australia, Living Coast Strategy for South Australia,* (see Figure 4)
- engaged regional communities in **integrating biodiversity planning** and management into natural resources management decisions (e.g. regional NRM planning)
- worked collaboratively with industry to prepare guidelines and establish **codes of practice** and protocols for integrating biodiversity conservation into industry standards (e.g. design guidelines for sustainable toursim development)
- **regulated** use, trade and development impacts on South Australia's biodiversity
- worked collaboratively with regional NRM groups, government and community to establish **regional biodiversity conservation programs.**





How does South Australia approach biodiversity conservation on the ground?

Different approaches give different outcomes.

The on-ground approaches to managing biodiversity in South Australia are varied and complex. Each approach addresses a different conservation outcome and is in some way limited in its capacity to conserve all attributes (components, patterns and processes) of the biodiversity hierarchy (genes, species and ecosystems) (see Figure 2).

The approaches to biodiversity conservation in South Australia focus on the management of:

1. **protected areas** where the goal is the formal protection of ecosystems according to CARRS criteria – can be limited in its capacity to conserve some species and ecological processes
2. **threatened species** where the goal is the restoration of viable populations of species – can be limited in its capacity to conserve more than one or a few species
3. **threatened ecological communities** where the goal is the restoration of species and ecological processes within communities and ecosystems – can be limited in its capacity to conserve some species and community patterns
4. **key threatening processes** where the goal is to prevent, eradicate, suppress or contain a threat for the restoration of biota within an area (e.g. habitats) – can be limited in its capacity to conserve some species
5. **landscapes** where the goal is integrated restoration of landscapes through management across a mix of private and public land tenures in partnership with multiple landholders (e.g. NatureLinks) – can be limited in its capacity to conserve some species
6. **cultural landscapes** where the goal is the management of biodiversity for Indigenous social, cultural and economic outcomes – can be limited in its capacity to conserve some processes.

A mix of approaches is required for effective conservation.

Usually, only a combination of approaches will conserve the total biota and ecological processes of an area (e.g. threatened species recovery actions may be required as part of a landscape management approach, which would also include management of protected areas).

Many secondary factors (e.g. financial, logistic, technical, social) further constrain and add to the difference and complexity of these approaches.

The 6 approaches feature throughout the objectives, recommendations and targets in Part Five of *No Species Loss*.

An example (see examples 1–6 over page) highlights each approach to conservation.

NatureLinks is a landscape conservation approach.

NatureLinks is in essence the on-ground delivery of *No Species Loss* – in 5 discrete landscapes (or 'corridors') strategically located across the State where there are significant conservation gains to be made.

The purpose of NatureLinks is to tackle habitat fragmentation by developing new viable habitat networks that connect existing habitats. These networks span public and private lands and are to be created over long timeframes. Their development is based on sound ecological principles. Protected areas are an integral part of the networks.

The management emphasis is on ecological restoration with a focus on the recovery of threatened species and ecological communities, and enhancement of habitat connectivity across landscapes. This management is achieved in partnership with community, industry and government.

South Australia's biodiversity hotspots reflect the landscape approach.

South Australia has 2 of Australia's 15 'biodiversity hotspots' – unique areas that are rich in plant and animal species, particularly endemic species. Our hotspots are under immediate threat from impacts such as land clearing, salinity, development pressures, weeds and feral animals. They are a priority for some recovery and restoration programs that are funded by the Commonwealth's Maintaining Australia's Biodiversity Hotspots Programme.

The 2 areas are the unique wetland habitats of the South East (extending into Victoria) and the woodland habitats containing many endemic species of the Mount Lofty–Kangaroo Island region, many of which are threatened.

Conservation approaches must be integrated to maximise conservation outcomes.

No Species Loss aims for improved coordination and integration among these 6 approaches to optimise biodiversity conservation outcomes at the State level.

Despite their differences, all approaches require further significant resourcing if we are to successfully widen and improve the already significant achievements of landholders, government, industry and community.

Example 1 – South Australia's protected area system

A comprehensive, adequate and representative reserve system (CARRS) of protected areas on private, public and Indigenous land specifically established and managed to protect native 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 system of formally protected areas to contribute to the conservation of native biodiversity in situ, in accordance with the National Reserve System (see Figure 13). The system, though incomplete, is providing an ecological core to conservation and restoration initiatives (in accordance with NatureLinks).

Because of their differing locations, proximities and sizes, protected areas vary significantly in their ability to conserve ecological processes and so cannot adequately protect all biodiversity. It has been recognised that South Australia's system of terrestrial protected areas on its own cannot ensure the conservation of all of South Australia's biodiversity, particularly in the face of the rapidly changing environment associated with climate change. This recognition 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.

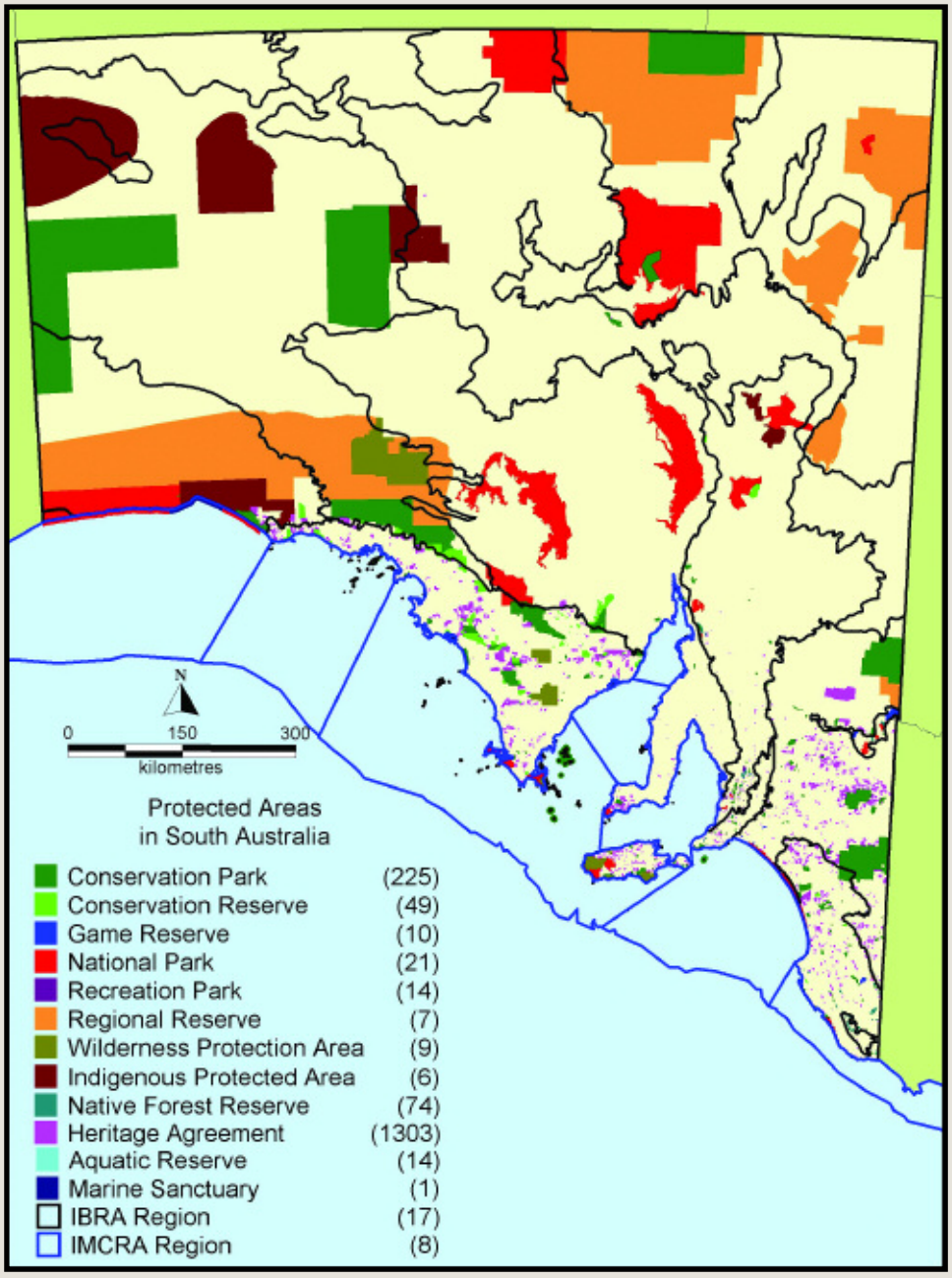


Figure 13.

Protected areas of South Australia

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

Example 2 – 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 bush stone curlew, beautiful firetail, bassian thrush and scarlet robin.

Community and landholder 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.

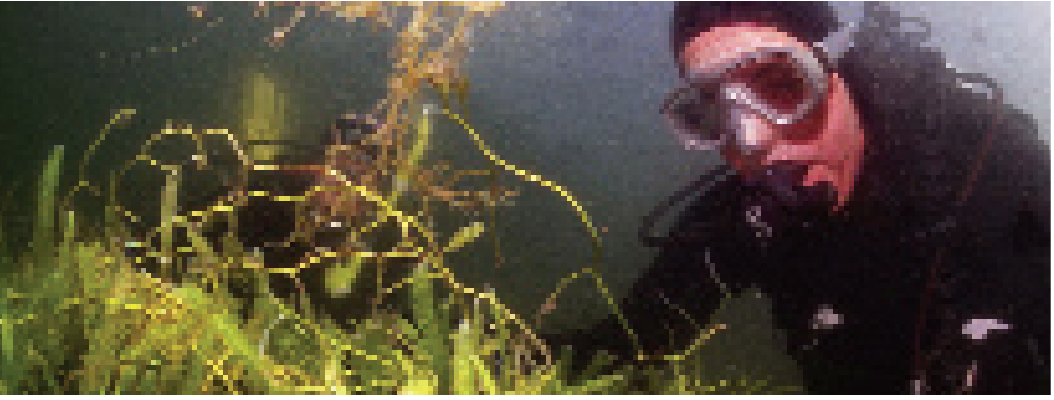
Example 3 – Threatened ecological community management

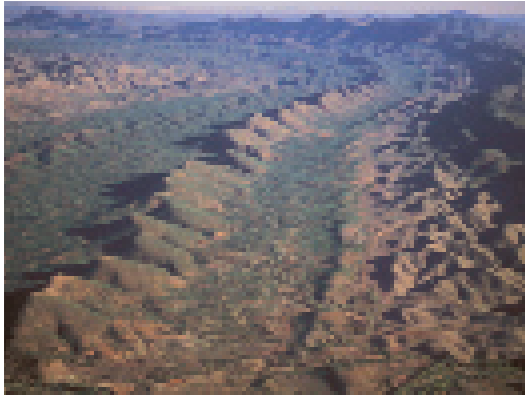
Great Artesian Basin (GAB) discharge spring wetlands on its northern, western and southern margins support unique communities of native species that are listed nationally as Endangered.

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 draw down from drilled bores, spring excavation, weeds, and disturbance from stock, feral animals and tourism. Recovery actions against these threats will engage stakeholders, particularly landholders, at many levels in each state.

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.





Example 4 – 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.

Example 5 – 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. It is one of the 5 NatureLinks corridors within South Australia.

The cooperative partnerships with landholders, and exchange of management advice and ideas, are critically important in this success story.

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)*.

Integrated threat abatement programs focus on these threats and operate both on private land and 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 project epitomises the NatureLinks landscape approach to integrated design and implementation of conservation programs.

Example 6 – Kuka Kanyini at Watarru – Caring for Country

Loosely translated *kuka kanyini* means 'looking after game animals'.

Kuka Kanyini is a landscape management project at Watarru in the Anangu Pitjantjatjara Yankunytjatjara Lands in the far north-west of South Australia. The area is biologically significant and contains many rare and endangered species.

Traditional owners and the Department for Environment and Heritage have formed a unique partnership that provides a vehicle for community development and the revitalising of relationships and traditional knowledge.

Kuka Kanyini has the goals of: combining contemporary scientific information with traditional Indigenous knowledge and skills to protect and restore biodiversity; revitalising traditional cultural and land management understanding and practice; providing employment and training; and improving health and overall wellbeing of Indigenous people.

Conservation actions include: mapping the region's biological assets; restoring and protecting rockholes from feral species; harvesting and monitoring bush foods; removing feral camels and monitoring biodiversity; creating a sanctuary for preferred plant and animal species; and protecting and reintroducing threatened species.

The project supports the Anangu elders to manage the land in accordance with traditional law, and to strengthen the ties between elders and young people to ensure that knowledge and skills are passed on to the next generation.

As a model for traditional land management, it has great potential to be replicated elsewhere in the Lands.

PART FIVE. Implementing *No Species Loss*

Targets and Recommendations

Goals and outcomes

The 5 goals that give detail to the vision of *No Species Loss* are:

- **Goal 1** – Conservation of South Australia's biodiversity
- **Goal 2** – Community ownership and stewardship for biodiversity
- **Goal 3** – Ecological knowledge that can influence decision making
- **Goal 4** – Adjustment to the impacts of climate change
- **Goal 5** – Active and integrated natural resources management partnerships.

For each goal, a scope defines its context for objectives, targets and recommendations.

Desired outcomes reflect where South Australia's conservation business needs to be in just under 25 years time if we make the progress required towards reversing our biodiversity decline.

Targets set directions for outcomes.

Targets and recommendations have a 10 year timeline (i.e. they are to be completed by 2017) unless otherwise stated. Recommendations are identified where a lack of knowledge or the complexity of an issue significantly restricts the capacity to set meaningful targets.

Not all targets and recommendations will contribute immediately to conservation activities. Many focus on gaps and inadequacies in current knowledge and management that need to be bridged as a step towards reversing the decline in South Australia's biodiversity.

Timeframes are biologically realistic.

Some of the targets and recommendations focus on enhancing existing initiatives, rather than creating new ones. Target timeframes reflect that:

- some actions will contribute relatively more towards biodiversity goals than others, and so should begin sooner
- not all actions can be implemented at once
- some actions need to precede others.

Ambition balanced with pragmatism influenced the setting of targets in *No Species Loss*. The scope and timing of each target to a large degree reflect conservation urgency.

Lead Agencies and Support Partners will implement the Strategy.

South Australian Government agencies are alone responsible for implementation of individual *No Species Loss* targets. Government agencies are assigned Lead Agency (LA) responsibilities for the delivery of targets and recommendations.

Lead Agencies are chosen on the basis that they have the most significant policy commitment to the scope of the target.

The LA is responsible for:

- overseeing and progressing the delivery of actions to achieve the target or recommendation
- facilitating clarification of issues that arise during implementation of the target
- reporting on the target.

Government agencies, NRM boards, industry and community (urban, rural, Indigenous) may also be assigned Support Partner (SP) responsibilities for targets. Support Partners are chosen because they make a policy, programming or delivery contribution to the implementation of the target.

To ensure clarity of roles, each target has only one LA (but may have multiple SPs).

Performance information sets the scene for targets.

Performance information provides a guide or reference to the style and categories of data that ultimately need to be collected/collated in order to report on the degree of success in meeting the targets.

The principles of *No Species Loss* provide the values, premises and approaches that guide the implementation of targets and recommendations within the Strategy.

Goal I – Conservation of South Australia's biodiversity

Scope

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

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

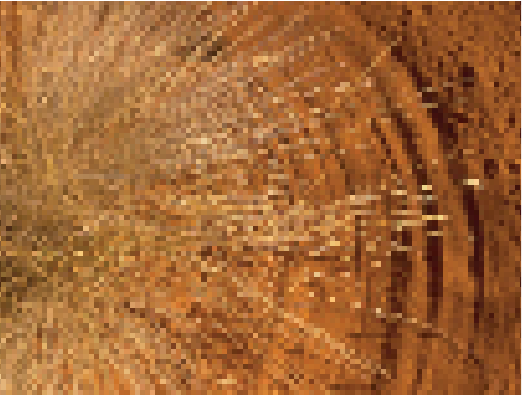
Coastal and marine landscapes and seascapes, including estuaries, inshore coastal and offshore areas within South Australia's jurisdiction, including natural and modified ecosystems and communities, within and outside of public and private land protected areas, and the resident and migratory marine species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

Goal

Conservation of South Australia's biodiversity–conservation of South Australia's terrestrial, aquatic and marine genes, species, and ecosystems and their ecological processes, within healthy and sustainable natural, production, urban and public landscapes

Desired outcomes by 2010–2030

- Landscape and seascape based conservation planning and biodiversity management based on sound ecological principles by government, industry and community in partnership
- Species, ecosystems, and landscapes and seascapes maintained, improved and restored over long timeframes
- 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 and seascapes
  - a comprehensive, adequate and representative range of habitats and ecosystems are protected and adequately managed on public and private lands
  - habitat is not further degraded and no further extinctions are human induced
  - genetic diversity is maintained, and in situ conservation of native 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
  - overabundant or impact-causing native species in conflict are managed in a way that mitigates impacts and conflict, encourages the development of strategies to live with wildlife, and ensures species conservation



Context to Goal 1

The landscape approach to conservation is efficient and effective.

Managing biodiversity within a landscape context provides the most efficient and effective means of conserving ecosystems and the species they contain. This logic underpins NatureLinks.

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

Ecosystems and species should be managed within a landscape context.

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. Prioritisation should include a risk assessment of vulnerability to climate change impacts.

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.

'Maintain, improve and reconstruct' is a sound context for conservation action.

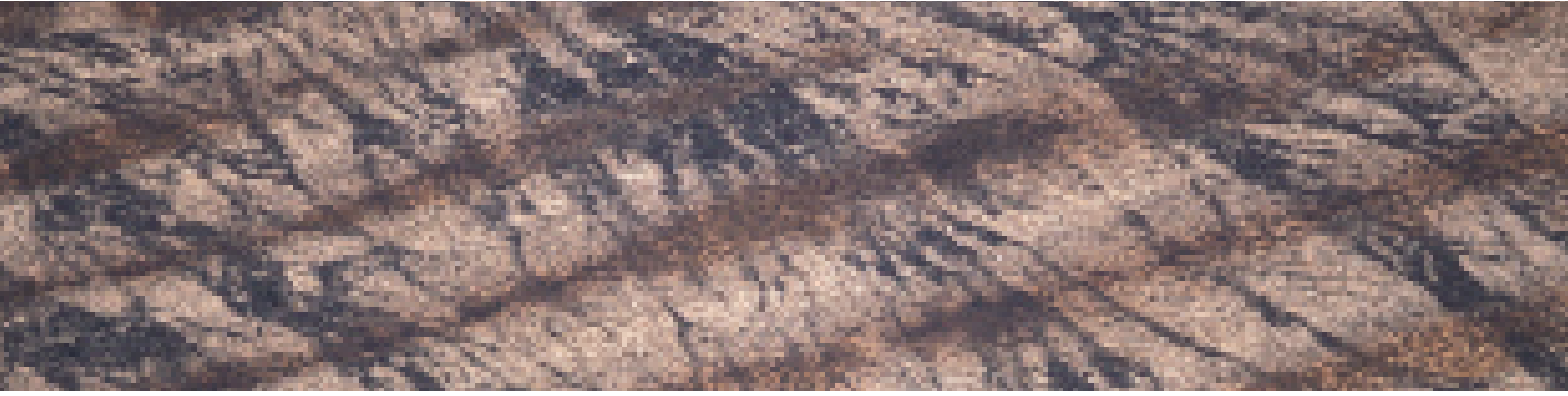
The differing patterns in habitat destruction and modification of the Arid, Mediterranean and Marine biomes will dictate the type of management actions for those biomes. A series of broad conservation actions consistent with the NatureLinks approach and delivered at a local scale will support landscape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

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

Maintaining, improving and reconstructing habitats are all critical to preventing the further loss of species in South Australia.

Goal 1 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.



GOAL I – Conservation South Australia's biodiversity

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 1.1 To create public and private land protected areas	T1 the public and private land protected area system is developed, whereby: 1. terrestrial, aquatic and marine ecosystems that are a priority for protection are determined, and State and regional conservation targets for CARRS are set, by 2008 2. 80% of South Australia's current environmental associations* are represented, by 2017 3. all nationally threatened ecosystems are represented, by 2017 LA=DEH; SP=DWLBC, Forestry SA, NRMB	• Percentage of ecosystems/ environmental associations identified for protection • Percentage of ecosystems/ environmental associations represented in the protected area system • Number and area of public and private land protected areas created
	T2 19 marine protected areas are created, by 2010 LA=DEH; SP=PIRSA	• Percentage of ecosystems/ environmental associations represented in the protected area system
Obj. 1.2 To maintain, improve and reconstruct landscapes	T3 the marine and public and private terrestrial protected area systems are managed for biodiversity conservation, whereby: 1. priorities and requirements for biodiversity management are determined, by 2008 2. management programs are in place, by 2017 LA=DEH; SP=Forestry SA, DWLBC, NRMB	• Proportion and area of protected areas where biodiversity management requirements have been determined • Proportion and area of protected areas where biodiversity has improved as a result of management plan development and implementation

* **Environmental association** a unique unit within a landscape with recognisable floristic composition, in combination with soil, landform, geology and position within the landscape, and including biota

GOAL I – Conservation South Australia's biodiversity (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 1.2 To maintain, improve and reconstruct landscapes (cont.)	T4 threats to biodiversity are managed on terrestrial, aquatic and marine public and private lands, whereby: 1. significant threats are identified and objectives and priorities are set, by 2008 2. the introduction and establishment of new threats is prevented, by 2007 (and ongoing) 3. threats that have the potential to become significant threats are eradicated or contained*, by 2012 4. significant existing threats are contained* or suppressed**, by 2017 LA=DWLBC, SP=DEH, PIRSA, NRMB, industry, community	• Trends in population size • Change in threat status • Proportion of species moved to a lower level of status category according to criteria used to determine schedules under the *National Parks and Wildlife Act 1972* • Area of landscape where biodiversity condition is improved by controlling threatening processes • Number of threat abatement plans (for both species and ecosystems) in place • Number of threats and introductions identified and thwarted • Reduction in the area of threat impact
	T5 ecological restoration programs are implemented in areas critical to increasing ecological connectivity and maintaining communities, species and ecological processes, by 2012 LA=DEH; SP=NRMB, DWLBC, PLNSA	• Area of habitat restored
Obj. 1.3 To maintain, improve and reconstruct species and ecological communities	T6 criteria for identifying species and ecological communities that are declining but are not yet threatened are established and baselines set, by 2010 LA=DEH; SP=PIRSA, NRMB	• Criteria that include climate change impacts

* **Contained** Where known threats have not yet impacted their whole potential range, or where their occurrence is not yet high, control should focus on containing the impact. Containment should seek to reduce the area of impact through time, ultimately leading to eradication.

** **Suppressed** Where known threats have spread virtually across their entire range, and where their occurrence is high, eradication or containment are no longer viable options, so control should focus on suppression in key biodiversity areas (e.g. threat-free buffer zones around such areas would reduce the threat's potential for re-establishment).

GOAL I – Conservation South Australia's biodiversity (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 1.3 To maintain, improve and reconstruct species and ecological communities (cont.)	T7 benchmarks for current status of threatened species and ecological communities are established, and management implications for each NRM region determined, by 2010 LA=DEH; SP=DWLBC, PIRSA, NRMB	• Proportion of species for which benchmarks (i.e. distribution, abundance, area occupied, trends) are known • Proportion of ecological communities for which benchmarks (diversity, pattern, condition, trends) are known
	T8 ecological communities and ecological processes that are currently declining are identified and targets for landscape restoration set, by 2011 LA=DEH; SP=NRMB, DWLBC, PLNSA	• Ecological community and processes status assessment • Areas for restoration mapped and targets established
	T9 conservation status is determined and/or reviewed for South Australia's 1. terrestrial, aquatic and marine biota 2. terrestrial, aquatic and marine ecological communities, by 2012 LA=DEH; SP=PIRSA	• Proportion of species/ ecological communities where conservation status is assessed including a risk assessment of vulnerability to climate change impacts
	T10 recovery/action plans are implemented for: 1. 40% of South Australia's Endangered and Vulnerable (terrestrial vertebrates and vascular plants) threatened species 2. 6 South Australian nationally threatened ecological communities, by 2012 LA=DEH; SP=DWLBC, NRMB, community	• Proportion of species moved to a lower level of status category according to criteria used to determine schedules under the *National Parks and Wildlife Act 1972* • Number of species/ communities with actions in place
	T11 decline in species and ecological communities is halted, by 2017 LA=DEH; SP=DWLBC, PIRSA, NRMB, industry, community	• Proportion of species moved to a lower level of status category according to criteria used to determine schedules under the *National Parks and Wildlife Act 1972*

GOAL I – Conservation South Australia's biodiversity (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
	T12 60% of South Australia's endangered and vulnerable threatened vascular plant species are conserved ex situ, by 2010 LA=DEH; SP=MSB	• Proportion of threatened plant species in accessible, long-term seed conservation collections
Obj 1.4 To facilitate the sustainable use and management of native species	T13 Maintain a status of harvested marine species within ecologically sustainable levels and protect the marine ecosystem on which fish populations depend to ensure no long-term damage to habitats or associated species LA=PIRSA; SP=DEH, DWLBC	• Species range, distribution, abundance • Proportion of species moved to a lower level of status category according to criteria used to determine schedules under the *National Parks and Wildlife Act 1972* • Ecological community diversity, patterns, condition, trends • Species range, distribution, abundance
	T14 Maintain a status of no decline in conservation status of harvested terrestrial species, or decline in the ecological communities that they come from, due to harvesting, by 2007 (and ongoing) LA=DEH; SP=Forestry SA, PIRSA, DWLBC	• Proportion of species moved to a lower level of status category according to criteria used to determine schedules under the *National Parks and Wildlife Act 1972* • Ecological community diversity, patterns, condition, trends
Obj. 1.5 To facilitate effective management of the impacts of overabundant or impact-causing native species	T15 Humane, socially acceptable and effective management of the unwanted impacts of overabundant or impact-causing native species, without compromising conservation status implemented, by 2007 (and ongoing) LA=DEH; SP=PIRSA, DWLBC, NRMB	• Species range, distribution, abundance

Goal 2 – Community ownership and stewardship for biodiversity

Scope

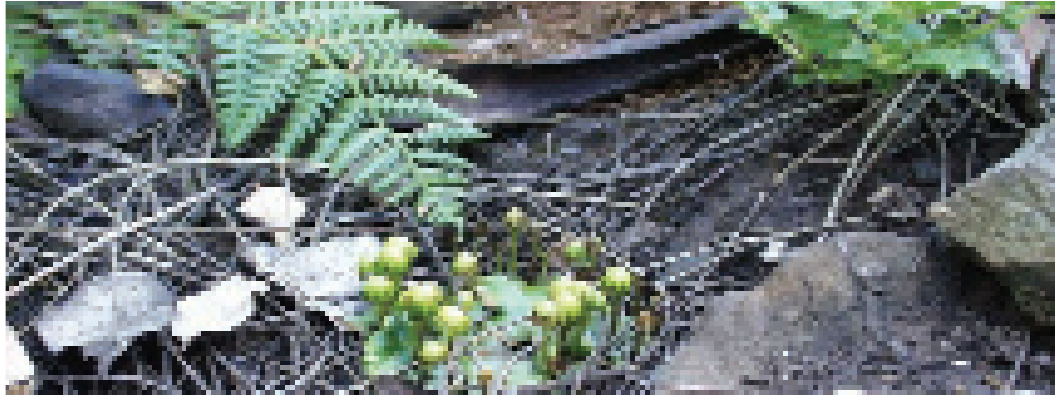
The understanding, capability, commitment and involvement of all South Australians across community (urban, peri-urban, Indigenous and rural landholders), government and industry in conserving and sustainably using biodiversity

Goal

Community ownership and stewardship for biodiversity – informed, motivated, empowered and engaged urban, rural and Indigenous communities, governments and industries that better value and share the responsibility for, and enjoy the benefits of, South Australia's terrestrial, aquatic and marine biodiversity

Desired outcomes by 2010–2030

- South Australians:
  - better understanding species, habitats and ecosystems
  - recognising the intrinsic and instrumental values of biodiversity
  - embracing the vision for conserving, sustainably using and living with 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



Context to Goal 2

Enhancing community capacity is critical to the success of the strategy.

People are the agents of change. Both individual and collective decisions and actions of South Australians 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 engagement:

- non-government conservation organisations with advocacy and on-ground initiatives including Conservation Council SA, Nature Foundation SA, Nature Conservation Society of South Australia, Threatened Species Network
- volunteer programs of various government instituitions including the South Australian Museum and State Herbarium
- 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
- conservation-focused experiences where community contributes to conservation agency, industry and education sector research programs.

Capacity will always vary, and so must efforts to sustain it.

Levels of appreciation and experience with biodiversity will always differ and so there will always be a need to inform, consult, involve and empower communities. Urban, rural and Indigenous communities all work best when they can see that they are making a difference at a local level. Knowing that their efforts are worthwhile and appreciated is essential to their ongoing participation in on-ground activities.

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 urban, rural and Indigenous communities have a finite capacity for engagement, and accordingly supporting them, is essential for long-term and stable community involvement. Government and NRM board processes for community engagement must be articulate, well directed and outcome focused if they are to sustain community desire to be part of conservation action.

Nature conservation starts with education.

It is important to connect government, industry and all communities – urban, rural and Indigenous – with their environments to maintain long-term commitment to biodiversity conservation and management. Connection and participation starts with relevant education.

There is a need for an increase in access to, and dissemination of, relevant, high quality and locally based information by government and industry sources. Communities need to understand broad biodiversity concepts, how human activities impact on biodiversity, what their roles and responsibilities are for duty of care, and what they can do to halt the current decline in South Australia's biodiversity.

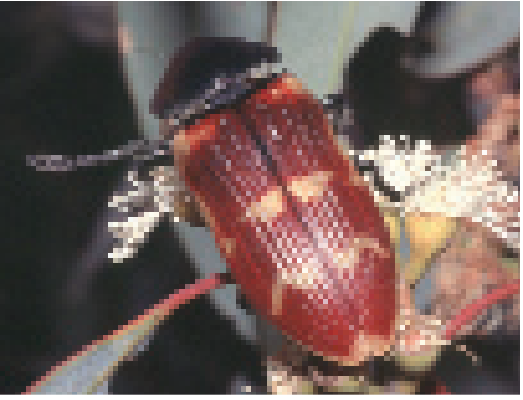
Backyard biodiversity connects people to nature.

'Backyard biodiversity' initiatives can be a valuable introduction to the State's plants and animals. When people create urban biodiversity environments they understand and engage at a local level.

Urban revegetation projects (e.g. Urban Forest Biodiversity Program) not only showcase revegetation techniques, they demonstrate what is possible, they reconnect people with bush landscapes, they give people opportunities to 'get back to' nature.

This connection, if fostered appropriately, can lead to a nature conservation ethic – an ethic we need from all South Australians if we are to gain conservation momentum.

Showcasing large scale reconstruction and restoration of habitats within urban and peri-urban settings is critical to engendering stewardship for biodiversity in 'city folk', who have a significant potential to elevate the status of nature conservation in South Australia.



Kids can develop a life-long understanding of nature at school.

Developing 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 resources management issues, 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 local 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.

Landholders and industry need a hand to be active in conservation.

Private and public landholders and industry leaders are crucial to achieving the State-wide scale of conservation that is required to halt the decline in our biodiversity. The current challenge is to integrate biodiversity conservation outcomes with farm production systems, while remaining profitable (see Part Two).

Land manager involvement in biodiversity conservation will be determined by whether real biodiversity improvements can go hand in hand with positive farm productivity outcomes. While better landholder understanding of the need for biodiversity conservation is fundamental to them taking conservation action, there is a real need for better incentive and investment mechanisms to bring about conservation on private lands.

Clarifying the roles and responsibilities associated with duty of care for biodiversity on public and private lands (in consultation with all stakeholders) would serve to initiate discussions on how to better engage all landholders in biodiversity conservation.

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.

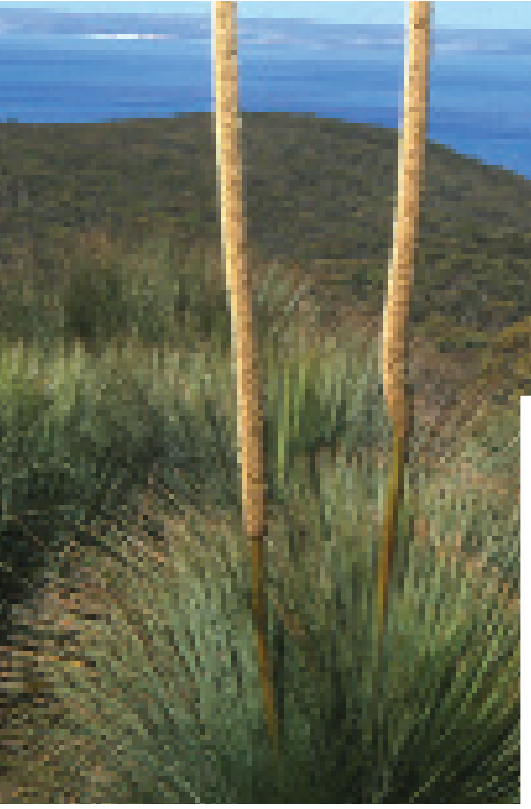
Goal 2 focuses on improving and broadening individual, community and industry understanding of biodiversity (by informing, consulting, involving and empowering), increasing participation in the conservation and sustainable use of biodiversity; and encouraging landholders and industry to adopt steps to conserve and sustainably use biodiversity.

GOAL 2 – Community ownership and stewardship for biodiversity

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 2.1 To raise community awareness of the need for biodiversity conservation	T16 landowner, industry, government and community awareness of how they can conserve and sustainably use native biodiversity, and the need for stewardship of biodiversity is increased, whereby: 1. a baseline survey of current level of community understanding of the value and role of South Australia's biodiversity is completed, and used to inform the development of new and existing awareness programs, by 2008 2. programs to increase awareness of the need for conservation of South Australia's biodiversity are implemented, by 2010 3. a resurvey of changes in community awareness of the need for conservation of South Australia's biodiversity is completed, by 2011 4. the performance of awareness programs is monitored, starting in 2013 (and every 2 years after that) LA=DEH; SP=DWLBC, PIRSA, DTEI, SA Water, SATC, DFEEST, NRMB, industry, LG, community	• Number of surveys • Number of programs to increase awareness • Proportion of people who recognise and appreciate the need for biodiversity conservation and management
	T17 material that supports teaching of and learning about the importance of biodiversity and its conservation in primary and secondary schools is reviewed, developed, updated and incorporated into education curricula, by 2008 LA=DEH; SP=DECS	• Extent of integration of information into curricula
	T18 a 'living with wildlife' philosophy for native species that have adapted to or have been advantaged by changed land use practices, is promoted, by 2007 (and ongoing) LA=DEH; SP=PIRSA, DWLBC, LG, NRMB *See also Goal 3, Obj. 3.2 To build capacity to collect and share information. Targets 32 and 33 focus on the capture and dissemination of knowledge and information and so have direct relevance to enhancing community awareness at a local level.*	• Proportion of people who recognise and appreciate the impacts of land use on biodiversity • Lower reliance on destructive management methods for impact-causing fauna species

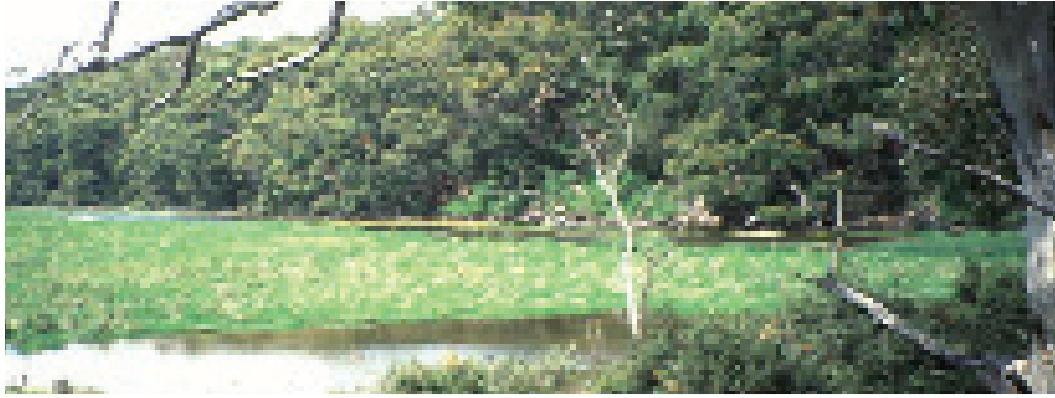

GOAL 2 – Community ownership and stewardship for biodiversity (cont.)

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 2.2 To raise community capacity, stewardship and decision making for biodiversity conservation	T19 landowner, industry, government and community stewardship for biodiversity is increased, whereby: 1. existing programs for engaging landowner, industry, government and community participation in biodiversity conservation are implemented, by 2007 2. new and innovative mechanisms and incentives for engaging landowner, industry, government and community participation in biodiversity conservation programs, are developed and implemented, by 2010 LA=DWLBC; SP=DEH, PIRSA, PLNSA, DTEI, SA Water, SATC, DFEEST, NRMB, NRMC, industry, LG, community	• Number of programs in place • Proportion of biodiversity conservation programs with community involvement • Improvement in the condition of biodiversity managed through collaborative projects
	T20 biodiversity networks for local and community organisations in biodiversity conservation that share information and knowledge, and further stimulate local engagement, are active, by 2008 (and ongoing) LA=DEH; SP=NRMB, community	• Knowledge shared through formal networks



GOAL 2 – Community ownership and stewardship for biodiversity (cont.)

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
	T21 urban and peri-urban community involvement in the creation of natural biodiversity urban environments is increased, by 2012 LA=DEH (UFBP); SP=DWLBC	• Number of programs in place • Area planted with native vegetation
	T22 schemes that promote, acknowledge and reward the actions of community-based groups actively working to conserve biodiversity are developed and improved, by 2009 LA=DWLBC; SP=DEH, PIRSA, NRMC, NRMB, community	• Number of schemes in place
	R1 existing partnerships to improve Indigenous participation in management of species and ecological communities at regional and local levels are developed and enhanced LA=DEH; SP=NRMB, DWLBC, community	



Goal 3 – Ecological knowledge that can influence decision making

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 review and learn from past experience; and to incorporate the knowledge into future biodiversity management

Goal

Ecological knowledge that can influence decision making – knowledge of terrestrial, aquatic and marine biodiversity that can inform and influence the decision making of South Australian urban, rural and Indigenous communities, governments and industries

Desired outcomes by 2010–2030

- Biodiversity conservation targets in place and guiding natural resources management
- A bioregional and landscape and seascape 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, based on science where appropriate
- Monitoring against biodiversity conservation targets to reveal trends in biodiversity condition and measure 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 breakthroughs in biodiversity management that are ecologically appropriate, socially acceptable and of practical use to natural resources 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

Context to Goal 3

Having knowledge is a prerequisite to using it in decision making.

Improved knowledge and understanding of biodiversity, based on science where appropriate, is essential for good planning, decision making and management across government, industry and community. Drawing on national and international information sources and research experiences, and collaborating at these levels, will be fundamental to enhancing our understanding of South Australia's biodiversity issues.

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 targets measure progress.

South Australia needs 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 objectives and targets is a critical first step towards integrating sustainable biodiversity management into South Australia's natural resources management framework.

Research partnerships are the key to addressing knowledge gaps.

Creative 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. Opportunities to develop innovative research models with industry partners (e.g. tourism, agriculture, mining) should be pursued.

South Australia's understanding of biodiversity is largely focused on component and pattern attributes (see Figure 2). Scientific research is needed into: how ecosystems function; the role of threatening processes, and 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 and reconstructing landscapes, ecological communities and species.

Research into how to integrate biodiversity outcomes into production landscape systems is also essential for progressing the sustainable management of biodiversity at a landscape scale.

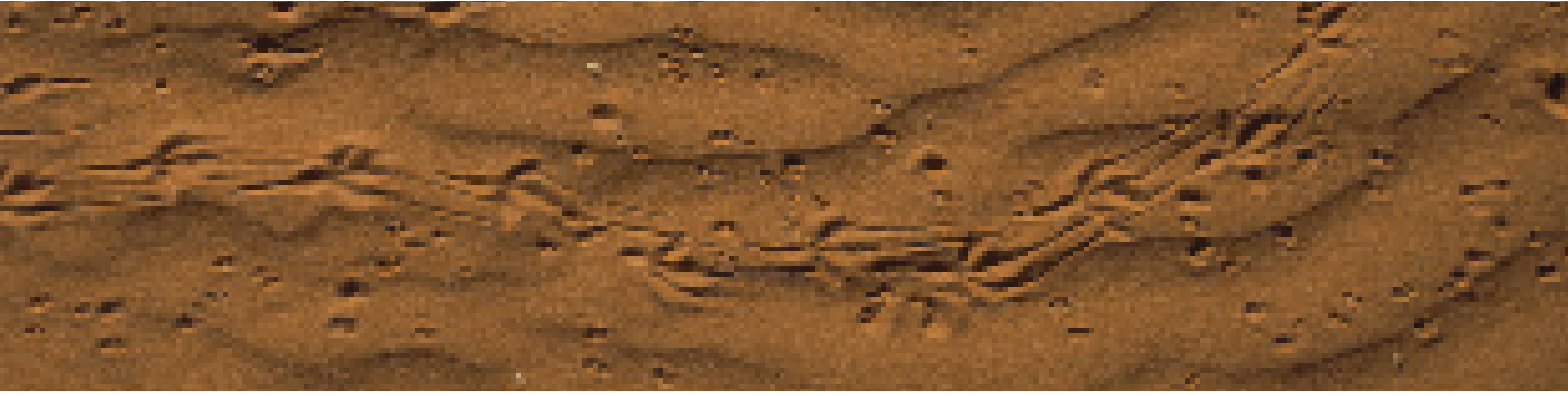
Monitoring biodiversity outcomes is fundamental to conservation.

Better systems, based on a consistent platform of biodiversity measures and indicators, are required to:

- ensure monitoring methods are consistently applied across issues and jurisdictions
- coordinate information sharing.

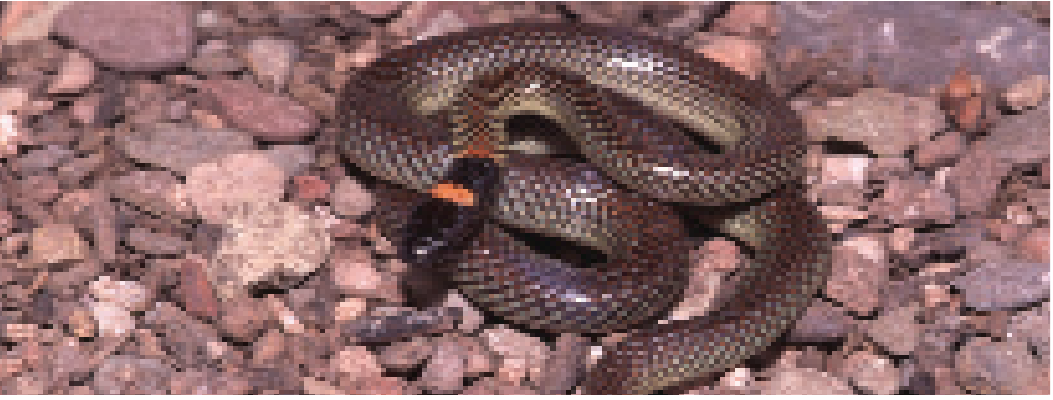
For these systems to build capacity, clear accountabilities for collecting, analysing, interpreting, managing and sharing that information must be assigned at State, regional and local levels.

Goal 3 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 the knowledge. South Australia must use this information to review management processes.



GOAL 3 – Ecological knowledge that can influence decision making

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 3.1 To identify and fill key gaps in knowledge to influence biodiversity management	T23 gaps in knowledge and priority areas for research on biodiversity and impacts on biodiversity are identified and appropriate research supported, by 2012 LA=DEH; SP=DWLBC, EPA, PIRSA, DFEEST, SATC, NRMC, NRMB	• Critical gaps in knowledge identified and investigated (focusing on: taxonomic description and documentation, species distribution; abundance and demographic processes; understanding threatening processes; new methods and technologies for species recovery, reconstruction and restoration of habitats and ecological processes, and measuring ecological condition) • Number and extent of research programs in place
	T24 gaps in knowledge and priority areas for research on integration of biodiversity outcomes into production landscapes are identified and appropriate research supported, by 2012 LA=DWLBC; SP=DEH, EPA, PIRSA, DFEEST, SATC, NRMC, NRMB	• Critical gaps in knowledge identified and investigated (focusing on contribution of biodiversity to production values)
	T25 priority IBRA and IMCRA bioregions are identified and mapped at an appropriate scale for biodiversity planning, by 2012 LA=DEH; SP=DWLBC, EPA, PLNSA, NRMB	•Proportion of area mapped
	T26 ecological condition of a representative sample of ecosystems within key IBRA and IMCRA bioregions is established, whereby SMART (specific, measurable, achievable, relevant, time bound) targets are identified, and benchmarks determined, by 2012 LA=DEH; SP=DWLBC, EPA, PIRSA	• Proportion of ecosystems with targets identified • Proportion of ecosystems with benchmarks



GOAL 3 – Ecological knowledge that can influence decision making (cont.)

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 3.1 To identify and fill key gaps in knowledge to influence biodiversity management (cont.)	T27 systematic surveys are completed, whereby: 1. the biological survey of South Australia's vascular plants and vertebrate animals covers 95% of the State's bio-subregions; and existing and pre-European vegetation mapping for the agricultural areas and most arid areas of the State is completed, by 2015 2. the biological survey of marine plants and animals in 2 of South Australia's IMCRA regions is completed, by 2012 3. the survey, definition of environmental water requirements, and assessment of South Australia's Wetlands of National Importance are completed, by 2013 4. the survey, habitat mapping, assessment and classification of South Australia's estuaries are completed, by 2011 LA=DEH; SP= DWLBC, EPA, PIRSA, NRMB	• Proportion of taxa described • Proportion of area of terrestrial/ aquatic/ marine environments covered by comprehensive biological inventories (including assessment of habitat loss and modification, and of habitats most sensitive to harvesting and other disturbances including climate change)
	T28 terrestrial (excluding aquatic) and marine invertebrate data are reviewed and consolidated to provide a preliminary listing of state and condition to inform further survey effort, by 2012 LA=DEH; SP=EPA, DWLBC, SA Museum	• Proportion of taxa described
	T29 AUSRIVAS aquatic invertebrate data are consolidated to provide a preliminary review of aquatic invertebrate state and condition, by 2009 LA=EPA; SP=DEH, DWLBC	• Proportion of taxa described by region
	T30 repeatable and ecologically defensible process for defining and delivering integrated conservation and restoration targets across multiple spatial and temporal scales is trialed by at least one NRM region, by 2010 LA=DEH; SP=DWLBC, NRMB	• Integration of conservation and restoration targets into regional planning processes

GOAL 3 – Ecological knowledge that can influence decision making (cont.)

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
	T31 innovative native fauna management techniques to overcome the impacts of native overabundant or impact-causing species, which are environmentally sound, socially acceptable and humane, are developed, by 2012. LA=DEH; SP=DWLBC, PIRSA, NRMB, LG	• Techniques developed
Obj. 3.2 To build capacity to collect and share information to inform biodiversity management	T32 knowledge that contributes to biodiversity management is captured, retained and promoted in consultation with urban, rural and Indigenous communities, by 2011 LA=DEH; SP=NRMB, DWLBC, PIRSA	• Information systems developed • Proportion of people sharing information on biodiversity conservation and management issues
	T33 systems and capability 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) are developed and strengthened, by 2012 LA=DWLBC; SP=DEH, EPA, PIRSA, NRMC, NRMB	• Number of people accessing portal to information

GOAL 3 – Ecological knowledge that can influence decision making (cont.)

OBJECTIVE	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
	R2 systems for providing relevant and timely information on areas of ecological significance to inform the development planning system are improved LA=DEH; SP=PLNSA	
	R3 a nationally networked information system on existing invasive species, providing access to information on their identification, their invasiveness and current national and international distributions is developed LA=DWLBC; SP=DEH, PIRSA	

Goal 4 – Adjustment to the impacts of climate change

Scope

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

Goal

Adjustment to the impacts of climate change – terrestrial, aquatic and marine ecological systems with an enhanced capacity to adjust to climate change impacts

Desired outcomes by 2010–2030

- Priority research and monitoring programs in place, including vulnerability assessments, 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 adjustment
- Adjustment strategies based on vulnerability assessments in place to manage the risks from climate change to our native biodiversity
- A precautionary approach taken in managing climate change impacts on biodiversity
- Actions required to adjust to climate change and mitigate greenhouse emissions effectively coordinated across government, industry and community, and integrated within the natural resources management sector in a manner that prevents the further loss of biodiversity

Context to Goal 4

Environmental change will be extensive.

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.

Understanding impacts will require a significant and coordinated research effort.

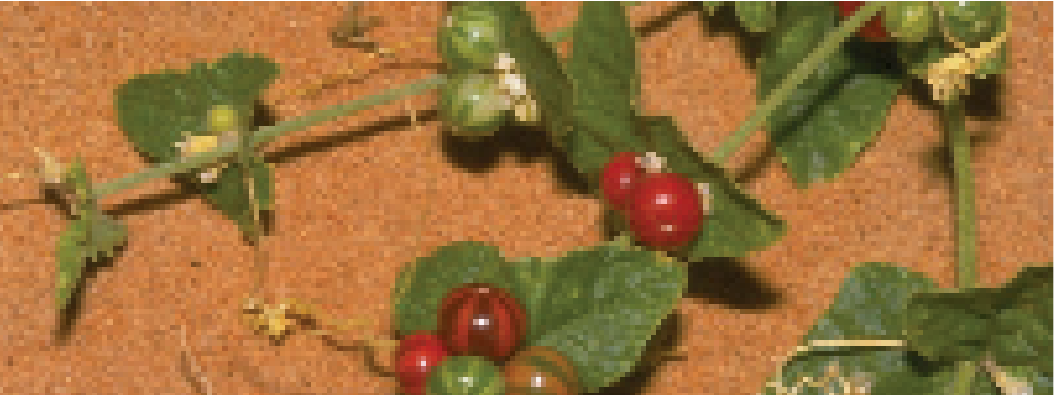
How South Australia's species and ecosystems respond to these climatic changes is uncertain. Species might change in distribution and abundance, population dynamics, life history patterns and reproductive cycles; vulnerable species might be at increased risk of extinction; invasive and over-abundant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

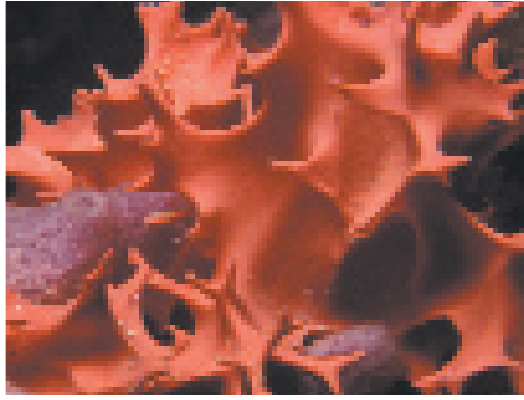
The uncertainty associated with these changes demands that research initiatives and practical solutions to the impacts of climate change be flexible, adaptable and innovative if they are to deal with the vagaries of South Australia's uncertain climate future.

***No Species Loss* is aligned with national policy.**

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 contained in *Tackling Climate Change: South Australia's Greenhouse Strategy*. 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 despite every effort.

Goal 4 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 resources and land use management strategies.





GOAL 4 – Adjustment to the impacts of climate change

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 4.1 To improve understanding of the impacts of climate change on biodiversity conservation	T34 gaps in knowledge and priority areas for research and monitoring about climate change impacts on biodiversity are identified and appropriate research is supported, by 2012 LA=DEH; SP=PIRSA, DWLBC, NRMC, NRMB	• Critical gaps in knowledge identified and investigated (focusing on: vulnerability assessments conducted (e.g. identifying species, ecological communities and processes, and landscapes vulnerable to climate change); the cumulative effects of other threatening processes whose impacts on biodiversity will be exacerbated by climate change; species-realised niche risk assessment; biogeographic approaches to ecosystem risk assessment; buffering and adaptability potential) • Number and purpose of established research programs
	R4 the capacity to model and predict the impacts of climate change on biodiversity are improved, by 2012 LA=DEH; SP=DWLBC, PIRSA, NRMB	
Obj. 4.2 To increase awareness of climate change impacts and our capacity to respond to conserve biodiversity	T35 awareness of the significance of climate change impacts on biodiversity is increased, by 2011 LA=DEH; SP=DWLBC, EPA, PIRSA, PLNSA, DTEI, SA Water, SATC, NRMB, industry, community	• Proportion of people who understand the impacts of climate change on biodiversity

GOAL 4 – Adjustment to the impacts of climate change (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj 4.3 To minimise the impacts of climate change on biodiversity	T36 the potential for current ecological restoration programs to be adaptive to the impacts of climate change on biodiversity is assessed, and the potential for programs to be reconfigured so that they adapt to climate change is reviewed, by 2012 LA=DEH; SP=DWLBC, PIRSA, Forestry SA, SA Water, NRMB, DPC	• Proportion of programs assessed • Proportion of programs assessed for reconfiguration
	T37 criteria for identifying and selecting reserves with the potential to act as refuges and areas for assisting movement across future bioclimatic gradients for vulnerable biodiversity are identified, by 2009 LA=DEH; SP=Forestry SA, SA Water, NRMB	• Criteria identified
	T38 the potential for the current protected area system to adapt to the impacts of climate change is assessed, by 2011 LA=DEH; SP=Forestry SA, SA Water, NRMB	• Proportion of protected areas assessed for adaptability
Obj. 4.4 To factor the impacts of climate change on biodiversity into natural resources management and land-use planning	T39 the impacts of climate change on biodiversity (based on modelled projections) are factored into ecological monitoring programs, and used to establish and revise management and climate change adjustment strategies, by 2017 LA=DEH; SP=DWLBC, NRMB, PIRSA	• Proportion of monitoring programs that have adopted climate change indicators
	T40 the current and future impacts of climate change on biodiversity are taken into account in the review of land-use planning policies, strategies, programs and planning instruments by 2011 LA=PLNSA; SP=DWLBC, DEH, PIRSA, NRMB, NRMC	• Proportion of planning policies, strategies, programs and planning instruments reviewed
	T41 the potential for protected area plans, strategies and programs to take the current and future impacts of climate change on biodiversity into account is reviewed, by 2009 LA=DEH	• Proportion of plans, strategies and programs reviewed

Goal 5 – Active and integrated natural resources management partnerships

Scope

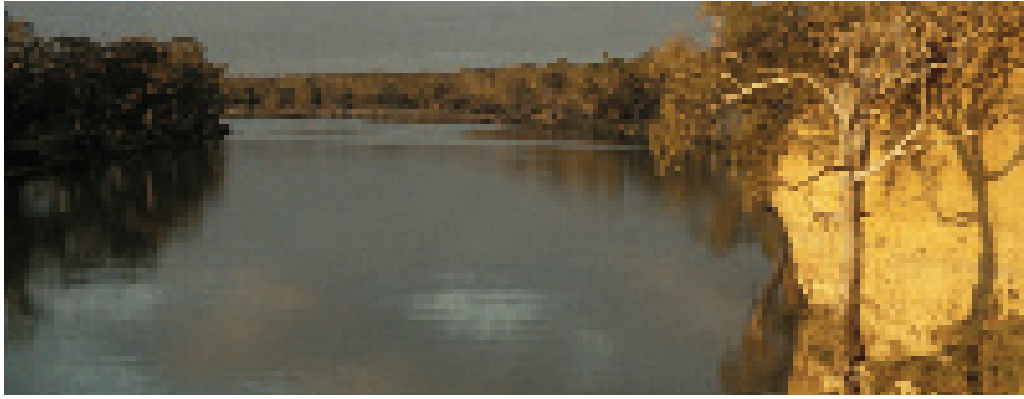
The role of government in establishing State biodiversity directions, goals and priorities, identifying roles and responsibilities in biodiversity management, providing guidance, and coordinating policies and programs for the conservation and sustainable use of South Australia's biodiversity

Goal

Active and integrated biodiversity natural resources management partnerships – urban, rural and Indigenous communities, governments and industries that use active and integrated partnerships to manage terrestrial, aquatic and marine biodiversity within ecologically sustainable limits

Desired outcomes by 2010–2030

- 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 State-wide, 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
- Identification of priority biodiversity conservation programs to be delivered
- Stronger provision for protecting and conserving biodiversity
- Biodiversity managed for economic, social and environmental sustainability
- Resource and land use planning and decision making that fully considers biodiversity conservation
- All natural resources and land use managers understanding and adopting ecologically sustainable development principles
- Policy based mechanisms with 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 resources management



Context to Goal 5

Environmental legislation will better protect biodiversity.

South Australia's environmental legislation and policy framework provides an important foundation for the conservation and sustainable use of biodiversity.

However, legislation with stronger provision for protecting and conserving biodiversity would assist biodiversity conservation in resource and land use planning and decision making, and integrate biodiversity considerations into other policies and legislation.

Regions need clear roles and responsibilities to progress biodiversity conservation within the NRM sector.

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 further clarified.

ESD can be delivered if industry policy fully considers biodiversity.

Reversing the decline in South Australia's biodiversity requires ecologically sustainable development, with biodiversity managed for economic, social and environmental sustainability.

There is scope for better integration of biodiversity sustainability within natural resources management policy.

Further enhancing the incorporation and adoption of ecologically sustainable development principles into industry policy will improve the alignment of the strategic directions for biodiversity management of government, industry and community.

Effective conservation requires an increase in landholder capacity.

South Australia's protected area system cannot alone ensure the long term sustainability of South Australia's biodiversity. Private land conservation initiatives are integral to reversing its decline. The engagement and active involvement of rural land managers is critical for protecting and conserving South Australia's biodiversity.

Engaging landholders more effectively will require better recognition and promotion of their achievements. Their progress must be shared, learned from and used to inform others. Current initiatives must be extended and new ones developed, and support and incentive mechanisms must be strengthened.

The development of relevant and adaptable incentive-based policy mechanisms focused on biodiversity conservation would help conserve species, habitats and ecosystems on land outside of protected areas. These mechanisms should also include funding models or partnership approaches with industry.

Improved planning systems will make a difference.

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 resources management content of development plans where natural resources management policy affects development.

Goal 5 focuses on the coordination and integration of biodiversity conservation within the natural resources management sector. This includes those structures needed to implement South Australia's nature conservation strategy.

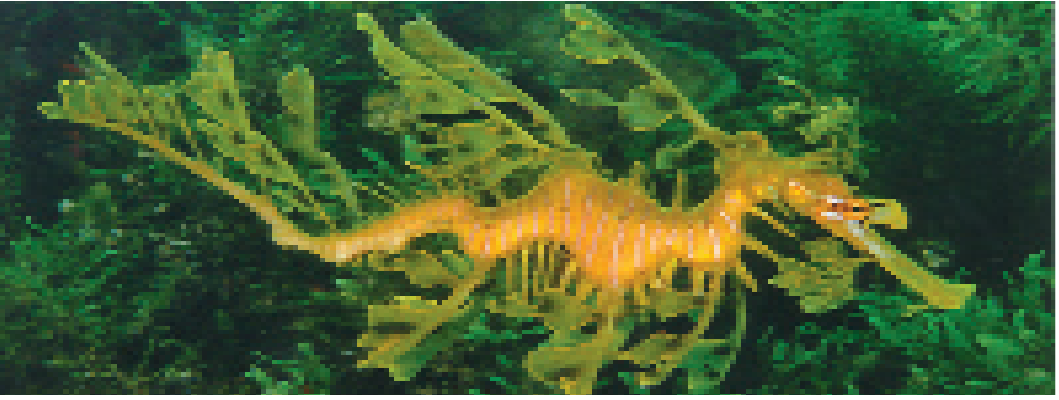
GOAL 5 – Active and integrated natural resources management partnerships

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 5.1 To recognise biodiversity conservation as a critical element of South Australia's natural resources and NRM programs	T42 *No Species Loss* targets are aligned with and integrated into the State NRM Plan and inform regional NRM plans, by 2008 LA=DWLBC; SP=NRMC, NRMB, DEH	• Number of targets adopted
	T43 *No Species Loss* targets are aligned with and inform the State of Environment Report, by 2009 LA=DEH; SP=EPA, DPC, NRMC	• Number of targets adopted
	T44 the biodiversity conservation objectives* of each of the 5 NatureLinks corridor plans: 1. are identified, by 2010 2. are integrated into State and regional NRM plans, by 2012 3. result in improved ecological condition in 5 priority NatureLinks corridor areas, by 2030 LA=DEH; SP=DWLBC, NRMC, NRMB, PIRSA, PLNSA	• Number of corridor management plans • Number of NatureLinks objectives/ targets adopted per NRM plan • Area that shows an improvement in condition of species, ecological communities and ecological processes • Number of landholders contributing to biodiversity outcomes within corridor
	T45 significant biodiversity benefits resulting from native vegetation clearance offsets that achieve a genuine net biodiversity gain are reported, by 2007 (and then annually) LA=DWLBC; SP=DEH	• Number of vegetation clearances that result in a genuine biodiversity gain
	T46 biodiversity is not further compromised and considered equally alongside trade and agriculture in implementation of the Biosecurity Strategy for SA, by 2008 LA=DWLBC; SP=DEH, PIRSA, NRMC, NRMB	• Number of introductions that are a threat to biodiversity identified and thwarted
	R5 existing funding mechanisms to protect and conserve habitats and ecological communities important for biodiversity are expanded and modified LA=DWLBC; SP=DEH, PIRSA	

* The biodiversity objectives of the 5 NatureLinks corridor plans have been developed and implemented in accordance with the relevant principles, goals and objectives of *No Species Loss*.

GOAL 5 – Active and integrated natural resources management partnerships (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 5.2 To provide a contemporary legislative framework for the protection and conservation of South Australia's biodiversity	T47 South Australian legislation that rationalises existing policy, reduces administration and compliance costs to business, and improves the protection and conservation of terrestrial, aquatic and marine biodiversity is developed, by 2010 LA=DEH; SP=DWLBC, PIRSA, EPA	• Working group overseeing legislation development formed • Legislation mechanisms created
	T48 a system for authorising and registering biological resource access permits and benefit sharing agreements between biological prospectors, access providers (landholders including native title holders/claimants), holders of relevant Indigenous cultural knowledge and the State Government is established, by 2008. LA=DEH; SP=DWLBC, PIRSA, DTED, AARD	• Authorisation and registration mechanism created
Obj. 5.3 To ensure the planning and development assessment system facilitates sustainable development that minimises the impacts of development on biodiversity	R6 planning policy and development assessment processes are informed by ecological investigation and impact assessment specific to the affected area and its biodiversity, and administered in a manner that identifies and protects areas of biological significance LA=PLNSA; SP=LG, DEH	
	R7 environmental impact assessment processes continue to be implemented and improved with respect to the impact of resource extraction and development projects on biodiversity LA=PLNSA; SP=LG, DEH, PIRSA, DTEI	
	T49 within the planning and development system: 1. objectives of regional biodiversity plans and NatureLinks strategies with spatial and land-use planning relevance are reflected and promoted in development plans, by 2011 2. recognition of the need to identify and protect areas of biological significance within development plans is increased, by 2011 LA=LG; SP=PLNSA, DEH, DWLBC, NRMB	• Proportion of development plans amended to include biodiversity policies

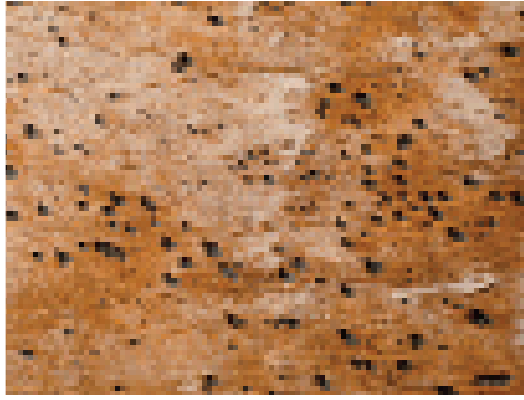


GOAL 5 – Active and integrated natural resources management partnerships (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 5.4 To use a range of incentive based policy mechanisms to foster engagement and commitment for biodiversity conservation	T50 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 reviewed and developed, by 2011 LA=DWLBC; SP=PIRSA, DEH, NRMC	• Biodiversity value estimates • Number of new incentives/ mechanisms • 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)
	T51 perverse incentives in government policy instruments that act as barriers to biodiversity protection and conservation are identified, and if appropriate, removed, by 2011 LA=DWLBC; SP=PIRSA, DEH	• Number of perverse incentives identified/removed
	R8 existing incentive schemes for bringing about biodiversity management on Indigenous lands are reviewed and incentive schemes put in place where investment is aimed primarily at maintaining and recovering biodiversity LA=DEH; SP= AARD, NRMB	
Obj. 5.5 To facilitate ecologically sustainable development	T52 *No Species Loss* targets are incorporated into government, industry and community natural resources management policy, planning and performance agreements, by 2011 LA=DEH; SP=DWLBC, EPA, PIRSA, PLNSA, DTEI, Forestry SA, SA Water, SATC, NRMC, NRMB, industry	• Proportion of State, regional and local government and industry policies, strategies and plans that have regard for and adopt targets

GOAL 5 – Active and integrated natural resources management partnerships (cont.)

OBJECTIVES	TARGETS (T) and RECOMMENDATIONS (R)	PERFORMANCE INFORMATION
Obj. 5.6 To encourage and build the capacity of natural resources managers	T53 Current duty of care for biodiversity on all land tenures is clarified and defined, agreed benchmarks that reflect an agreed minimum standard of future care for biodiversity are set in consultation with landholders, and a baseline to inform incentive based policy mechanisms and public investment decisions is established, by 2010 LA=DWLBC; SP=DEH, PIRSA	• Duty of care, benchmarks and baselines defined
	R9 development of livelihoods based upon the sustainable use of biodiversity native to South Australia is supported LA=PIRSA; SP=DEH, DWLBC	
	R10 industry is assisted to strengthen and implement mutually beneficial biodiversity considerations into industry-based environmental management policies, operational practices, performance standards and codes of practice, regional plans(e.g. with the agriculture, forestry, horticulture, fisheries, aquaculture, mining and tourism sectors) LA=PIRSA; SP=DEH, DWLBC, SATC	
	R11 indicators, monitoring and reporting protocols are developed for industries that rely upon the sustainable use of biodiversity LA=PIRSA; SP=DEH, DWLBC	
Obj. 5.7 To ensure the effective implementation of *No Species Loss*	T54 progress towards achieving *No Species Loss* targets is reported to the Minister for Environment and Conservation, by 2010 LA=DEH; SP=DWLBC, EPA, PIRSA, PLNSA, DTEI, SA Water, SATC, NRMC, NRMB, industry, community	• Review of *No Species Loss* 4 years after adoption • 4 yearly review report
	T55 a mechanism for working groups to monitor the implementation of *No Species Loss* and facilitate the resolution of conflicts and issues that may arise during that implementation is developed, by 2007 LA=DEH; SP=DWLBC, EPA, PIRSA, PLNSA, NRMC, NRMB	• Mechanism developed



PART SIX. Implementing, monitoring and reviewing performance

How do we take a coordinated, strategic and cooperative approach?

DEH will lead implementation of *No Species Loss*.

No Species Loss aims to facilitate conservation actions across the State. Lead Agencies and Support Partners will coordinate and support the delivery of these actions, guided by statutory mechanisms.

The Department for Environment and Heritage will take the lead role and work closely with the Department of Water, Land and Biodiversity Conservation, Department of Primary Industries and Resources, South Australia, and Planning SA in progressing the implementation of *No Species Loss*.

The Natural Resources Management Council has a central role.

The Natural Resources Management Council is responsible for monitoring and evaluating the effectiveness of the biodiversity component of the State NRM Plan.

Council will monitor implementation of those components of *No Species Loss* that contribute to the State NRM Plan, ensuring that: Lead Agencies and Support Partners adhere to their roles and responsibilities; the aspirations, intent, targets and recommendations of *No Species Loss* inform the State NRM Plan and Planning Strategy; the Strategy is reported on in the required timeframe; and the detail and targets within *No Species Loss* guide the development of regional NRM plans.

Working groups will oversee implementation as specialists.

Working groups will further oversee the more detailed aspects of the implementation of *No Species Loss* that are beyond the capacity or jurisdiction of the NRM Council (e.g. progressing protected areas, threatened species schedules, biological resources access and benefit sharing, legislation, biodiversity research needs particularly in relation to climate change, independent scientific advice on biodiversity targets) and the resolution of conflicts and issues tied to the implementation of those aspects.

Progress will be reported and monitored.

The Department for Environment and Heritage will be responsible for coordinating reporting to the Minister for Environment and Conservation on progress towards targets every 5 years.

Performance, measured against targets and recommendations, will indicate progress towards achieving the objectives and goals of *No Species Loss*.

In order to streamline and align current environmental reporting systems, this reporting will also coincide with and inform the update and review of the State NRM Plan and the State of Environment Report, and ongoing implementation of the Planning Strategy.

How do *No Species Loss* targets relate to the State NRM Plan?

No Species Loss targets give specific detail to the broader goals, milestones, strategies and biodiversity resource condition targets within the State NRM Plan.

The Appendix tables an assessment of the extent to which the State NRM Plan provides outcomes that are consistent with *No Species Loss*.

This assessment is a measure of integration of the plan and the strategy, and an indication of the synergies between the two.

All targets within *No Species Loss* are in some way addressed in the State NRM Plan.

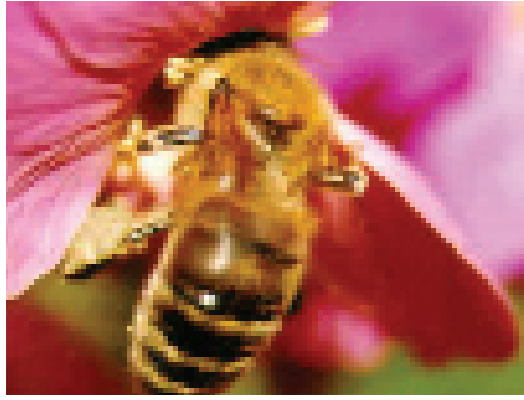
Where *No Species Loss* targets are not addressed in the State NRM Plan, the NRM Council along with working groups will both ensure that targets are implemented and reported against in an appropriate and timely manner.

We will need to be flexible in our approach.

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 resources 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
The farming of aquatic organisms of any species for the purposes of trade or business or research.

AUSRIVAS
AUSRIVAS (Australian River Assessment System) is a rapid prediction system used to assess the biological health of Australian rivers. AUSRIVAS was developed under the National River Health Program by the Federal Government in response to growing concern in Australia for maintaining ecological values.

benchmark
A quantitative or qualitative point of reference or standard value against which change in condition or status can be measured.

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, landscape and seascape levels. Genes, species, ecosystems, and landscapes can also be described in terms of their attributes: components – the identity and variety of the genes, subspecies, 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.

buffer areas
Areas of vegetation around fragments or patches.

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).

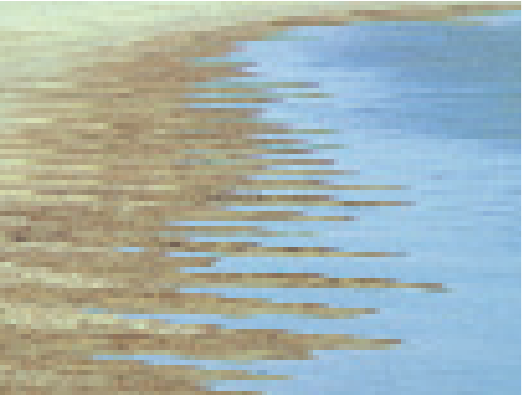
connecting areas
Areas of vegetation between fragments or patches.

connectivity
The extent of interconnected-ness between habitat units and subpopulations in a landscape.

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

conservation status
An assessment of extinction risk for a species. South Australia uses the international standard for conservation status assessment, the IUCN Red List Categories and Criteria (version 3.1). The IUCN categories are then translated into the categories recognised under the our National Parks and Wildlife Act 1972, which sets the legislative basis for conservation status in South Australia. This Act has three conservation status categories:

- Endangered: those species thought to be extinct or at very high risk of extinction in the wild
- Vulnerable: those species thought to be at high risk of extinction in the wild
- Rare: those species that are not currently Endangered or vulnerable, but are potentially at risk of extinction due to their limited abundance or their potential to become Endangered or Vulnerable in the near future.




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 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; soil stabilisation; pollination of crops and native vegetation; fulfillment of people's cultural, recreational, spiritual, intellectual needs; and provision of options for the future, for example though maintaining biodiversity.

endemic
Restricted to a specified region or site.

environmental association
A unique unit within a landscape with recognisable floristic composition, in combination with soil, landform, geology and position within the landscape, and including biota.

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 extent of fire.

fragmentation/fragmented landscapes or seascapes
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.

fragment
Restricted areas of habitat surrounded by areas of mostly destroyed habitat (most relevant to modified and highly modified landscapes).

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 that is sustainable, maintaining its organisation (native 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.

impact-causing species
A native plant or animal species that can cause damage to the environment, or to crops, stock or other property, or can lead to social disturbance in urban or peri-urban areas.

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.

Indigenous lands
Any Aboriginal freehold land or land leased to an Aboriginal person or community; lands covered by the Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981; the Maralinga Tjarutja Land Rights Act 1984; and the Aboriginal Lands Trust Act 1966

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
Any animal pest, weed or disease that can adversely affect native 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
Incentive mechanisms or instruments that provide or increase financial or productivity rewards for changes that help achieve environmental outcomes.

Matters of National Environmental Significance
The EPBC Act 1999 identifies and provides protection in areas associated with seven Matters of National Environmental Significance:

- World Heritage properties
- national heritage places
- Wetlands of International Importance (Ramsar wetlands)
- threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- nuclear actions (including uranium mining).

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.

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

nature
All plant and animal life.

natural resources 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 resources 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.

patches
Areas of least modified habitat against a background of more highly modified habitat (most relevant to intact and modified landscapes).

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.

plants and animals
Encompasses terrestrial, aquatic and marine plants (vascular, non-vascular) and animals (vertebrate, invertebrate).

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 system
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.

reconstruction
A specific case of restoration where the biological components are missing (i.e. a destroyed ecological system) and are re-introduced.

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
Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed.

seascape
A heterogeneous area of local ecosystems and sea 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.

significant biodiversity benefit/ significant environmental benefit
The rationale for SBB and SEB is based upon the premise that the clearance of native vegetation will result in the further loss (even temporary) of habitat, biodiversity and environmental values in a landscape that has been substantially modified by European settlement. In order to compensate for that loss, an operator or individual who wishes to clear native vegetation must establish a process to protect and manage the biodiversity in that region over and above that lost. The intent of SBB and SEB is, therefore, to not only replace the immediate environmental values lost through clearing (i.e. achieve an SEB), but also to make a net gain that contributes to improving the condition of the environment and biodiversity of the region (i.e. achieve an SBB). SBB and SEB may be achieved at the site of the operations, or within the same region of the State. They are not defined under South Australian legislation.

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

species diversity
The variety of species on 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 (Convention on Biological Diversity).

subspecies
Distinct geographical ranges of interbreeding natural populations of species that are reproductively isolated and possess distinguishing characteristics from other populations of the same species.

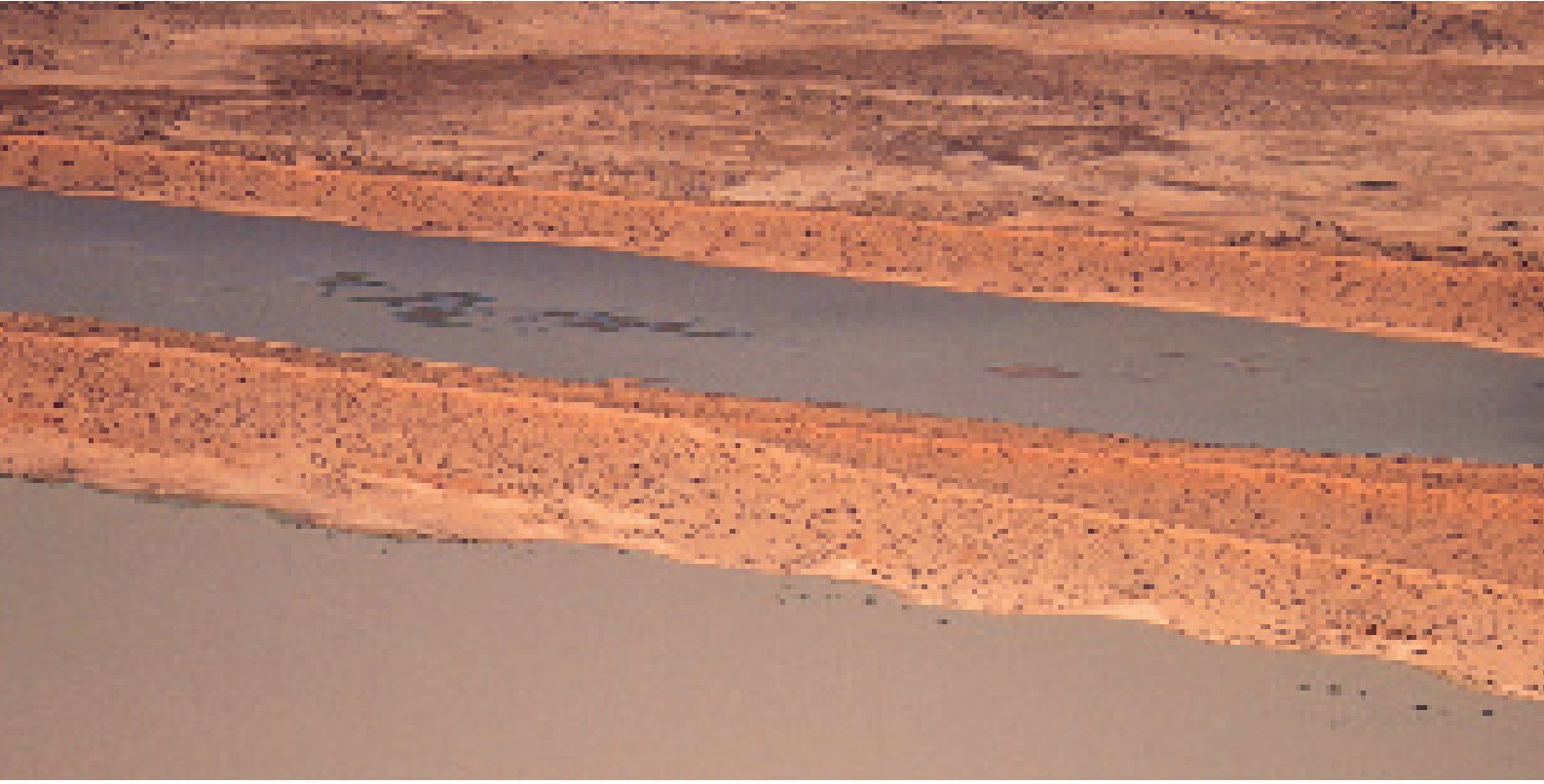
terrestrial
Land based biodiversity including inland aquatic ecosystems, such as rivers, streams, lakes, wetlands, springs, groundwater and groundwater dependent ecosystems, and the native inland aquatic species in these areas.

threat abatement
Eliminating or reducing a threat.

threatened species and/or ecological communities
Species (at national and State levels) or ecological community (at a national level) 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; include ferns, flowering plants and trees, but not mosses and liverworts.



Appendix

Relationship of *No Species Loss* to the State NRM Plan 2006

The extent to which the goals, milestones, strategies and biodiversity resource condition targets within the State NRM Plan contribute to the outcomes of the targets in *No Species Loss*. Numbers refer to the specific strategies within the State NRM Plan that will contribute to the targets in *No Species Loss*. See the State NRM Plan for a full description of these strategies. Letters refer to the degree of contribution of specific strategies to individual targets: empty box=none; a=minor; b=major; c= complete; A=direct; B=indirect.

		No Species Loss Goal 1 – Conservation of South Australia's biodiversity														
		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15
Goal	State NRM Plan Milestone	protected areas	marine protected areas	managing protected areas	managing threats	implementing restoration programs	setting criteria for declining species/ communities	benchmarks for threatened species/ communities	set targets for declining communities	conservation status	recovery plans	decline halted	ex-situ conservation	harvested marine species and ecological communities	harvested terrestrial species and ecological communities	socially acceptable and humane management techniques
Landscape scale management	**1.1** By 2010, the NRM sector will have an increased understanding of the impacts of climate change on natural resources compared to 2006.			1.1.1b 1.1.2b	1.1.1a 1.1.2b		1.1.2b	1.1.2b	1.1.2b		1.1.1b 1.1.2b 1.3.1a					
	1.2 By 2010, the mechanisms and instruments will be in place to respond to the natural resource impacts of key threats (including climate change).	1.2.5b 1.2.6b 1.2.9a	1.2.5b 1.2.6b 1.2.9a	1.2.5b	1.2.5b	1.2.5b		1.2.5a	1.2.5a		1.2.5a 1.2.6a					
	1.3 By 2010, the capacity of terrestrial and aquatic ecosystems to adapt to climate change (and other threats) will be greater than in 2006.	1.3.1b 1.3.2c 1.3.3b 1.3.4c 1.3.5a 1.3.6c 1.3.7a	1.3.1b 1.3.2c 1.3.3b 1.3.4c 1.3.5a 1.3.6a 1.3.7a 1.3.10c	1.3.1a 1.3.2c 1.3.3b 1.3.4c 1.3.5c 1.3.6c 1.3.7c 1.3.10c	1.3.1c 1.3.3b 1.3.4c 1.3.5c 1.3.6b 1.3.7c	1.3.3b 1.3.4c 1.3.5c 1.3.6b 1.3.7c	1.3.1b 1.3.3b 1.3.5b 1.3.6b 1.3.7a	1.1.3c 1.3.3c 1.3.5c 1.3.6a 1.3.7a 1.3.8c	1.3.1c 1.1.2a 1.3.3c 1.3.5c 1.3.6a 1.3.7a 1.3.8c 1.3.10b	1.3.1b 1.3.2b 1.3.3c 1.3.5c 1.3.6a 1.3.7a 1.3.8b 1.3.10b	1.3.2a 1.3.3c 1.3.4c 1.3.5c 1.3.6b 1.3.7c 1.3.10b	1.3.2b 1.3.3c 1.3.4c 1.3.5c 1.3.6b 1.3.7b 1.3.10b	1.3.3c 1.3.5a 1.3.6c	1.3.1a 1.3.2a 1.3.5b 1.3.6b 1.3.10b	1.3.1a 1.3.2a 1.3.5b 1.3.6b	1.3.4b 1.3.6c 1.3.7c
	1.4 By 2010, natural resource based industries will have a greater capacity to adapt to climate change than in 2006.		1.4.3a	1.4.2a	1.4.1c 1.4.2b	1.4.1a			1.4.1a		1.4.1a				1.4.1a	1.4.1a
	1.5 By 2020, reduce the NRM sector's net contribution to greenhouse gas emissions compared to 2006 levels.					1.5.4a										
Prosperous communities and industries	**2.1** By 2020 sustainable natural-resources based industries will deliver multiple outcomes.	2.1.6c 2.1.7a	2.1.2a 2.1.6c 2.1.7c 2.1.10a	2.1.6c 2.1.7c	2.1.6a 2.1.7a 2.1.9b	2.1.6a 21.1.7c 2.1.8a 2.1.9b	2.1.6b	2.1.6c	2.1.6c	2.1.6b	2.1.6b 2.1.7b 2.1.9c			2.1.6c	2.1.6c 2.1.9c	2.1.6a 2.1.9b
	2.2 By 2010 land capability assessments will take into account climate change risks, and will be a key element of planning for all land-based industries.		2.2.2b			2.2.2b			2.2.2a							
	2.3 By 2010 NRM Plans will adopt a catchment-to-coast approach so as to protect coastal ecosystems and associated industries.	2.3.2c 2.3.3b 2.3.4b	2.3.2c 2.3.4c	2.3.2a 2.3.4a	2.3.2a 2.3.4c 2.3.3a		2.3.4a	2.3.2a 2.3.4a	2.3.2a 2.3.4b		2.3.2c 2.3.4b	2.3.4b		2.3.2b 2.3.4b		
	2.4 By 2010 all water resources will be managed within ecologically sustainable limits (excluding the River Murray).				2.4.4a		2.4.4a 2.4.5a	2.4.4b	2.4.4a 2.4.5b							
	2.5 By 2018 the River Murray will be managed within ecologically sustainable limits.															
	2.6 By 2010 NRM-relevant statutory plans will address the impacts of land use change and climate change.															
	2.7 By 2010 the impacts of salinity and diffuse pollution on water resources will be decreasing.				2.7.2b	2.7.2c					2.7.2b					
	2.8 By 2020 alternative water sources will fulfil 25% of household, secondary industry, recreational and commercial premises consumptive demand.															
Capability, commitment and connections	**3.1** By 2010, the capabilities of the South Australian community will be greater than in 2006.															
	3.2 By 2010, the science, technology and innovation capabilities for NRM are greater than in 2006.	3.2.1a	3.2.1a				3.2.1a	3.2.1a	3.2.1a	3.2.1a						
	3.3 By 2010, the connections to drive NRM through institutional, organisational and community arrangements will be stronger than in 2006.	3.3.1b	3.3.1b	3.3.1b												
	3.4 By 2010, the South Australian community is 10% more committed to NRM than in 2006.															
Integrated management	**4.1** No new pest species become established in South Australia from 2010.			4.1.1b 4.1.3c 4.1.5b	4.1.1c 4.1.2c 4.1.3c 4.1.4c 4.1.5c						4.1.3b					4.1.3a
	4.2 There is a net reduction in the impact of established pest species and over-abundant native species on natural and productive systems and the community by 2010.			4.2.2b 4.2.4a 4.2.6b 4.2.7a	4.2.2b 4.2.4b 4.2.6b 4.2.7c			4.2.6a	4.2.6a		4.2.6a 4.2.7a			4.2.7a	4.2.7a	4.2.2c 4.2.4b 4.2.6a 4.2.7c
	Target															
Resource condition	**B1** By 2020, 50% of species and communities in each of the 2006 risk categories have moved to a lower risk category.	A	A	A	A	A	B	B	B	B	A	A	B	A	A	A
	B2 By 2011, no species and ecological communities have moved to a higher risk category from 2006.	A	A	A	A	A	B	B	B	B	A	A	B	A	A	A
	B3 By 2011, no further net loss of natural habitat (terrestrial, marine and aquatic) extent and condition below that of 2006.	A	A	A	A	A	B	B	B	B	A	A	B	A	A	A
	B4 By 2020, a net increase in ecological connectivity across all terrestrial, marine and aquatic ecosystems compared to the 2006 values.	A	A	A	A	A	B	B	B	B	A	A	B	A	A	A

		No Species Loss Goal 2 – Community ownership and stewardship for biodiversity							No Species Loss Goal 3 – Ecological knowledge that can influence decision making										
		T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26	T27	T28	T29	T30	T31	T32	T33
Goal	State NRM Plan Milestone	awareness and stewardship	educational material	living with wildlife	participation and stewardship	biodiversity networks	natural biodiversity urban environments	community promotion schemes	research into knowledge gaps and threats	research into production landscapes	IBRA and IMCRA bioregions identified and mapped	SMART targets	systematic surveys	invertebrate review	AUSRIVAS	process for target setting	overabundant and impact-causing species	knowledge capture and retention	systems for sharing knowledge
Landscape scale management	**1.1** By 2010, the NRM sector will have an increased understanding of the impacts of climate change on natural resources compared to 2006.	1.1.1a 1.1.3c			1.1.1a 1.1.3a	1.1.3a			1.1.1c 1.1.2c	1.1.1c 1.1.2c	1.1.1a 1.1.2a	1.1.1a 1.1.2a	1.1.1b 1.1.2b	1.1.1a 1.1.2a	1.1.1a 1.1.2a		1.1.1a		
	1.2 By 2010, the mechanisms and instruments will be in place to respond to the natural resource impacts of key threats (including climate change).								1.2.9a	1.2.9a	1.2.5a					1.2.5a 1.2.9c			1.2.9a
	1.3 By 2010, the capacity of terrestrial and aquatic ecosystems to adapt to climate change (and other threats) will be greater than in 2006.			1.3.3a 1.3.6b			1.3.4b 1.3.6a		1.3.3a 1.3.4b 1.3.6c 1.3.7a	1.3.4c 1.3.6c 1.3.7a	1.3.2a 1.3.4a 1.3.5a 1.3.5b 1.3.10a	1.3.1c 1.3.4b 1.3.5a 1.3.6c 1.3.7a	1.3.1a 1.3.3a 1.3.5a 1.3.6a 1.3.7a 1.3.8c 1.3.9c 1.3.10a	1.3.1a 1.3.3a 1.3.5a 1.3.8c 1.3.9c	1.3.1a 1.3.3a 1.3.5a 1.3.8c 1.3.9c	1.3.1c 1.3.3b 1.3.4a 1.3.5b 1.3.6c	1.3.6c 1.3.7b		
	1.4 By 2010, natural resource based industries will have a greater capacity to adapt to climate change than in 2006.								1.4.2b	1.4.2b 1.4.4a									
	1.5 By 2020, reduce the NRM sector's net contribution to greenhouse gas emissions compared to 2006 levels.									1.5.4a									
Prosperous communities and industries	**2.1** By 2020 sustainable natural-resources based industries will deliver multiple outcomes.	2.1.8b				2.1.8a	2.1.8a		2.1.7a 2.1.9a	2.1.2a 2.1.4a 2.1.7a 2.1.9a	2.1.6a	2.1.6c	2.1.6a	2.1.6a	2.1.6a	2.1.6c		2.1.9c	
	2.2 By 2010 land capability assessments will take into account climate change risks, and will be a key element of planning for all land-based industries.																		
	2.3 By 2010 NRM Plans will adopt a catchment-to-coast approach so as to protect coastal ecosystems and associated industries.										2.3.2a 2.3.4a								
	2.4 By 2010 all water resources will be managed within ecologically sustainable limits (excluding the River Murray).												2.4.4c		2.4.4c				
	2.5 By 2018 the River Murray will be managed within ecologically sustainable limits.																		
	2.6 By 2010 NRM-relevant statutory plans will address the impacts of land use change and climate change.																		
	2.7 By 2010 the impacts of salinity and diffuse pollution on water resources will be decreasing.								2.7.2a	2.7.2a					2.7.2a				
	2.8 By 2020 alternative water sources will fulfill 25% of household, secondary industry, recreational and commercial premises consumptive demand.																		
Capability, commitment and connections	**3.1** By 2010, the capabilities of the South Australian community will be greater than in 2006.	3.1.1b 3.1.3b 3.1.4b 3.1.5a	3.1.1c	3.1.1a 3.1.4a	3.1.1a 3.1.2a 3.12.4b	3.1.1a 3.1.6c	3.1.1a	3.1.1a	3.1.2a	3.1.2a			3.1.2a	3.1.2a			3.1.2a	3.1.2c 3.1.6c	3.1.2b 3.1.4b 3.1.6c
	3.2 By 2010, the science, technology and innovation capabilities for NRM are greater than in 2006.								3.2.1b 3.2.2b	3.2.1b 3.2.2b		3.2.1c				3.2.1c			
	3.3 By 2010, the connections to drive NRM through institutional, organisational and community arrangements will be stronger than in 2006.	3.3.7a			3.3.7b													3.3.5a 3.3.6a 3.3.7a	3.3.5a 3.3.6a 3.3.7b
	3.4 By 2010, the South Australian community is 10% more committed to NRM than in 2006.	3.4.3c			3.4.2c 3.4.4b 3.4.6b	3.4.2b 3.4.3a 3.4.4b	3.4.3a 3.4.4b 3.4.6c											3.4.3c 3.4.4c	3.4.2c 3.4.3c
Integrated management	**4.1** No new pest species become established in South Australia from 2010.																		
	4.2 There is a net reduction in the impact of established pest species and over-abundant native species on natural and productive systems and the community by 2010.	4.2.9c		4.2.2a 4.2.9a		4.2.9a			4.2.1c 4.2.2a	4.2.1c							4.2.1b 4.2.2c 4.2.7b		
	Target																		
Resource condition	**B1** By 2020, 50% of species and communities in each of the 2006 risk categories have moved to a lower risk category.	B	B	A	A/B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
	B2 By 2011, no species and ecological communities have moved to a higher risk category from 2006.	B	B	A	A/B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
	B3 By 2011, no further net loss of natural habitat (terrestrial, marine and aquatic) extent and condition below that of 2006.	B	B	A	A/B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
	B4 By 2020, a net increase in ecological connectivity across all terrestrial, marine and aquatic ecosystems compared to the 2006 values.	B	B	A	A/B	B	A	B	B	B	B	B	B	B	B	B	B	B	B

		No Species Loss Goal 4 – Adjustment to the impacts of climate change								No Species Loss Goal 5 – Active and integrated natural resources management partnerships													
		T34	T35	T36	T37	T38	T39	T40	T41	T42	T43	T44	T45	T46	T47	T48	T49	T50	T51	T52	T53	T54	T55
Goal	State NRM Plan Milestone	climate change knowledge gaps and research	awareness of climate change	ecological programs adjusted for climate change	climate change and reserve selection	potential of protected areas	monitoring programs	land use planning	reserve planning	biodiversity targets integrated into regional NRM plans	SoE reporting	NatureLinks	significant biodiversity benefits	Biosecurity strategy	legislation	access and benefit sharing	planning and development	develop MBIs	perverse incentives removed	integration with NRM	landholder duty of care	report progress to Minister	working group mechanism
Landscape scale management	**1.1** By 2010, the NRM sector will have an increased understanding of the impacts of climate change on natural resources compared to 2006.	1.1.1c 1.1.2c	1.1.2a 1.1.3c	1.1.1a 1.1.2a	1.1.1b 1.1.2b	1.1.1a 1.1.2b	1.1.1a 1.1.2a	1.1.2a	1.1.2a														
	1.2 By 2010, the mechanisms and instruments will be in place to respond to the natural resource impacts of key threats (including climate change).	1.2.9a			1.2.9a	1.2.9a	1.2.9c	1.2.5b	1.2.5b			1.2.5b 1.2.6b			1.2.3c		1.2.5b 1.2.6b 1.2.9a	1.2.2c 1.2.3c	1.2.4c				
	1.3 By 2010, the capacity of terrestrial and aquatic ecosystems to adapt to climate change (and other threats) will be greater than in 2006.	1.3.1b 1.3.5a 1.3.6b 1.3.7a		1.3.1a 1.3.4a 1.3.5a 1.3.6b 1.3.7b	1.3.2a 1.3.4a 1.3.5a 1.3.6b 1.3.7a	1.3.2a 1.3.4c 1.3.5c 1.3.6b 1.3.7	1.3.6b		1.3.2a 1.3.6a		1.3.1a	1.3.1b 1.3.2c 1.3.3c 1.3.4c 1.3.5c 1.3.6c 1.3.7c 1.3.10a	1.3.1a				1.3.2a 1.3.4b						
	1.4 By 2010, natural resource based industries will have a greater capacity to adapt to climate change than in 2006.	1.4.2c					1.4.2a	1.4.2a															
	1.5 By 2020, reduce the NRM sector's net contribution to greenhouse gas emissions compared to 2006 levels.											1.5.4a											
Prosperous communities and industries	**2.1** By 2020 sustainable natural-resources based industries will deliver multiple outcomes.	2.1.7a		2.1.6b 2.1.7a	2.1.6a	2.1.6b		2.1.7a	2.1.6a 2.1.7a	2.1.6c 2.1.12c	2.1.6a 2.1.12c	2.1.6c 2.1.7a 2.1.12c	2.1.6a			2.1.2b 2.1.3a 2.1.9a		2.1.3a		2.1.2b 2.1.11b	2.1.8b		
	2.2 By 2010 land capability assessments will take into account climate change risks, and will be a key element of planning for all land-based industries.	2.2.4b	2.2.4a		2.2.4a	2.2.4a	2.2.4b										2.2.5a						
	2.3 By 2010 NRM Plans will adopt a catchment-to-coast approach so as to protect coastal ecosystems and associated industries.								2.3.2a			2.3.2c 2.3.3c											
	2.4 By 2010 all water resources will be managed within ecologically sustainable limits (excluding the River Murray).	2.4.5			2.4.5a	2.4.5b			2.4.5b														
	2.5 By 2018 the River Murray will be managed within ecologically sustainable limits.																						
	2.6 By 2010 NRM-relevant statutory plans will address the impacts of land use change and climate change.							2.6.3b	2.6.2b								2.6.3b						
	2.7 By 2010 the impacts of salinity and diffuse pollution on water resources will be decreasing.																						
	2.8 By 2020 alternative water sources will fulfil 25% of household, secondary industry, recreational and commercial premises consumptive demand.																						
Capability, commitment and connections	**3.1** By 2010, the capabilities of the South Australian community will be greater than in 2006.	3.1.2a	3.1.1a 3.1.2a																				
	3.2 By 2010, the science, technology and innovation capabilities for NRM are greater than in 2006.	3.2.1c 3.2.2c																					3.2.1b 3.2.2b
	3.3 By 2010, the connections to drive NRM through institutional, organisational and community arrangements will be stronger than in 2006.									3.3.1c	3.3.1c	3.3.1c	3.3.1a				3.3.4b			3.3.1c			
	3.4 By 2010, the South Australian community is 10% more committed to NRM than in 2006.		3.4.3c									3.4.1a 3.4.3b									3.4.5b		
Integrated management	**4.1** No new pest species become established in South Australia from 2010.			4.1.3a		4.1.3a	4.1.3a	4.1.3a				4.1.3b		4.1.1a 4.1.2a									
	4.2 There is a net reduction in the impact of established pest species and over-abundant native species on natural and productive systems and the community by 2010.	4.2.1c				4.2.6a						4.2.1b 4.2.2c 4.2.7b 4.2.9a			4.2.3a								
	Target																						
Resource condition	**B1** By 2020, 50% of species and communities in each of the 2006 risk categories have moved to a lower risk category.	B	B	B	B	B	B	B	B	B	B	A/B	B	B	B	B	B	B	B	B	B	B	B
	B2 By 2011, no species and ecological communities have moved to a higher risk category from 2006.	B	B	B	B	B	B	B	B	B	B	A/B	B	B	B	B	B	B	B	B	B	B	B
	B3 By 2011, no further net loss of natural habitat (terrestrial, marine and aquatic) extent and condition below that of 2006.	B	B	B	B	B	B	B	B	B	B	A/B	B	B	B	B	B	B	B	B	B	B	B
	B4 By 2020, a net increase in ecological connectivity across all terrestrial, marine and aquatic ecosystems compared to the 2006 values.	B	B	B	B	B	B	B	B	B	B	A/B	B	B	B	B	B	B	B	B	B	B	B

Notes

Notes

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Cover

Mount Grainger (P Canty)

Ooldea mallee *Eucalyptus youngiana* (T Robinson DEH)

Trap line preparation (T Robinson DEH)

Ant nests, Yellabinna (T Robinson DEH)

Kowari *Dasycercus byrnei* (P Canty)

Small-leaf mulla mulla *Ptilotus parvifolius* var. *parvifolius* (P Canty DEH)

Inside front cover

Lizard tracks (P Canty)

Page 1

Glendambo swamp (P Canty)

Page 2

Sandhill riceflower *Pimelea penicillaris* (P Canty DEH)

Eastern banjo frog *Limnodynastes dumeril*, Kangaroo Island (T Robinson DEH)

Page 3

Chequered swallowtail *Papilio demoleus* (DEH)

Minkie waterhole (P Canty)

Forrest's mouse *Leggadina forresti*, Aṉangu Pitjantjatjara Lands (P Canty DEH)

Page 5

Gould's wattled bat *Chalinolobus gouldii* (P Canty)

Page 6

Pied oystercatcher *Haematopus longirostris eggs*, Nuyts Archipelago Conservation Park (T Robinson DEH)

Python *Morelia spilota*, St Francis Island (P Canty DEH)

Page 7

Mallee (T Robinson DEH)

Page 8

Eastern pygmy possum *Cercartetus nanus* (P Canty DEH)

Centralian bluetongue *Tiliqua multifasciata* (P Canty)

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Feeding limpets (P Canty)

Wolf spider (P Canty)

Page 10

Myall Swamp, cracks in mud (T Robinson DEH)

Lobster fishing boat (PIRSA)

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Coast bonefruit *Threlkeldia diffusa* (pink), ruby saltbush *Enchylaena tomentosa* (green) and round-leaved pigface *Disphyma clavellatum* (buff), East Franklin Island (P Canty)

Limnodynastes spenceri, Aṉangu Pitjantjatjara Lands (T Robinson DEH)

Georgina gidyea, gidgee *Acacia georginae* (P Canty DEH)

Bridal creeper *Asparagus asparagoides* (D Taylor)

Page 12

Sturt's Desert Pea *Swainsona formosa* (T Robinson DEH)

Hindmarsh Island Coastcare project (R Sandercock DEH)

Ploughshare wattle *Acacia gunnii,* Cleland Conservation Park (P Lang)

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Mallee fowl mound monitoring (J van Weenen DEH)

Slime mould *Stemonitis* sp. (D Catcheside)

Trevally (D Muirhead Marine Life Society of SA)

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Wilpena Pound (P Canty)

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Desert grass-tree *Xanthorrhoea thorntonii* (P Copley DEH)

Osprey *Pandion haliaetus* (P Canty)

Page 16

Fairy tern *Sterna nereis,* Althorpe Islands (P Canty DEH)

Seagrass (S Connell)

Nest box maintenance (T Mooney)

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South Casuarina Island (P Canty DEH)

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Disphyma herbland, South Casuarina Island (T Robinson DEH)

Sugar gum *Eucalyptus cladocalyx* woodland, Eyre Peninsula (T Robinson DEH)

Birchmore Lagoon, Kangaroo Island (DEH)

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Pandie Pandie dune (P Canty)

Page 24

Coastal white mallee *Eucalyptus diversifolia* (N Willoughby DEH)

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Sand dune (P Canty)

Pelicans *Pelecanus conspicillatus* (P Canty)

Page 28

Euro *Macropus robustus* (G Moss)

Cattle water point (P Canty)

Page 29

Brush-tailed bettong *Bettongia penicillata* (P Canty)

Coral fern *Gleichenia microphylla* (P Lang)

Page 30

Orchid *Caladenia gladiolata* (Y Steed)

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Scotchman's beard fungi *Calocera guepinioides* (D Catcheside)

Trap checking, Gawler Ranges (T Robinson)

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Acacia glandulicarpa, Northern Mount Lofty Ranges (T Croft)

Black-footed rock-wallaby *Petrogale lateralis* (J van Weenen DEH)

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Perentie *Varanus giganteus*, Witjira National Park (P Canty DEH)

Sabella worms (R Sandercock DEH)

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Edge of Ngarkat Conservation Park (P Canty DEH)

Honey pot ant *Melophorus bagoti* (T Robinson DEH)

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Glossy black-cockatoo *Calyptorhynchus lathami halmaturinus* (L Pedler)

Hermit Hills, Great Artesian Basin Springs (T Gotch DWLBC)

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Alga *Caulerpa taxifolia* (G Adams *The Advertiser*)

Flinders Ranges (P Canty)

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Camel mustering, Aṉangu Pitjantjatjara Lands (L Liddle DEH)

Fire lighting, Aṉangu Pitjantjatjara Lands (L Liddle DEH)

Burnt spinifex (P Canty)

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Channels (P Canty)

Wilson's honey-myrtle *Melaleuca wilsonii* (T Robinson DEH)

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Flinders bullockbush *Alectryon oleifolius* (P Canty)

Saltmarsh at the mouth of Cygnet River, Kangaroo Island (P Canty DEH)

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Aristida sp. (P Canty)

Scorpion, Upper Sturt (T Robinson DEH)

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Hambidge Conservation Park fire scars (P Canty)

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Feral goats *Capra hircus* (G Moss)

Brown bandicoot *Isoodon obesulus* (P Canty)

Page 44

Lepidoptera (T Robinson DEH)

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Red kangaroos *Macropus rufus* and red fox *Vulpes vulpes* (D Croft)

Disphyma (P Canty)

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Seal Bay Conservation Park (DEH)

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Hiking trail interpretation sign maintenance (DEH)

Post-fire mallee vegetation community recovery, Flinders Chase National Park (DEH)

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Adelaide parklands (M Long)

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Lashmar Lagoon, Kangaroo Island (P Canty)

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Ant nests, Yellabinna (T Robinson DEH)

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Onkaparinga Gorge (T Robinson DEH)

Greater long-eared bat *Nyctophilus timoriensis* (T Robinson DEH)

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Rabbit scats (P Canty)

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Tracks (P Canty)

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Seal vomit (DEH)

Gastropod mollusc *Helix aspersa* (T Robinson DEH)

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Nephrurus levis (T Robinson DEH)

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Mukia maderaspatana, Coongie Lake (P Canty DEH)

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Lichen and moss (DEH)

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Hambidge Conservation Park boundary (P Canty)

Swan Reach cliffs (P Canty)

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Cape du Couedic, Kangaroo Island (DEH)

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Fromms Landing, River Murray with cliffs and dead red gums (T Robinson DEH)

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Foam, Rocky River, Kangaroo Island (W Haylock DEH)

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Yellow-footed rock-wallaby *Petrogale xanthopus* (J van Weenen DEH)

St Francis Island cliff and tidal zone (P Canty)

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Kowari *Dasycercus byrnei* (P Canty)

Sheep tracks through shrubland (J van Weenen DEH)

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Volunteers searching for *Delma impar* (J van Weenen DEH)

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Azolla and nardoo (P Canty)

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Dingo *Canis lupus dingo* (P Canty)

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Flood (P Canty)

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Ooldea mallee *Eucalyptus youngiana* (T Robinson DEH)

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Winninowie (P Canty)

Acknowledgments

The Department for Environment and Heritage coordinated the preparation of this document.

The Department would like to acknowledge the many people and organisations who contributed to the development of *No Species Loss*.

Thanks to industry bodies, interested individuals and urban, rural and Indigenous landholders and community groups who took the time to make comment, provide written submissions and attend the public information and feedback sessions.

Valuable input has been provided by NRM Council, regional NRM boards, Conservation Council of SA, South Australian Farmers' Federation, South Australian Premier's Round Table on Sustainability and numerous government agencies, in particular, Department of Water, Land and Biodiversity Conservation, Environment Protection Authority, Department of Primary Industries and Resources South Australia, Planning SA, Local Government Association, Department of the Premier and Cabinet, Aboriginal Affairs and Reconciliation Division of the DPC, Department of Education and Children's Services, SA Forestry Corporation, SA Water, Department of Further Education, Employment, Science and Technology, Department of Trade and Economic Development, Department for Transport, Energy and Infrastructure, and the South Australian Tourism Commission.

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FIS 2592.06
ISBN: 1 921238 038

Government
of South Australia

Department for
Environment and Heritage