



South Australian Arid Lands Biodiversity Strategy



Volume 1 Region-wide Priority Actions

SOUTH AUSTRALIAN ARID LANDS NATURAL RESOURCES MANAGEMENT REGION

A partnership between

**The Department for Environment and Heritage and
South Australian Arid Lands Natural Resources Management Board**



Australian Government



Government
of South Australia

Conserving the biodiversity of the South Australian Arid Lands requires new ways of approaching natural resources management. Shared responsibility and integrated action is required to more effectively protect, use and enhance our natural systems, whether they are managed for production, social benefit or specifically for conservation purposes. The vision and goal of this strategy reflect the foresight, mindset and commitment of all those who live in or have an interest in the region, to prevent further loss of our known native species and incorporate biodiversity conservation as a key element of sustainable natural resources management.

VISION

The South Australian Arid Lands region is a healthy, naturally functioning ecosystem with sustainable industries and vibrant communities.

GOAL

Conserve the biodiversity of the South Australian Arid Lands.

Minister's foreword



South Australia's Arid Lands contain some of our State's most iconic landscapes – the dunefields and sand plains of the desert, Lake Eyre and the magnificent Northern Flinders.

It's vital that we protect the precious biodiversity of this region. Not only does it underpin the well being of the communities and industries that depend on the environment of the arid lands, the region also contains many species of plants and animals that are found nowhere else.

As we increasingly look towards this region for our future prosperity, we must ensure that we value and protect its environment.

Across South Australia, we have strategies in place to protect our State's biodiversity. We've set a target within South Australia's Strategic Plan to lose no species in our State, and have implemented a statewide conservation strategy, *No Species Loss – A Nature Conservation Strategy for South Australia 2007-2017*¹ to achieve this.

Creating regionally specific biodiversity strategies is a crucial part of this statewide approach. Gaining detailed knowledge of each region – the range of species within them and the threats they face – will give us the knowledge and tools that we need to protect our State's biodiversity.

A regional focus will also enable the communities within each region to fully participate in conservation work in their local area. This is particularly crucial within the Arid Lands, where the engagement of Aboriginal communities, with their generations of knowledge of their country, is an invaluable asset in our quest to understand and protect the area's biodiversity.

The South Australian Arid Lands Biodiversity Strategy has been prepared in partnership with the South Australian Arid Lands Natural Resources Management Board and consists of six documents:

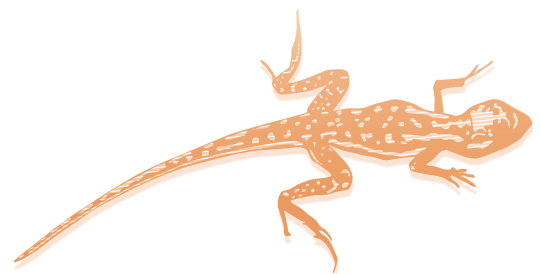
- *Volume 1 South Australian Arid Lands Region-wide Priority Actions (this document)*
- *Volume 2 Channel Country Conservation Priorities*
- *Volume 3 Flinders and Olary Ranges Conservation Priorities*
- *Volume 4 Gawler Conservation Priorities*
- *Volume 5 Sandy Deserts Conservation Priorities*
- *Volume 6 Stony Plains Conservation Priorities*

This comprehensive strategy provides a framework for communities, industry and government to live and work sustainably in this region. Let's make sure we protect the biodiversity of the Arid Lands for generations to come.

Jay Weatherill

The Hon Jay Weatherill MP

Minister for Environment and Conservation



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A shared interest in natural resources management

There has been a long history of human involvement in natural resources management in the South Australian Arid Lands. Aboriginal people have had an intimate involvement with the arid areas over tens of thousands of years and have had a significant role in shaping the ecology of the landscape. The region continues to have great significance to Aboriginal people, who hold strong spiritual connections to the arid landscapes. Today the region supports much of the State's highly valuable mining and petroleum industries, a significant pastoral industry, and developing enterprises such as tourism.

Over the past 150 years, many arid ecosystems have been significantly modified or degraded as a result of land use and the introduction of new species. Despite significant and sustained efforts by government, industries and communities to improve natural resources management, many species and ecosystems are still declining. The major challenge for all stakeholders is to halt any decline and build resilience into the environmental, economic and social systems of the region in order to meet the State's growth targets and challenges from external factors such as globalisation and climate change. While many challenges face the region, there are also many opportunities to apply traditional knowledge and develop partnerships and collaborative initiatives that deliver sustainability outcomes within the South Australian Arid Lands Natural Resources Management region (SAAL) and across natural resources management (NRM) and State jurisdictions.

Sustainability is an interest shared by the Australian Government, the Government of South Australia, primary industries, value adding and service industries, non-government organisations, landholders and the wider community. The economy and social well-being of the Arid Lands is built on the use of natural resources. The key to sustainable natural resources management is to balance economic and societal expectations whilst preventing further resource degradation and enhancing the environments of the region. This strategy provides a guide to conserving biodiversity as a part of sustainable land management in the South Australian Arid Lands into the future. It provides direction and guidance for all those involved in land management whose actions continue to shape the region's future.

Recognising past and current conservation achievements

Land managers, industries, communities and governments have all contributed to addressing biodiversity decline and improving natural resources management in the SAAL region, including:

- Significant, localised and regional control of introduced predators and herbivores.
- Establishment of a pastoral lands monitoring system.
- Engagement of industry and landholders in management practices that are sympathetic to the protection of biological systems in production environments.
- Engagement of regional communities in integrating biodiversity planning and management into natural resources management decisions.
- Successful reintroduction of regionally extinct fauna species into the region at Roxby Downs.
- Planning and implementation of management regimes to reverse the decline of critically threatened species and ecological communities.
- Improved knowledge and understanding of species, habitats, and ecosystems.
- Ongoing enhancement and consolidation of a national system of public and private reserves as core areas for the protection of natural biodiversity.

What is biodiversity?

Biological diversity, or biodiversity, refers to the variety of all life forms – the different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part. Biodiversity is generally considered at three levels:

- **genetic diversity** – the variety of genetic information contained in all individual living things, and varying within and between populations of organisms that comprise of 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.

With the variety of plants and animals on the land, freshwater and marine ecosystems needs to be maintained for these systems to remain healthy. The extinction of just one species in an ecosystem can dramatically affect the function of the ecosystem as a whole.

Why value biodiversity?

People and societies value biodiversity and what it has to offer in a number of ways:

- **Production value:** the provision of material such as food, timber, fibre, medicines, chemical and genetic material that is directly consumed by society.
- **Ecosystem services:** includes the maintenance of services naturally provided by ecosystems, which include the purification of air and water, mitigation of droughts and floods, pollination of crops and native vegetation, and maintenance of biodiversity.
- **Aesthetic and recreational value:** includes nature-based recreational pursuits such as photography, tourism and natural heritage.
- **Intrinsic, spiritual and ethical value:** the various cultural and religious systems that place value on various components of biodiversity.
- **Future value:** the need to maintain the capacity to identify future direct or indirect utilitarian value.

Land managers, indigenous communities, local industries and the broader community value biodiversity in different ways. The value system of individuals is not static, responding to differing environmental, economic and social influences over very short timeframes.

Benefits of conserving biodiversity

The many benefits to both community and the environment from the implementation of this Strategy include:

- Conservation of high biodiversity priority areas, including those with high species diversity, natural refuges for flora and fauna, and unique habitats and species.
- Enhanced sustainability of local industries through access to financial and technical support for land management.
- Increased opportunities for environmentally based employment.
- Protection of representative examples of ecosystems, habitats, species and populations.
- Improved land condition and ecological health.
- Improved research and education outcomes.
- Enhanced landscape for nature-based tourism and sustainable recreational activities.



How will the South Australian Arid Lands Biodiversity Strategy work?

This Strategy promotes strategic thinking by government, industry and communities about how best to conserve biodiversity as part of sustainable natural resources management. It represents an important tool in providing information and guiding resource allocation within the region. The size of the region and the limited funds available for conservation activities requires that we strive to improve decision-making at all levels in order to maximise the return on investment, through direct intervention, capacity building, or improvement in technology.

Links to the South Australian Arid Lands and State natural resources management plans

This Strategy has been developed by the South Australian Arid Lands Natural Resources Management Board (SAAL NRM Board) and the South Australian Department for Environment and Heritage (DEH). The State Natural Resources Management Plan 2006 (State NRM Plan) and South Australian Arid Lands Natural Resources Management Plan (SAAL NRM Plan)ⁱⁱⁱ provide the over-arching direction for natural resources management for South Australia. This Strategy has adopted the resource condition targets from the State NRM Plan and linkages are identified throughout the document to ensure a consistent and strategic regional approach.

The Strategy also provides guidance, and greater detail, to the biodiversity component of the SAAL NRM Plan, and is complementary to a range of plans under state and federal legislation, including policy documents, national and state strategies, recovery and threat abatement plans.

Prioritisation

This Strategy has prioritised actions to address major issues affecting biodiversity at a regional level, as well as actions to manage specific biodiversity assets considered most at risk. This prioritisation was based on available information at the time of publication. Importantly, prioritisation is an ongoing process that must be responsive to knowledge, urgency, opportunity and costs over time. Further prioritisation has to occur in order to achieve and build on biodiversity conservation success, and as an integral part of sustainable natural resources management in the region.



Structure of the South Australian Arid Lands Biodiversity Strategy

The SAAL region covers over 520,000 km², almost 53% of South Australia. The landscapes and biodiversity of this huge region are diverse and complex. Planning for biodiversity conservation at such large scales requires a landscape-based system of classifying the land surface. The landscape classification system used for this strategy is the Interim Biogeographic Regionalisation for Australia (IBRA) regions. The IBRA bioregions included in the SAAL region are the Stony Plains, Flinders Lofty Block, Broken Hill Complex, Channel Country, Simpson–Strzelecki Dunefields, Finke and Gawler bioregions.

The Strategy consists of six documents. This document, the South Australian Arid Lands Natural Resources Management Region Biodiversity Strategy: Region-wide Priority Actions is the first volume in the series. It identifies the region-wide goal for biodiversity conservation and sets resource condition targets that will enable us to measure our success in achieving this goal. A comprehensive suite of management action targets and strategies that must be implemented regionally in order to achieve the goal are also detailed, and have been grouped into five priorities for action. The Priority Actions outlined in this document provide the means to meet or at least move towards the bioregional conservation priority targets.

These are:

- Priority Action 1. Improving ecological knowledge, decision-making and capacity.
- Priority Action 2. Reducing the impact of climate change on biodiversity.
- Priority Action 3. Reducing the impact of invasive species on biodiversity.
- Priority Action 4. Reducing the impact of total grazing pressure on biodiversity.
- Priority Action 5. Reducing the impact of land use pressure on biodiversity.

The five bioregional documents identify conservation priorities for each of the bioregions in the South Australian Arid Lands. These are:

- Volume 2 Channel Country Conservation Priorities (Channel Country)
- Volume 3 Flinders and Olary Ranges Conservation Priorities (Flinders Lofty Block, Broken Hill Complex)
- Volume 4 Gawler Conservation Priorities (Gawler)
- Volume 5 Sandy Deserts Conservation Priorities (Simpson – Strzelecki Dunefields, Finke)
- Volume 6 Stony Plains Conservation Priorities (Stony Plains)

What are bioregions?

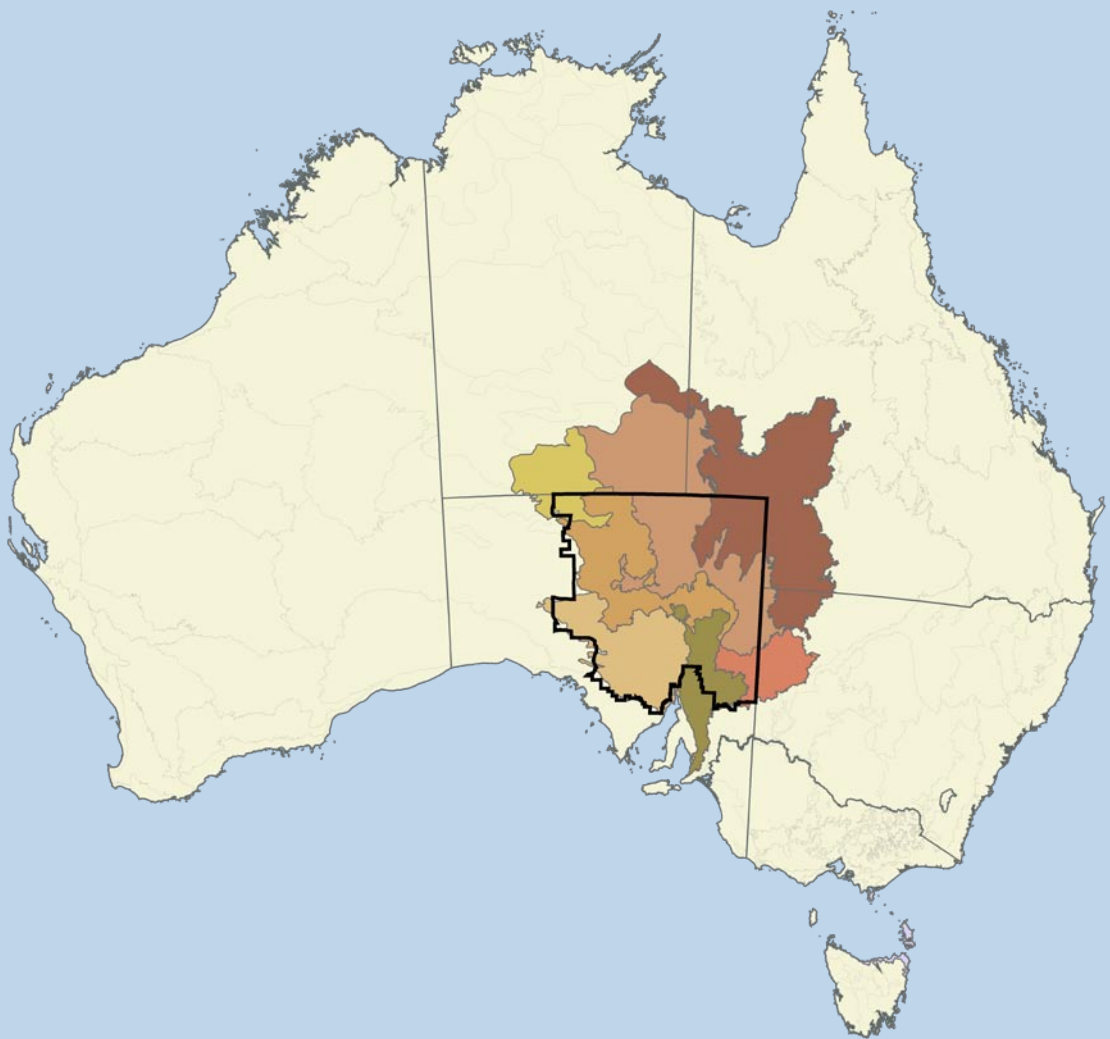
The Interim Biogeographic Regionalisation of Australia (IBRA)ⁱⁱ establishes a hierarchy of ecosystem classification for which the physical, climatic and biological characteristics are described. This classification provides a context for planning biodiversity conservation.

Bioregions are continental scale (1:1,000,000) ecosystems that range in size from one to 20 million hectares. They are distinguished from adjacent regions by their broad physical and biological characteristics. They may include more than 30 landforms and 50 vegetation associations. Seven bioregions or parts thereof, occur in the SAAL NRM region.

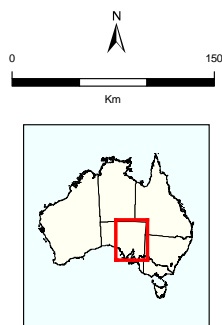
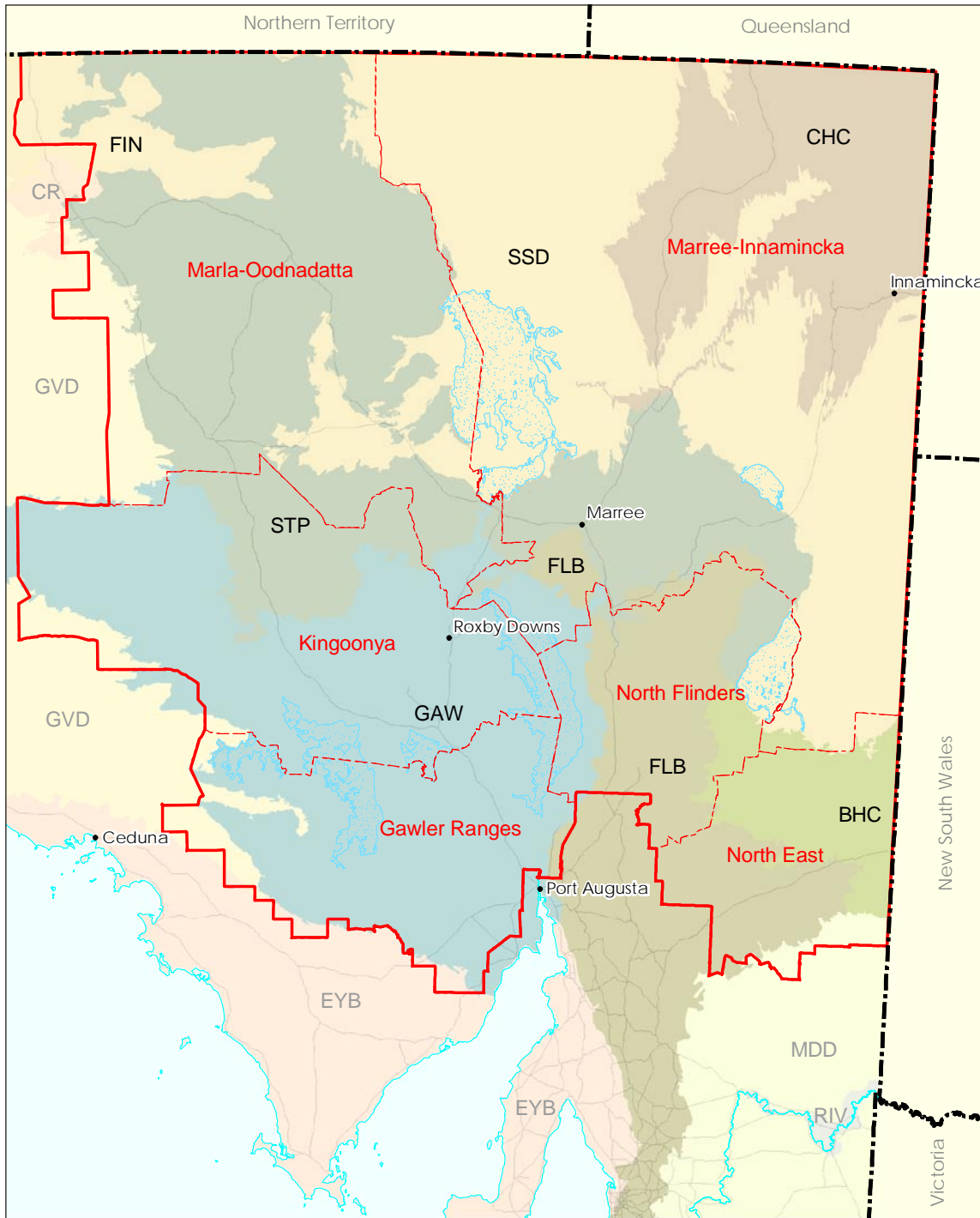
Subregions are sub-continental scale (1:500,000) ecosystems that range in size from 100,000 to seven million hectares. They occur within IBRA bioregions and may include up to 15 landforms and 30 vegetation associations.

Landsystems are regional scale (1:250,000) ecosystems that range in size from 2,000 to five million hectares. They occur within IBRA subregions and may include up to five landforms and 10 vegetation associations.

Vegetation communities are local scale (1:100,000) ecosystems that range in size from five to 5,000 hectares and are based on a single landform and vegetation community.



South Australian Arid Lands NRM region – IBRA bioregions



Bioregion

- | | | |
|--|---|--|
|  Broken Hill Complex (BHC) |  Gawler (GAW) |  South Australian Arid Lands NRM Region |
|  Channel Country (CHC) |  Great Victoria Desert (GVD) |  South Australian Arid Lands NRM Group Boundary |
|  Central Ranges (CR) |  Murray Darling Depression (MDD) |  Salt Lake |
|  Eyre Yorke Block (EYB) |  Riverina (RIV) |  Major Road |
|  Finke (FIN) |  Simpson-Strzelecki Dunefields (SSD) |  State Border |
|  Flinders Lofty Block (FLB) |  Stony Plains (STP) |  Locality |



Biodiversity in the SAAL region

The Australian rangelands

The Australian rangelands cover around 70% of the continent and include low-rainfall, diverse dry (arid and semi-arid) inland areas and some seasonally high-rainfall areas north of the Tropic of Capricorn^{iv}. Rangeland landscapes are diverse, and support a rich complement of plants and animals of international importance^v. Nine of Australia's 12 plant ecosystems^{vi} can be found in the rangelands, providing habitats for a rich diversity of Australia's fauna, including reptiles (67%), birds (62%), frogs (47%), and mammals (33%)^v. Many rangeland wetlands are internationally significant as feeding grounds for migratory waders.

The South Australian Arid Lands NRM region

The South Australian Arid Lands Natural Resources Management region covers over 520,000 km², almost 53% of the State. At a regional scale, there is significant variation in climate from the semi-arid south to the arid north. South Australia's arid lands are characterised by episodic wet and dry cycles, where prolonged dry periods are often broken by high-intensity rains. These rains are highly unpredictable, infrequent and variable, and have shaped the natural processes. Animals and plants cope with prolonged dry periods ('bust') and respond quickly to intense bursts of rainfall ('boom') when the natural environment flourishes. Landforms represented in the SAAL region include gibber and gypsum plains, dunefields and sand plains, arid watercourses, lakes, artesian springs and rugged mountain ranges. Four of Australia's 12 plant ecosystems occur in the region, providing habitats for a significant proportion of South Australia's reptiles (70%), birds, (57%), frogs (50%), and mammals (50%).



Biodiversity decline in the South Australian Arid Lands

The decline in biodiversity

The rate of extinction and decline of species in the South Australian Arid Lands over the past 150 years has been particularly high (Table 1).

Table 1: Threatened species in the bioregions of the South Australian Arid Lands

	Plants	Mammals	Birds	Reptiles	Amphibians
Broken Hill Complex	14(1)	3(27)	14(2)	2	
Channel Country	23	8(7)	36(1)	6	1
Finke	1	2(13)	13(3)		
Flinders Lofty Block	92(3)	6(24)	38	3	1
Gawler	58	3(14)	61	2	
Simpson-Strzelecki Dunefields	26	7(11)	28(1)	2	
Stony Plains	50	5(10)	39	1	

Information sourced from all recorded flora or fauna species in the DEH ORACLE biological database that have a conservation rating, as defined by the EPBC Act or the NPW Act.

Number of species presumed extinct is in brackets. The numbers recorded are minimum values for accounts of species published and vertebrate extinctions reported favour mammals and birds. It is unclear to what extent other vertebrates and invertebrates are regionally extinct.

Despite greater awareness and ongoing recovery efforts, many species are currently considered threatened in South Australia. These include 14% of mammals, 20% of birds, six percent of reptiles, and four percent of plant species^{i,vii}. The extinction and decline of species is due to the breakdown of ecological processes, predation, competition and habitat loss.

The Australian Government has recognised the significance of protecting ecosystems and has provided for the listing of threatened ecological communities under the *Environmental Protection and Biodiversity Conservation Act 1999*. One threatened ecological community 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' occurs in the South Australian Arid Lands. South Australian legislation has no provision for officially protecting the State's threatened ecological communities, though a provisional list identifies 16 threatened ecological communities in the South Australian Arid Lands^{vii}.

Major threats to biodiversity

There are a range of factors that have contributed to the decline of the region's biodiversity. These include excessive total grazing pressure, introduced predators, competition from exotic plant species, vegetation clearance, and altered fire regimes. The intensity and impact of these threats varies both over time and location across the region. The landscapes of the region are complex, highly variable and respond to disturbance in often unpredictable ways. Likewise, the biodiversity is affected in different and complex ways. Because of this complexity, identifying direct causal relationships between threatening processes (Table 2) and biodiversity decline remains one of the most significant challenges for natural resources managers^v.

Climate change driven by human-induced global warming is now emerging as a serious threat to the region's biodiversity.

Table 2: Threatening processes affecting the biological diversity of the Australian rangelands

Threatening process ^{viii}	Category of threat
Damage to key sites by grazing animals	<ul style="list-style-type: none"> Excessive total grazing pressure
Displacement of native perennial grasses and palatable shrubs through grazing	<ul style="list-style-type: none"> Excessive total grazing pressure
Feral herbivores	<ul style="list-style-type: none"> Excessive total grazing pressure Competition for resources by pest plants and animals
Climate change	<ul style="list-style-type: none"> Alteration of natural water flows Competition for resources by pest plants and animals Altered fire regimes Direct impacts on populations
Changed water regimes	<ul style="list-style-type: none"> Reduction in Great Artesian Basin water pressure Alteration of natural water flows
Introduced predators	<ul style="list-style-type: none"> Competition for resources by pest animals Predation
Invasion of exotic plant species	<ul style="list-style-type: none"> Competition for resources by pest plants
Unsuitable fire regimes	<ul style="list-style-type: none"> Altered fire regimes
Disease	<ul style="list-style-type: none"> Direct impacts on populations
Mining	<ul style="list-style-type: none"> Mechanical disturbance Pollution Reduction in Great Artesian Basin water pressure Alteration of natural water flows
Hunting	<ul style="list-style-type: none"> Direct impacts on populations
Commercial harvest	<ul style="list-style-type: none"> Direct impacts on populations Habitat degradation for non-target species
Tree clearing	<ul style="list-style-type: none"> Mechanical disturbance



Goal – conserve the biodiversity of the South Australian Arid Lands

The goal of this strategy is clear and unambiguous. Quite simply, the goal is to conserve the biodiversity that currently exists within the SAAL region. In setting this goal, it is acknowledged that the region has historically lost a considerable number of native plants, animals and ecosystems; however, for the term of this strategy, no further losses are acceptable. The natural systems of the region are still relatively intact and so, with a considerable and concerted effort, this goal is achievable.

Measuring success – South Australian Arid Lands resource condition targets

To measure success in achieving this goal a number of resource condition targets (RCTs) have been identified. These describe the desired change in state or condition of the region's biodiversity within a specific timeframe. These resource condition targets are consistent with the biodiversity conservation specific resource condition targets that are described in the *State Natural Resources Management Plan* and the *South Australian Arid Lands Natural Resources Management Comprehensive Plan*.

Significant progress towards these RCTs is difficult to detect in the short term, and it is extremely difficult to attribute change to specific actions, so targets with more pragmatic timeframes are useful.

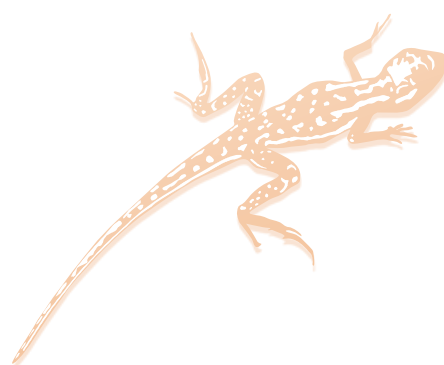
Management action targets (MATs) fill this role, providing short to medium term targets that are more directly related to the implementation of certain actions.

Performance information provides a progress indicator to help gauge how successful strategies have been in achieving their targets.

Monitoring and evaluation are necessary to provide this performance indication, so that effort can be directed where it will have the most effect.

Resource condition target	Explanation
<p>1. By 2020, 50% of species and communities in each of the 2006 risk categories have moved to a lower risk category.</p>	<p>Risk for communities and species can be assessed by International Union for the Conservation of Nature (IUCN) criteria or through listing under State and Federal legislation. By implementing the actions identified for each conservation priority described in this strategy, we aim to move 50% of species and communities into a lower risk category.</p>
<p>2. By 2011, no species and ecological communities have moved to a higher risk category from 2006.</p>	<p>Risk for communities and species can be assessed by IUCN criteria or through listing under legislation. By implementing the strategies and actions identified in this strategy we aim to ensure that the biodiversity of the region is managed sustainably, ensuring no species or ecological communities are placed at greater risk.</p>
<p>3. By 2011, no further net loss of natural habitat (terrestrial and aquatic) extent and condition below that of 2006.</p>	<p>If we utilise biodiversity sustainably then there will be no measurable decline in the condition of terrestrial and aquatic ecosystems. A range of measures will be required to measure our success against this target including trends in the land condition index.</p>
<p>4. By 2020, a net increase in ecological connectivity across all terrestrial and aquatic ecosystems compared to the 2006 values.</p>	<p>Connectivity is particularly important for allowing species to move and adapt to the impacts of climate change. New measures will be required to measure our success against this target.</p>

Resource condition targets will be reviewed and adjusted as goals are attained.





Achieving the goal – priority actions to conserve biodiversity

To achieve the resource condition targets, five priority actions have been identified. These contribute to one or more of the targets. Priority actions are not ranked in importance, but together they address the impact of major system-wide threats that are the underlying cause of biodiversity decline. They represent a region-wide response that is consistent with both national and state approaches.

For each priority action, time-bound management action targets and priority strategies have been identified. Lead partners may not necessarily deliver actions themselves, but will play an integral role in coordinating and supporting the achievement of the desired outcomes. This will involve extensive negotiation and liaison with government agencies, industry, land managers and community. The term landholders is used generically in this section and includes pastoralists, private, public and indigenous reserve managers, holders of mineral and petroleum tenements and tourism operators.

- Priority Action 1. Improving ecological knowledge, decision-making and capacity.
- Priority Action 2. Reducing the impact of climate change on biodiversity.
- Priority Action 3. Reducing the impact of invasive species on biodiversity.
- Priority Action 4. Reducing the impact of total grazing pressure on biodiversity.
- Priority Action 5. Reducing the impact of land use pressure on biodiversity.

The outcomes sought through this approach include:

- More effective management that will reverse any decline in extent and condition of populations and habitats of species and communities.
- Improved knowledge of biodiversity condition and status, and better informed decision-making for biodiversity conservation.
- Improvement in our preparation for the impacts of climate change on biodiversity.
- Engagement of the full capacity of governments, landholders, industries, non-government organisations and communities to conserve the biodiversity of the South Australian Arid Lands.

Priority Action 1:

Improving ecological knowledge, decision-making and capacity

Scope

We don't completely understand our native environments. In order to make the best decisions, we need to identify and fill the knowledge gaps and open up communication networks to collect and share biodiversity information.

Context

Targeted and effective decision-making relies on access to good information and knowledge. Extensive knowledge has been gained over the last 200 years through the experience of the indigenous and pastoral land managers and our ability to manage the biodiversity of the SAAL region has improved considerably, however there is still a great deal to learn. Sharing and easy access to this growing knowledge base is an important part of ongoing land management. This will involve extensive communication, cooperation, negotiation and liaison between government agencies, industry, land managers and community. Measuring trends in the distribution and abundance of species and communities, understanding the biological attributes important to their survival, and measuring the distribution, magnitude and impacts of key threatening processes are fundamental.

There are a range of factors which make the collection of this information difficult and expensive in the SAAL region. These include the huge geographic size, highly variable landscapes and the sparse human population. In addition, much biodiversity is sparsely distributed, and often only found following occasional and unpredictable rainfall. The frequency and seasonal timing of rainfall, the main driver of biological activity, is erratic and unpredictable.

A comprehensive science-based program of survey, research, and monitoring targeted to current and future priorities is essential. Also essential is the appropriate collection, storage, analyses, use and sharing of data. This will enable the region to build greater knowledge and understanding of its biodiversity, resulting in greater regional capacity to prioritise and make informed and effective management decisions.

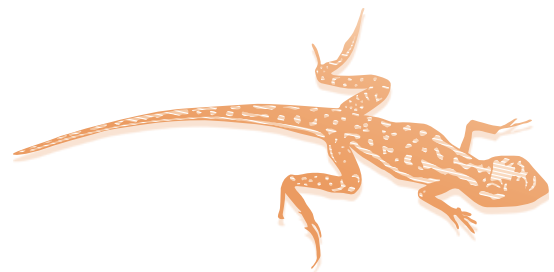
Desired outcomes

- Biodiversity conservation targets in place and guiding natural resources management.
- Biodiversity conservation and management activities underpinned by sound ecological knowledge, based on further scientific research where appropriate.
- Information widely accessible and biodiversity managers with the capacity to effectively share their skills and experiences with others.

Priority Action 1. Improving ecological knowledge, decision-making and capacity

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
1.1. By 2015, key knowledge gaps in baseline biodiversity information filled.	1.1.1. Complete biological surveys including water-dependent ecosystems for the Gawler, Finke, Simpson-Strzelecki Dunefields, Channel Country and unsurveyed areas in the Stony Plains Bioregion by 2015.	1,2	% area surveyed	DEH
	1.1.2. Complete vegetation mapping incorporating water-dependent ecosystems for the Gawler, Finke, Simpson-Strzelecki Dunefield, Channel Country and unsurveyed areas in the Stony Plains Bioregion by 2015.	1,2	% area mapped	DEH
	1.1.3. Survey, assess and define the environmental water requirements, of wetlands of national significance, including the Strzelecki Creek and Diamantina River Wetland System, Coongie Lakes, GAB Springs, and inland saline lakes by 2014.	1,2	% of wetlands of national significance with water requirements defined	DWLBC
1.2. By 2010, investment targeted towards management, recovery and reintroductions to halt the decline in species, ecological communities and ecological processes.	1.2.1. Develop, resource and implement projects to achieve conservation priority targets identified within the Channel Country, Flinders and Olary Ranges, Gawler, Simpson-Strzelecki Dunefields, Finke and Stony Plains bioregions – Ongoing.	1	% of Conservation Priorities Delivered	NRM/ DEH/ DWLBC
	1.2.2. Develop and implement a policy and guidelines for the strategic reintroduction of regionally extinct taxa into the South Australian Arid Lands by 2010.	2	Policy and guidelines completed	DEH
	1.2.3. Review prioritisation framework for conservation priorities in line with business planning and investment strategy process – Ongoing..	1	Annual review undertaken	NRM/ DEH/ DWLBC

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
1.3. By 2013, the ability to detect, report and halt any decline in species, ecological communities and ecological processes is improved.	1.3.1. Formalise process for identifying species and ecological communities that are declining but not threatened by 2010.	2	Process defined	DEH
	1.3.2. Commence monitoring to determine which species and ecological communities are declining based on the criteria developed in 1.3.1 by 2011.	2	# species and ecological communities assessed	DEH
	1.3.3. Incorporate the results of the investigations in 1.3.2 into the revision of the SAAL Biodiversity Strategy in 2013.	2	Results incorporated	DEH
1.4. By 2013, land managers have an increased ability to incorporate biodiversity stewardship into enterprise decision making.	1.4.1. Incorporate a landholder engagement and extension component into all biodiversity conservation related programs, projects and regional activities by 2014.	1,2,3	% projects	NRM
	1.4.2. Incorporate relevant information on conservation priorities into all Pastoral Lease Assessment reports and extension activities by 2010.	1,2,3	% Pastoral Lease Assessments	DWLBC
	1.4.3. Support research and projects that promote the understanding of the value of biodiversity and ecosystem services to natural resources management enterprises – Ongoing.	1,2,3	# of case studies	NRM



Priority Action 2:

Reducing the impact of climate change on biodiversity

Scope

The seasons and temperatures we have come to expect are changing. We need to minimise the risks and impacts to biodiversity from human induced climate change.

Context

Human induced climate change may significantly affect the biodiversity of the South Australian Arid Lands. Current research using modelled scenarios for the South Australian Arid Lands indicates that:

- By 2030, the annual temperature warms 0.6 to 1.5°C. In summer and spring, the warming is 0.6 to 1.7°C and in autumn and winter 0.5 to 1.5°C.
- By 2070, the annual temperature warms between 1.2 and 4.7°C. Summer warms by 1.3 to 5.1°C, spring warms by 1.3 to 5.3°C, autumn warms by 1.2 to 4.6°C and winter warms by 1.1 to 4.7°C.
- Annual rainfall changes by -9 to +1% by 2030 and -25 to +4% by 2070. Spring and winter rainfall strongly decreases while moderate decreases occur for summer and autumn.

These changes, including the increased potential for more extreme weather events are likely to impact the region's biodiversity through:

- Alteration in availability of water and nutrients within the landscape.
- Alteration to river flow, flood frequency, nutrient and sediment inputs.
- Alteration to fire regimes.
- Increased risk of pest plant and animal colonisation.
- Alteration to structure and composition of plant communities.

Just how the species and ecosystems of the South Australian Arid Lands will respond to these changes is uncertain. However, the region will be particularly vulnerable to climate change due to high levels of endemism and relatively little topographic relief. Patterns of biodiversity in the landscape may change over timeframes as short as decades. An important element of managing the potential risks of climate change will be to identify core areas and linkages that have the potential to be important in maintaining vulnerable species and increasing the probability of successful migration of those species whose distribution will change. We must build upon existing programs to retain and restore biodiversity by promoting voluntary partnerships between all stakeholders to develop strategic core area and linkage networks.

We must also integrate climate change into all natural resources management planning by ensuring strategies for managing the impacts of climate change are updated as new and more accurate information becomes available.

Desired outcomes

- Priority research and monitoring programs in place, including vulnerability assessments, to enhance understanding of how biodiversity will respond to the combined impacts of climate change and other threats to biodiversity.
- Adjustment strategies based on vulnerability assessments in place to manage the risks from climate change to our native biodiversity.
- Adequate core areas connected by linkage networks allowing species and communities to move and adapt to the effects of climate change.

Priority Action 2. Reducing the impact of climate change on biodiversity

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
2.1. By 2010, understanding of the potential impacts of climate change on biodiversity improved.	2.1.1. Identify species, communities and ecological processes (eg. catchment hydrology) that may be particularly vulnerable to the impacts of climate change by 2010 and review biennially.	1,2,4	# species, communities, and ecological processes evaluated	DEH
	2.1.2. Identify where there is insufficient information available to undertake a climate risk analysis for species, communities and ecological processes and develop and implement a research agenda by 2010.	2	Research Prospectus completed % of species, communities, and ecological processes the target of research	DEH
2.2. By 2013, climate change factored into all natural resources management planning and implementation programs.	2.2.1. Incorporate the results of the climate change risk analysis in determining conservation priorities during the revision of the SAAL Biodiversity Strategy in 2013 and SAAL NRM Comprehensive Plan.	1,2,4	Results incorporated	DEH
	2.2.2. Support initiatives that promote preparedness and responsiveness to drought on pastoral properties – Ongoing.	1,2,3,4	# initiatives	DWLBC/ NRM
2.3. By 2017, the capacity of terrestrial and aquatic ecosystems to adapt to climate change increased.	2.3.1. By 2017 further develop the public, private and indigenous protected area network to ensure that: <ul style="list-style-type: none"> – 80% of all IBRA subregions are represented; – All nationally threatened ecosystems are adequately represented; – All provisionally listed state threatened ecosystems are represented; – 50% of South Australian Arid Land endemic species are represented. 	1,2,3,4	% of IBRA subregions represented; % of nationally threatened ecosystems adequately represented; % of provisionally listed state threatened ecosystems represented; % of South Australian Arid Land endemic species represented	DEH/ NRM
	2.3.2. Establish a linkage network, including three NatureLinks corridors, to maximise ecological outcomes particularly for climate change by 2014.	4	# of linkage networks with objectives defined	DEH/ NRM
	2.3.3. Incorporate conservation priorities identified in SAAL Biodiversity Strategy into protected area management programs by 2010.	1,2,3,4	% of conservation priorities incorporated into programs	DEH

Priority Action 3:

Reducing the impact of invasive species on biodiversity

Scope

Invasive species continue to be a major threat to the regions biodiversity. We need to minimise the risks and impacts to biodiversity from invasive species (pests and pathogens of terrestrial animals and plants, aquatic pests and pathogens, terrestrial and aquatic weeds, and invasive vertebrate and invertebrate animal species).

Context

Over the past 150 years, invasive species such as rabbits, foxes, cats and a multitude of weeds, have contributed substantially to the decline and in many cases the extinction, of species and ecosystems in the SAAL region. Many of these invasive species continue to be a major threat to biodiversity. The introduction of new invasive species from other regions and overseas is a further threat.

It is important to consider the management of invasive species at both regional and species/ecosystem level. At the regional level the *South Australian Arid Lands Pest Management Strategy 2005-2010* provides the key direction. Whilst the pest management strategy describes management actions to address the impacts of pest plants and animals, there is also a need to better address the potential impacts of pathogens and invertebrate pests.

At the species/ecosystem level, the conservation priorities outlined in Volumes 2-6 of the SAAL Biodiversity Strategy identify native species and communities at risk from the impacts of invasive species, and describe mitigation strategies and actions required to reduce these risks.

Many invasive species of concern within the SAAL region are also a concern at State and National level. For these species, it is important that the SAAL region contribute to combined efforts across NRM and State borders to manage these threats. This can only be achieved through communication, collaboration, leadership, support for research and the development of improved management.

Pest management strategies need to be clear in their biodiversity outcomes to ensure that pest control is effective in enhancing the biodiversity of the South Australian Arid Lands.

Desired outcomes

- Ability to monitor and determine threat mitigation thresholds for prey and pest species enhanced.
- Broad-scale control methods of introduced fauna populations enhanced.
- The impact of existing pest species reduced for priority fauna and flora populations.
- Regional capacity to prevent, detect, manage and eradicate new species introductions is enhanced.

Priority Action 3.

Reducing the impact of invasive species on biodiversity

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
3.1. No new pest species become established in the South Australian Arid Lands from 2010	3.1.1. Implement actions from the State Biosecurity Strategy and the State NRM Plan that are relevant to the region – Ongoing.	1,2,3,4	% Completed	NRM
3.2. There is a net reduction in the impact of established pest species on natural systems by 2018	3.2.1. Establish biodiversity indicators for pest management activities where biodiversity outcomes are sought by 2012.	1,2,3,4	% of pest management activities targeting biodiversity outcomes with biodiversity indicators	DEH/ NRM
	3.2.2. Support ongoing and new research into the ecology and management of priority biosecurity threats (such as cats, foxes, rabbits and Weeds of National Significance) to the region – Ongoing.	1,2,3,4	# research programs	NRM



Priority Action 4:

Reducing the impact of total grazing pressure on biodiversity

Scope

Minimise the risks and impacts to biodiversity from excessive total grazing pressure (the combined impacts of domestic, feral and native herbivores).

Context

Total grazing pressure refers to the combined contribution of all herbivores, including domestic stock, feral animals and native herbivores. Grazing by domestic stock on pastoral leases is managed and monitored using criteria developed under the Pastoral Land Management and Conservation Act 1989. At a practical level, pastoralists have developed infrastructure, management systems and markets to improve domestic livestock management. Management of feral herbivores is regulated through the Natural Resources Management Act 2004, and the *South Australian Arid Lands Pest Management Strategy 2005-2010* provides important regional direction. Regulation of native herbivores occurs through the National Parks and Wildlife Act 1972.

Excessive total grazing pressure affects biodiversity through:

- reduction or increase in native plants through preferential grazing.
- loss of habitat and reduction in suitable habitat for plants and animals.
- soil erosion, compaction, loss of soil nutrients and breakdown of soil structure.
- increased potential for weed invasion, including “woody weeds”.
- changes in vegetation community structure from perennial to ephemeral or annual species.

Management of total grazing pressure in the South Australian Arid Lands has improved significantly over the past 50 years. Improvements have come about through a combination of better feral animal management, improved management of livestock and distribution through fencing, utilisation of road trains to rapidly remove livestock during dry periods, and a general improvement in understanding the dynamics of arid landscapes.

Improving access to new technologies, sharing information, and the adoption of ‘best practice’ by all land managers will significantly improve the management of total grazing pressure.

Desired outcomes

- Reduced impacts of excessive total grazing pressure on biodiversity.
- Organisations working co-operatively to facilitate the management of total grazing pressure for biodiversity conservation outcomes.
- Total grazing pressure thresholds, and the contribution of individual species, identified for conservation priorities where excessive total grazing pressure is a major threat.
- Pastoral managers broadly applying best practice grazing strategies as an element of total grazing pressure management.
- Kangaroo industry increasingly recognised for conservation and commercial viability.

Priority Action 4.

Reducing the impact of total grazing pressure on biodiversity

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
4.1. By 2013, the capacity to prevent, or minimise the impacts of excessive total grazing pressure on the environment is improved.	4.1.1. Undertake land type and biodiversity analysis in consultation with pastoralists, to identify areas within the landscape most at risk of resource degradation and biodiversity loss by 2012.	1,2,3,4	% bioregion completed # bioregions completed	DWLBC/ DEH
	4.1.2. Working in partnership with the community, develop a duty of care as defined in the Natural Resources Management Act 2004 as 'general statutory duty', for all land managers based on performance indicators to manage excessive total grazing pressure by 2013.	1,2,3,4	% landholders	DWLBC
	4.1.3. Support collaborative research to investigate the economic and biodiversity benefits of alternative grazing strategies to achieve the conservation outcomes identified in the SAAL Biodiversity Strategy – Conservation Priorities by 2013.	1,2,3,4	# research programs	DWLBC
4.2. By 2013, Integration and linkages exist between total grazing pressure management and biodiversity conservation outcomes.	4.2.1. Strengthen institutional arrangements between the SAAL NRM Board, Pastoral Board and DEH Abundant Species Unit, to review and improve total grazing pressure management by 2011.	1,2,3,4	% programs incorporating all elements of TGP	NRM/ DWLBC/ DEH
	4.2.2. Ensure kangaroo management integrated into total grazing management programs by increasing the involvement of landholders in the sustainable harvest of kangaroos by 2012.	1,2,3,4	% landholders involved in industry	DEH
	4.2.3. By 2013, incorporate introduced pest herbivores including rabbits into integrated total grazing pressure management programs through: <ul style="list-style-type: none"> – Developing objective measures to account for impact of all herbivores in setting stock maxima. – Supporting strategic research to explore the impact of introduced pest herbivores on pastoral production and biodiversity. 	1,2,3,4	# research programs	DWLBC/ NRM

Priority Action 5:

Reducing the impact of land use pressure on biodiversity

Scope

Minimisation of the risks and impacts to biodiversity from land use pressure due to pastoralism, conservation, mining, petroleum and tourism industries, and the issues associated with these land uses, including Dingoes and alteration to natural water flows.

Context

By area, the pastoral industry is the dominant land use in the region, followed by land managed for conservation, mineral and petroleum exploration and extraction, tourism, transport infrastructure and urbanised areas. Individual land uses result in disturbance that varies in intensity through both space and time. The management of land use pressure in the South Australian Arid Lands is fundamental in ensuring both economic and environmental sustainability over the long term. Individual land use developments at the local scale have, in isolation, relatively little impact on biodiversity. However, it is the cumulative effects of land use pressures across the landscape – death by a thousand cuts – that can have serious consequences on biodiversity.

Achievement of sustainability requires adoption of “best practice” and application of Ecologically Sustainable Development (ESD) principles across all land uses. A key objective of all development should be to ensure that disturbance associated with it, (e.g. borrow pits acting as water points) does not significantly affect biodiversity. The maintenance of biodiversity requires that a range of disturbance regimes be maintained to allow for the spatial and temporal variation in disturbance that favours different species at different times. One practical measure to achieve this is to allocate certain portions of the landscape to disturbance classes so that the direct and secondary impacts (e.g. grazing pressure) of development are accounted for.

This enables development activities to account for:

- Vegetation communities and species at the extent of their range.
- Vegetation communities and species that only occur in isolated locations.
- Vegetation communities and species that are subject to disturbance across most of their range.
- Vegetation communities that provide important habitat linkages.
- Vegetation communities and species that are threatened or declining.

Desired outcomes

- All natural resources and land use managers understand and apply ecologically sustainable development principles.
- Resource and land use planning fully consider biodiversity conservation and act to maintain landscape complexity.
- Land managers have an improved understanding of the regional significance of local actions on biodiversity.

Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) and its core objectives and guiding principles are defined in the *National Strategy for Ecologically Sustainable Development* (1992) as: "using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased."

Core Objectives of ESD

- to enhance individual and community wellbeing and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations; and
- to protect biological diversity and maintain essential ecological processes and life-support systems.

Guiding Principles of ESD

- decision making processes should effectively integrate both long and short term economic, environmental, social and equity considerations;
- where there are serious or irreversible environmental threats, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- the global dimension of environmental impacts of actions and policies should be recognised and considered;
- the need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised;
- the need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised;
- cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms; and
- decisions and actions should provide for broad community involvement on issues which affect them.

These guiding principles and core objectives need to be considered as a package. No objective or principle should predominate over others. A balanced approach is required that takes into account all these objectives and principles to pursue the goal of ESD.

Priority Action 5.

Reducing the impact of land use pressure on biodiversity

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
5.1. By 2010, the protection of biodiversity and ecosystem processes at a regional scale incorporated into the planning and development process	5.1.1. Incorporate the conservation priorities of the <i>South Australian Arid Lands Biodiversity Strategy</i> into the Far North Regional Land Use Framework and protected area management plans – Ongoing.	1,2,3,4	Incorporation of conservation priorities into FNRLU Framework % protected area management plans	Planning SA/ DEH/DWLBC
5.2. By 2010, all water resources managed within ecologically sustainable limits	5.2.1. Develop and implement policies and programs to ensure that the water needs of the environment identified in Strategy 1.1.3 are provided for in water resource allocation and management and land use planning decisions – Ongoing.	1,2,3,4	% Policies and programs	NRM/ DWLBC
5.3. By 2010 mining and petroleum operators and Government agencies provide significant regional environmental benefit delivering multiple outcomes	5.3.1. Ensure activities authorised under the <i>Mining Act 1971</i> or the <i>Petroleum Act 2000</i> demonstrating Significant Environmental Benefit under the <i>Native Vegetation Act 1991</i> , address the conservation priorities of the <i>South Australian Arid Lands Biodiversity Strategy</i> – Ongoing.	1,2,3,4	% of activities	PIRSA/ DWLBC
5.4. By 2010, a sustainable tourism industry will be applying best practice standards for nature-based tourism and delivering multiple outcomes	5.4.1. Continue to inform and implement 'best practice' standards for nature-based tourism in the South Australian Arid Lands – Ongoing.	1,2,3,4	# industry-accredited nature-based tourism products	SATC/DEH/ NRM

Management action targets	Actions	Relevant resource condition targets	Performance information	Lead partner
5.5. By 2014, development of infrastructure occurs following ESD principles	5.5.1. Establish parameters and disturbance thresholds for each land type identified in Strategy 4.1.1 by 2013.	1,2,3,4	% IBRA subregions	DWLBC/ NRM
	5.5.2. Ensure activities authorised under the <i>Mining Act 1971</i> , <i>Petroleum Act 2000</i> , <i>Mine and Works Inspection Act 1920</i> , <i>Pastoral Land Management and Conservation Act 1989</i> , <i>Development Act 1993</i> , <i>National Parks and Wildlife Act 1972</i> and <i>Natural Resources Management Act 2004</i> do not exceed disturbance thresholds determined by Strategy 5.5.1 by 2014.	1,2,3,4	# disturbance thresholds exceeded	NRM/PIRSA/ DWLBC/ DEH/ Planning SA/ DTEI
	5.5.3. Reduce artificial sources of water in reserves within the South Australian Arid Lands by undertaking an audit by 2012 and rationalising water sources through reserve management planning by 2013.	1,2,3,4	% reserves audited % reserve management plans reviewed	DEH
	5.5.4. Ensure relevant NRM Board and Pastoral Board policies incorporate the MATs, strategies and conservation priorities of the SAAL Biodiversity Strategy by 2010.	1,2,3,4	Policies amended	NRM/ Pastoral Board
5.6. By 2015, there is improved understanding of the ecological role of dingoes leading to better management of Dingo populations	5.6.1. Support research to better understand the interactions of Dingoes with introduced predators, including predation, competition with foxes and cats, and the regulation of herbivore populations by 2014, and use the new understanding to review triggers and thresholds for the Dingo management program.	1,2	# research programs, objective triggers and thresholds informing Dingo management programs and policies	NRM



Monitoring, reviewing and reporting performance

Monitoring and reviewing is an ongoing process undertaken by lead agencies to measure the effectiveness of the Strategy in achieving its goal and improving the state and condition of biodiversity in the South Australian Arid Lands. Both the SAAL NRM Board and the Department for Environment and Heritage are jointly responsible for evaluating the effectiveness of this Strategy that contributes to the SAAL NRM Plan and No Species Loss – A Nature Conservation Strategy for South Australia.

Monitoring and reviewing needs to happen at two levels.

At Strategy level, reviews are aimed at measuring the effectiveness of the Strategy in achieving its goal of improving the condition of biodiversity in the SAAL region.

This process will occur annually through budgeting and business planning, every three years through the further development of business plans and in 2019 through a review of the region-wide Strategy.

A five-year review and evaluation will be undertaken of the bioregional conservation priorities (Volumes 2-6) in 2014, and DEH will assess and report on overall progress towards the region-wide actions and bioregional conservation targets. The success of the South Australian Arid Lands Biodiversity Strategy will be assessed by evaluating three components:

- the state and condition of the conservation priorities will be evaluated by collecting information and reporting on the condition of each priority, based on performance information;
- success in achieving the Strategy’s goal to “Conserve the Biodiversity of the South Australian Arid Lands” will be evaluated using progress towards the four resource condition targets; and
- the operational performance of the Strategy will be evaluated with respect to how and to what extent actions have been implemented.

At project level, in the implementation of actions associated with specific conservation priorities, there will be a range of performance indicators that become important. These depend on the specific objectives of the individual projects.

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Glossary

Arid: Refers to climates or regions that lack sufficient rainfall for crop production or extensive sown pastures. Usually defined as a climate with annual average rainfall less than 250 mm (10 inches).

Biodiversity: The variety of life forms: the different plants, animals and micro-organisms; the genes they contain; and the ecosystems they form.

Bioregion: Extensive (continental scale) regions distinguished from adjacent regions by their broad physical and biological characteristics.

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

Decreaser Species: A species that decreases in abundance in areas of high grazing pressure, generally in proximity to water.

Drought: An extended period of abnormally dry weather that causes water shortages under normal usage conditions. There is no definitive threshold, and what is perceived as drought in one area for one land use may not be considered drought somewhere else. Governmental "drought assistance" is a response to the social and economic impact of extended dry periods and eligibility criteria cover more than purely climatic factors.

Ecological Community: A characteristic suite of interacting species that are adapted to particular conditions of soil, topography, water availability and climate.

Ecological Processes: Dynamic interactions that occur among and between biotic (living) and abiotic (non-living) components of the environment.

Ecosystem: A dynamic complex of plant, animal, fungal and micro-organism communities and the associated non-living environment interacting as an ecological unit.

Endemic: Exclusively native to a specified region or site.

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.

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

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

IBRA bioregion: Interim Biogeographic Regionalisation for Australia regions.

IBRA subregion: A subdivision of a bioregion based on broad physical and biological characteristics; a system of related and interconnected landsystems within an IBRA region.

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

Increase Species: A species that increases in abundance in areas of high grazing pressure, generally in proximity to water.

Invasive Species: Any animal pest, weed or disease that can adversely affect native species and ecosystems.

Landform: Any of the numerous features that make up the surface of the earth, such as plain, plateau, dune or canyon.

Landscape: A heterogeneous area of land or sea that is of sufficient size to achieve positive results in the recovery of species or ecological communities, or in the protection and enhancement of ecological and evolutionary processes.

Landsystem: A group of local ecological communities derived from a landscape pattern of related and interconnected local ecosystems within a subregion.

Native Species: A plant or animal species that occurs naturally in South Australia.

Nature-based Tourism: any sustainable tourism activity or experience that relates to the natural environment, whether for relaxation, discovery or adventure.

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.

Refuge: A region, or habitat, where organisms are able to persist during times when most of their original geographic range is uninhabitable.

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

Sustainable: The use of resources or components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

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.

Threatened Species or Ecological Communities: A species or ecological community that is vulnerable or endangered.

Threatening Processes: The dominant limiting factors and constraints to the ongoing conservation of biodiversity.

Woody Weed: Tree or woody shrub which is growing outside its normal habitat. It can be introduced or native, and includes increaser species that can become invasive under some management or disturbance conditions.

Abbreviations

DEH	South Australian Department for Environment and Heritage
DWLBC	South Australian Department for Water Land and Biodiversity Conservation
EPBC	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
GAB	Great Artesian Basin
IBRA	Interim Biogeographic Regionalisation of Australia
NPW	National Parks and Wildlife
NRM	Natural Resources Management
PIRSA	Primary Industries and Resources South Australia
SAAL	South Australian Arid Lands
SATC	South Australian Tourism Commission

Department for Environment and Heritage (2009)
South Australian Arid Lands Biodiversity Strategy –
Region-wide Priority Actions,
South Australian Arid Lands NRM Board,
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Designed and produced by Corporate Communication Branch, DEH.
ISBN 978 1 921466 92 2
FIS 90326 • June 2009



**Government
of South Australia**

Department for
Environment and Heritage

South Australian Arid Lands
Natural Resources Management Board