



SOUTH AUSTRALIA IN A CHANGING CLIMATE:
A BLUEPRINT FOR A SUSTAINABLE FUTURE

BIODIVERSITY IN A CHANGING CLIMATE

CCSA'S BIODIVERSITY VISION:

CCSA envisages a future where biodiversity is recognised as a key driver in all levels of decision making. Biodiversity is critical to human aspirations and would be valued accordingly, as evidenced by significant investments in adaptation activities across public and private land to build resilience to climate change. We would have the knowledge and tools for sound decision making as it affects biodiversity, with the community engaged in biodiversity management as part of their daily lives. Indicators of biodiversity health would be on an upward trend.

Biodiversity: The variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species [genetic], between species and of ecosystems⁵.

Current biodiversity trends

As an island nation, Australia has a high proportion of species that occur nowhere else on earth. Within the large expanse of South Australia we have an impressive range of diverse ecosystems, from water-dependent swamps, to our spectacular arid lands in the Red Centre, and everything in between. The value of biodiversity extends beyond the intrinsic value of the conservation of species and the need to maintain ecosystem services. It also provides us with the resources for major activities such as tourism and recreation, nature conservation, pastoralism, agriculture, horticulture and forestry, which all benefit from healthy ecosystems.

On a global scale, species extinction rates have increased by 1000 times over background rates, dramatically impacting genetic diversity. Studies have estimated that 10-30% of the world's mammal, bird and amphibian species are now threatened with extinction⁶. The number of South Australian plants, animals and ecological communities at risk of becoming extinct is increasing exponentially⁷. The Millennium Ecosystem Assessment chillingly concluded that unless we take action to mitigate current rates of decline in ecosystem services, the costs to society will be substantial⁸.

In South Australia we have amongst the highest extinction rates in the world⁹. Recovery efforts have increased significantly across the state, but nevertheless remain less than the effort required to minimise the potential for species loss¹⁰. We are losing genetic diversity and our natural heritage. Past practices born of good intentions but imported from very different landscapes have taken an enormous toll on our native flora and fauna. We have lost huge swathes of habitat, which realistically will never be returned to their original form. Special remnant pockets exist, but they are often marooned by intensive development, both urban and rural.

Introduced species are widely recognised as one of the greatest threats to biodiversity¹¹. The 2008 State of the Environment Report has identified that the abundance of feral rabbits, cats, camels and goats in South Australia is continuing to increase. We are making progress with the increase of the area of land under protected status, yet indigenous revegetation activity continues to decrease. This is alarming as native vegetation provides vital habitats for native animals, prevents soil erosion, guards against soil salinity and is the basis for healthy catchments.



Biodiversity in a changing climate

Climate change will have an impact on all aspects of life in South Australia. However, impacts that are social and economic in nature, pertaining directly to the wellbeing of our own species, tend to receive priority¹². Thousands of Australia's native animals, birds and plants are facing extinction with nearly 3000 unique natural habitats disappearing, taking more than 1500 species with them¹³. Failure to acknowledge the value of our natural systems has left us with a legacy of environmental problems that will ultimately have a significant impact on our social and economic health.

It is not only our plants and animals that are at stake. Our way of life and livelihoods depend on healthy, functional ecosystems. We only have to look at the decline of the River Murray to see how much value an ecosystem adds to our economy. While we have learned a great deal from past mistakes, and are trying to change our ways, new challenges have presented themselves. Our climate is changing at an unprecedented rate and the fragmentation of habitats means species do not always have the ability to move to cooler climates.

Climate change has been recognised as the increasingly prominent direct driver of change within ecosystems. Currently in South Australia we do not have the systems in place to protect our species and ecosystems from further dramatic decline caused by climate change. This is of concern to CCSA as climate change has the

potential to fundamentally re-shape our environmental, social, and economic landscapes, accelerating losses of biodiversity worldwide; changing productivity and distribution of habitat; causing sea level rise; and increasing the prevalence of pests and disease.

What are the key biodiversity issues in South Australia?

Much of South Australia's economy is based on the use of biological resources and the need to maintain ecosystem services. Our primary production systems require biodiversity for pest control/management, soil conservation, enhanced productivity and stabilisation, pollination, salinity amelioration, and water purification.¹⁴ This should motivate even the solely economically driven to take an interest in preserving South Australia's biodiversity.

South Australia's biodiversity is declining at an alarming rate. It may take millions of years for biodiversity to recover from the impacts of European settlement over the last 200 years. In South Australia key threats to biodiversity include pollution, invasive species, land clearance, clearance of remnant native vegetation, and subsequent fragmentation of flora and habitat for native fauna species.

Other key threats to South Australia's biodiversity in our state include:

- habitat fragmentation from development
- predation and competition for food, shelter and resources from introduced flora and fauna
- introduced disease
- collection of firewood from remnant vegetation
- altered fire regime
- inappropriate grazing/overgrazing
- inappropriate management activities including the destruction of riparian habitat for the sake of flood management or water extraction
- water pollution
- climate change effects including increasing oceanic temperatures and acidification.

Changing the future - new ways forward

To prevent extinction rates and general dieback escalating dramatically, we have to turn our attention to this situation urgently. We must make substantial investments to protect our natural heritage. In short, we must act now and we must act together to seek solutions.

To address and reverse current biodiversity trends our society must recognise, understand and value biodiversity. Land managers, indigenous communities, local industries, government and the broader community value biodiversity in different ways. However, we must work together in a coordinated approach to conservation and management of biodiversity for outcomes to be effective and to ensure the continuation of these values for the wellbeing of future generations. Biodiversity values vary across many interest areas and may include:

- maintenance of the life cycles of all species
- production value for the provision of food, medicines, clothing and building materials consumed by society
- the maintenance of ecosystem services which affect the natural storing and cycling of nutrients, stabilising soil formation, protection of water resources and breakdown of pollution, and maintenance of biodiversity and environmental flows
- socio-economic value for recreation, research, education and monitoring, and cultural values
- future value to maintain the capacity to identify future direct or indirect utilitarian value
- the economic value and ongoing productive capacity of existing systems.

Investing in biodiversity is essential to maintain ecosystem services and in turn provide dividends resource availability and to human health and wellbeing. Policies and regulations must ensure all stakeholders are accountable for their environmental footprint and role in implementing change for the future protection of our state's



biodiversity. Ongoing monitoring must become standard practice to ensure that money and materials are accounted for in achieving biodiversity outcomes.

Management plans which include actions that encourage natural ecosystem services such as biosequestration (through which plants absorb atmospheric carbon dioxide) are important. This may include maintaining original native ecosystem zones, establishing tree-planting programs or carbon sequestration forest sinks, increasing energy efficiencies or increasing renewable energy generation. Restoration of degraded riparian and wetland habitats should be seen as investments in a healthy future.

The South Australian Government has recognised the significance of biodiversity through integrated approaches such as the National Strategy for the Conservation of Australia's Biological Diversity, a joint initiative of the Commonwealth, state and territory governments. The South Australian Government has also implemented its own biodiversity focused strategies including No Species Loss, NatureLinks, Tackling Climate Change, and the State Strategic Plan. It is also facilitating the development of regional biodiversity plans. However, for these plans and strategies to be effective, actions for conservation, management and awareness raising must be backed by political will, improved and enforceable legislation, and be targeted and supported financially.

RECOMMENDATIONS

Adequate biodiversity protection in state and national legislation

1. Nature conservation legislation in South Australia is inadequate in its current form. It must be clear and accountable and must be reviewed, strengthened and recognised across other statutes to maximise biodiversity outcomes and deliver No Species Loss.

- 1.1. A statutory listing process with public nominations, threatened ecological communities, recovery and threat abatement plans should be recognised under South Australian legislation, noting that recognition could avoid duplication by formally recognising processes under the *Environment Protection and Biodiversity Conservation Act 1999*.
- 1.2. The No Species Loss Strategy should be recognised in statutes.
- 1.3. Perverse incentives which work against biodiversity conservation should be identified and removed from South Australian legislation.
- 1.4. *Native Vegetation Act 1991* exemptions should be tightened and simplified to improve clarity.
- 1.5. Greater referrals mechanisms across South Australian legislation are required to ensure that the best available information guides decision making.
- 1.6. Enabling legislation is required to ensure that biodiversity considerations such as listed species and reserve management plans are adequately considered under other legislation, to ensure biodiversity policy is delivered.
- 1.7. Impacts of plantation forestry need to be accounted for and managed under South Australian legislation.
- 1.8. South Australian legislation should define general statutory duty in relation to biodiversity.
- 1.9. The community's rights to participate should be strengthened through third party appeal and enforcement rights, in particular under the *Native Vegetation Act 1991*.
- 1.10. Introduced freshwater fish species need to be recognised under the provisions to regulate pests under Natural Resource Management (NRM) legislation.

2. Biodiversity must be the key driver of decision-making under the Commonwealth *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*, the primary piece of federal legislation dealing with nature conservation. The full suite of instruments within the Act must be used to effectively address root causes of biodiversity decline and provide maximum outcomes for species protection and recovery. Investment must be made to foster effective community engagement and partnerships for more cost effective delivery of the Act.

- 2.1. The objects of the *EPBC Act 1999* must be amended to require 'protection' of the environment and to 'conserve biodiversity'.
- 2.2. Mechanisms need to be identified to demonstrate implementation of 'Ecological Sustainable Development' in decision-making.
- 2.3. The Act should be amended to include further triggers (e.g. for greenhouse gas emissions, broad scale vegetation clearance, and unsustainable ground and surface water use).



- 2.4. Any bilateral assessment agreement should ensure that the proper procedures for assessment match or exceed the requirements under the Act and that procedures under the *State Development Act 1993* such as the major development procedures not be used. To this end the current South Australian bilateral agreement should be reviewed as a matter of urgency.
- 2.5. Instruments such as strategic assessments, bioregional and recovery plans under the *EPBC Act 1999* must be used in a proactive and complementary manner to address threats to biodiversity at a range of scales.
- 2.6. Recovery plans to address site and landscape based threats to species, their associated species and habitats, need greater support.
- 2.7. A greater number of policy statements for listed species and common development threats should be developed to establish best practice.
- 2.8. Mechanisms for speeding up assessment of nominations for listing under the *EPBC Act 1999*, perhaps through bulk listings, should be explored.
- 2.9. All community nominations eligible for assessment should be assured consideration and not subject to the 2006 amendments.
- 2.10. Provision for the protection of critical habitat should be clarified and strengthened.
- 2.11. The condition class assessment as it applies to listed Ecological Communities should be reviewed as inconsistent with a recovery approach.
- 2.12. Mechanisms to engage state/territories and community across the full scope of the Act should be identified and supported, including reinstatement of the EPBC Community Unit or equivalent service.
- 2.13. The scope for third party enforcement should be broadened and explored.
- 2.14. Rights to appeal the merits of Ministerial decisions to the Administrative Appeals Tribunal should be reinstated.



Climate change adaptation

3. SA needs to develop and implement a climate change adaptation strategy, based on the Tackling Climate Change Strategy, where building biodiversity resilience is a key driver. Climate change mitigation strategies should seek to build biodiversity resilience where possible and minimise risk.
 - 3.1. Revenue collected from carbon trading should contribute to biodiversity conservation and adaptation to climate change.
 - 3.2. The 'developmental' State Strategic Plan target for adaptation to climate change must be progressed, with a strong focus on biodiversity resilience in time for adoption under the next review of the Plan.

Increased resources

4. Significantly increased resources are required to better manage threats to South Australian biodiversity on both public and private land, undertake research and development, effectively evaluate management efforts and where possible achieve multiple outcomes at minimal risk to biodiversity.
 - 4.1. Increased investment is required in the following areas as a matter of urgency:
 - ensuring information is accessible to decision makers and the wider community
 - delivering effective monitoring and enforcement of compliance and offsets under legislation
 - monitoring the effectiveness of policy and planning and their implementation
 - delivering adequate management of biodiversity both outside and within the reserve system including reserve acquisition (to meet CARRS targets)
 - increasing incentives to manage, restore and expand protected areas on private lands for landscape biodiversity outcomes
 - increasing resources to fund biodiversity objectives driven by NRM and guarantee NRM funding provided by the state at levels equal to or exceeding matching investment provided by the state under the Natural Heritage Trust 2.
5. State government must promote and facilitate investment in South Australia's biodiversity by international, national and local philanthropic organisations, industry and agencies, building investment partnerships. Greater investment is required to foster community partnerships and ensure community groups can access funds, as they drive the biodiversity dollar further.



6. Integrated decision-making across projects, programs, planning, policy, legislation and monitoring and evaluation should be supported by greater investment in a series of informal and formal links, referrals, cross-government agreements and delivery strategies, and partnerships.
 - 6.1. Pest, forestry and fire management needs to be integrated across both public and private lands, based on sound ecological guidelines and to maximise natural resource outcomes including biodiversity.

Research & development, monitoring and evaluation

7. Information to guide biodiversity conservation must be expanded, improved and made accessible to all stakeholders.
 - 7.1. Mechanisms to share, access and correctly apply data and information held across all levels of government, Aboriginal communities, non-government organisations and the wider community need to be enhanced and where appropriate, formalised.
8. South Australia needs a suite of indicators for evaluating biodiversity resilience, with sound baseline data and long-term ecological monitoring in place to effectively evaluate trends and progress against management efforts. Increased research and development is required in the following areas as a matter of urgency:
 - increasing understanding of biodiversity baselines, effective indicators and ecosystem services
 - comprehensive baseline information relating to the extent and condition of biodiversity, ecological communities and species including satisfactorily completing the SA Biological Survey program
 - defining effective biodiversity management, the impacts of threats such as pests, plantation forestry and fire, and designing integrated threat abatement techniques including revegetation and large scale restoration and management techniques
 - fire management based on sound ecological guidelines with clear links between reserve and district fire planning mechanisms
 - supporting and/or establishing long-term ecological monitoring to identify changes over time.



Community, education and partnerships

9. Government has key roles to undertake best practice engagement and consultation with its own processes and to facilitate and support partnerships between stakeholders (including industry, communities and NGOs) to achieve biodiversity outcomes.

- 9.1. Large scale restoration efforts, such as NatureLinks, require genuine contributions from and partnerships between all levels of government, NRM bodies, land managers, Aboriginal communities, the wider community and environmental NGOs to work.
- 9.2. Mechanisms must be in place to ensure community groups are fully aware of the support systems and resources available to community groups in South Australia.

10. Environmental education both within and outside the formal education sector provides unique opportunities to connect the public to the importance and value of biodiversity and its delivery should be further supported and strengthened. Opportunities to learn about sustainable lifestyles and landscapes through participation in local biodiversity conservation initiatives should be promoted.

- 10.1. Stronger partnerships should be developed between educators, scientists, business, policy makers and practitioners.

Protected areas

11. Biodiversity outcomes potentially provided through the reserve system for both park assets and the broader landscape should be optimised.

- 11.1. Legislative protection for biodiversity within all classifications of reserves must be strengthened.
- 11.2. Strategic acquisition should be undertaken to meet objectives for a comprehensive, adequate and representative reserve system, including a minimal 30% representative protection that is resilient to climate change.
- 11.3. Greater investment is required in management in all reserves to maintain, protect and restore biodiversity assets both in reserves and across the wider landscape.
- 11.4. Impacts of mining exploration and production both in and adjacent to reserves must be minimised, with certain mining practices such as long-wall mining being discontinued unless absolute safeguards can be put in place.
- 11.5. Further opportunities to manage reserves under cooperative management arrangements with Aboriginal communities must be sought.



- 11.6. The community must be effectively engaged to promote education and ensure sustainable use.
- 11.7. The Classification Review for Protected Areas must be completed in consultation with the community and implemented.
- 11.8. There must be greater implementation of provisions for achieving biodiversity conservation under the *Wilderness Protection Act 1992*.
- 11.9. The potential for aquatic protected areas should be investigated, to ensure the state's reserve system adequately caters for freshwater biodiversity.
- 11.10. Ensure unallocated Crown Land is managed as an asset and contributes to broader biodiversity landscape outcomes.

Incentives

12. South Australia needs to develop a transparent framework of incentives to support and develop sustainable practices and stewardship activities for biodiversity assets on private land, with payments proportional to outcomes. The framework should include stewardship payments, industry incentives and biodiversity credits.

- 12.1. Greater incentives are required to manage, restore and expand the network of protected areas on private lands for biodiversity outcomes.

Management of fire and riparian systems

13. South Australia's management of fire and water must be world's best practice with biodiversity conservation as a key driver.

- 13.1. Fire and water management must be planned at the landscape scale with regard to biodiversity assets and be integrated across both public and private land.
- 13.2. Fire and water management should include biodiversity impact assessment based on robust science and the Precautionary Principle used where scientific uncertainty prevails.
- 13.3. Fire and water management should be undertaken within an adaptive management framework.
- 13.4. Greater investment is required to better understand appropriate fire and water management regimes to maintain biodiversity resilience in South Australia as a matter of urgency.
- 13.5. Greater integrated planning of land management including weed abatement, biodiversity assets and fire management is necessary to achieve sustainable biodiversity outcomes while managing the risks posed by bushfire. For example, targeting woody weeds would improve biodiversity outcomes and reduce bushfire threats, and could be achieved via partnerships between the Country Fire Service (CFS) and the NRM system to educate and train residents or via targeted funding for Bushcare groups.
- 13.6. The 'Ecological Fire Management Guidelines' for the South Australian 'Code of Practice for the Management of Native Vegetation to Reduce the Impact of Bushfire' must be adopted on a provisional basis only for a period of no more than two years - to be replaced by scientifically robust guidelines developed through a rigorous process with government and community experts and peer review.
- 13.7. Aboriginal expertise in management of fire needs to be recognised and integrated in local fire management practices where appropriate.
- 13.8. Environmental flows required to maintain healthy wetlands and other water-dependent ecosystems in South Australia need to be identified and adaptively managed through regional Water Allocation Plans (WAPs) with evaluation in place.

⁵ United Nations (2000) *Convention on Biological Diversity*, Accessed online <<http://www.cbd.int/convention/convention.shtml>>

⁶ Earthwatch Institute, World Resources Institute, World Business Council for Sustainable Development and World Conservation Union (2006) *Business and Ecosystems*, Atar Roto Presse SA, Switzerland

⁷ Department of Environment and Heritage (2001) *Biodiversity Theme Report, Australia State of the Environment Report*, Accessed online <<http://www.environment.gov.au/soe/2001/publications/theme-reports/biodiversity/biodiversity04-2a.html>>

⁸ Millennium Ecosystem Assessment (2005) *Overview of Reports*, Accessed online <<http://www.millenniumassessment.org/en/Reports.aspx#>>

⁹ Department for Environment and Heritage (2007) *No Species Loss Strategy: A Nature Conservation Strategy for South Australia 2007-2017*, Government of South Australia, Adelaide

¹⁰ Environment Protection Agency (2008) *State of the Environment Report*, Government of South Australia, Adelaide

¹¹ Department for Environment and Heritage (2007) *No Species Loss Strategy: A Nature Conservation Strategy for South Australia 2007-2017*, Government of South Australia, Adelaide; Environment Protection Agency (2008) *State of the Environment Report*, Government of South Australia, Adelaide

¹² Conservation Council of South Australia and The Wilderness Society (2006) *Comments on the Climate Change and Greenhouse Emissions Reduction Bill*, Submission to the Government of South Australia

¹³ Australian Conservation Foundation (2002) *Australian Terrestrial Biodiversity Assessment 2002: Our species in peril*, Accessed online <http://www.acfonline.org.au/articles/news.asp?news_id=329>

¹⁴ Department for Environment and Heritage (2007) *No Species Loss Strategy: A Nature Conservation Strategy for South Australia 2007-2017*, Government of South Australia, Adelaide