Report on the Review of the first five years of *Australia's Biodiversity Conservation Strategy 2010–2030*

Photo: Early Season Habitat Burn (© Copyright Nick Rains)

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Prepared by the Biodiversity Working Group convened under the Meeting of Environment Ministers

The Department of Environment has prepared this publication on behalf of the Biodiversity Working Group convened under the Meeting of Environment Ministers. The Biodiversity Working Group consists of representatives of the Australian, state and territory governments and the Australian Local Government Association.

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Executive Summary

Australia has one of the most ecologically diverse environments on the planet. Our natural environments are home to a rich and unique diversity of species and ecosystems across terrestrial, aquatic and marine environments. We are also very fortunate in retaining a remarkable array of biodiversity in many of our built environments and modified landscapes.

Our existence is critically dependent on the biodiversity in the landscapes that surround us. It is synonymous with our national and cultural identity and underpins our quality of life. We derive social, health and economic benefits through our interactions with biological diversity across the continuum of Australian landscapes.

Australia's Biodiversity Conservation Strategy 2010–2030 (the Strategy) was released in 2010 and is the guiding framework for governments to conserve our national biodiversity to 2030. It provides an overview of the state of Australia's biodiversity and outlines collective priorities for conservation. The Strategy aims to coordinate efforts at a national level across all sectors to sustainably manage biological resources in a way that meets our current needs and ensures their long term resilience, health and viability.

In addition to being Australia's national framework for biodiversity conservation, the Strategy acts as Australia's principal instrument for implementing the United Nations Convention on Biological Diversity.

The Strategy provides for a review every five years supporting an adaptive national framework that continues to guide conservation activities informed by current and relevant priorities.

This review, conducted by the Australian Government, state and territory governments, and the Australian Local Government Association, examined the operation and national implementation of the Strategy since its establishment, its ability to deliver Australia's international biodiversity-related commitments, and opportunities for improvement.

Since the establishment of the Strategy in 2010, all governments, together with Indigenous peoples and organisations, businesses, environmental non-government organisations and community groups have successfully contributed to positive biodiversity conservation outcomes. While progress has been consistent with the intended objectives of the Strategy, the review revealed the Strategy has not has been a strong driver of these efforts.

The review identified several factors which have affected the Strategy's implementation and its success in delivering against its intent, including its governance, reporting and institutional frameworks; its ability to facilitate increased engagement in biodiversity conservation across society; and the effectiveness of the Strategy's design for prioritising and coordinating action.

Key findings of the review are:

1. **The Strategy did not engage, guide, or communicate its objectives to all audiences in a useful way.**
   - The Strategy is long and often technical, limiting its ability to influence a broad audience.
   - The Strategy does not clearly articulate its intended use for different levels of government and other relevant sectors.
   - There is inadequate guidance for decision makers to determine how best to direct investment for biodiversity conservation.
   - Overall, the Strategy's targets did not effectively guide the efforts of governments, other organisations or individuals. Some targets were unclear or difficult to measure, while others were not tightly tied to the Strategy's outcomes.

2. **The Strategy is too focused on preventing the loss of biodiversity in natural terrestrial environments and does not consider biodiversity contributions across all landscapes.**
   - The Strategy is generally focused on the restoration and protection of natural environments and does not provide a framework for biodiversity conservation in built or production landscapes.
   - The Strategy does not clearly resonate with people living in urban or rural environments or make key linkages to livelihoods, and health and wellbeing.
   - The Strategy includes few outcomes designed to specifically improve the health and resilience of biodiversity in marine and aquatic environments.
   - The Strategy does not adequately recognise that governments must achieve a balance between short and long term social, economic and environmental interests.

3. **The Strategy has not effectively influenced biodiversity conservation activities.**
   - There was no ongoing oversight from jurisdictions to facilitate and coordinate implementation of the Strategy.
   - An implementation plan, including allocation of responsibility for actions, has not been established and coordinated implementation of the Strategy has been ineffective.
   - The expectation that a new, stand alone monitoring and reporting framework would be developed for the Strategy was ambitious and did not build on existing efforts.

4. **Alignment of the Strategy with the Convention on Biological Diversity, and other related international obligations, could be enhanced.**
   - Timing of the Strategy's release was not ideal as it preceded the adoption of the Convention's Strategic Plan, making its implementation through the Strategy challenging.
   - The Strategy could more comprehensively align with the Convention's Strategic Plan and be adaptable to evolving themes and priorities.

The review **recommends** the Strategy be revised in light of these findings, recognising a national biodiversity strategy remains uniquely placed to:

- manage transboundary environmental issues,
- deliver on biodiversity-related issues that require Australian Government authority or cooperation from multiple jurisdictions, and
- coordinate effort and leverage investment on shared priorities for biodiversity management.

1. Introduction

1.1. Background to the Strategy

Australia produced our first national biodiversity strategy in 1996—the *National Strategy for the Conservation of Australia's Biological Diversity*. This was in response to an appreciation that we had experienced, and were continuing to experience, significant and continuing reduction in Australia's biological diversity.

Reviews of the 1996 strategy were undertaken in 2001 and 2006. The 2001 review found that while advances had been made since 1996, not all of the agreed objectives were achieved. The *National objectives and targets for biodiversity conservation 2001–2005* were developed based on the findings of the 2001 review. However, disagreement over specific targets prevented its implementation. The 2006 review considered key lessons from the implementation of the 1996 strategy, finding its goal remained relevant.

In 2010, with consideration of the outcomes from the 2006 review, the current strategy—A*ustralia's Biodiversity Conservation Strategy 2010–2030* was released.

In addition to being Australia's national framework for biodiversity conservation, our national biodiversity strategy also forms our National Biodiversity Strategy and Action Plan which meets our obligations under the Convention on Biological Diversity (the Convention). The Strategy aims to integrate the approach to biodiversity conservation across all levels of government and strengthen the implementation of our international obligations.

In 2014, all Parties to the Convention, including Australia, were requested to review, and as appropriate, update and revise their National Biodiversity Strategy and Action Plans. This is to ensure alignment with the *Convention's Strategic Plan for Biodiversity 2011–2020* (the Convention's Strategic Plan) and its Aichi Biodiversity Targets, which were agreed by the Parties in 2010.

Photo: Wetlands near Noosa Heads with Mount Tinbeerwah in the background (© Copyright Sarah Wheaton and the Department)

1.2. Scope of the review

The Strategy provides for a review every five years. As the Strategy was agreed in 2010, this first review commenced in 2015.

The Senior Officials Group, comprising Heads of Environment Departments from each jurisdiction and the Australian Local Government Association, led the review of the Strategy. The Biodiversity Working Group, chaired by the Commonwealth Government with representatives from each state and territory Government and the Australian Local Government Association, has overseen the review and development of this report. Three independent experts have provided high-level guidance and assurance to the review of the Strategy. The Review Report has been endorsed by the Meeting of Environment Ministers.

The review considered:

- The operation and implementation of the Strategy since its launch in 2010.
- Alignment of the Strategy with the Convention's Strategic Plan and its Aichi Biodiversity Targets, as well as relevant obligations of other biodiversity-related international agreements.
- Opportunities to improve and streamline the Strategy, while maintaining effective standards, including consideration of:
  - the robustness and durability of objectives,
  - responsibility and accountability for the delivery of outcomes, and
  - monitoring and reporting systems.

This report discusses the above aspects, the process undertaken to conduct the review, effectiveness of the Strategy to date, and the international context and application of the Strategy across all sectors. It also explores the opportunities that could be gained through a revision of the Strategy and proposes next steps for governments.

The review of the Strategy is discussed across the following three core sections:

- Chapter 2—R*eview of the Strategy's Context and Operation* provides an analysis of the narrative and scope of the Strategy, its effectiveness as a communication tool, its governance arrangements, national implementation, and its monitoring and reporting framework.
- Chapter 3—R*eview of the Strategy's Purpose* discusses the Strategy's purpose for different audiences, including Australian, state, territory and local governments, private industry, and communities; and provides an assessment of its success in each sector.
- Chapter 4—R*eview of Strategic Settings of the Strategy* provides an assessment of the Strategy's vision, principles, priorities for action, outcomes and national targets, including the effectiveness of their design.

1.3. Consultation

The review has been informed by public and targeted consultations, ensuring a broad range of people have had the opportunity to participate in the review process and provide input.

Public consultation

On 16 July 2015, Environment Ministers opened public consultation to seek input to the review on implementation challenges, emerging issues, and opportunities to improve the Strategy.

Information on the review was made available on the Australian Government Department of the Environment's website. Members of the public were invited to submit their comments and 29 standalone public submissions were received. A further six individuals provided their support for submissions made by other organisations.

Environmental non-government organisations and community groups provided 18 submissions, and the remaining 11 were received from Indigenous organisations, industry bodies, NRM organisations, academic institutions and local governments.

The majority of views presented in submissions related to the Strategy's context setting, the suitability of its 10 national targets and three priorities for action, implementation challenges and the adequacy of monitoring and reporting systems.

Several submissions noted it was not possible to provide meaningful comments on the effectiveness of the Strategy in achieving its intended outcomes without information on progress in achievement against the 10 national targets.

Targeted consultation

On 21 August 2015, a web survey was circulated for consultation with key stakeholder groups. Hard copies of the survey were mailed to stakeholders with limited access to the internet.

The survey link was circulated to business and industry associations, environment and community non-government organisations, local governments, scientific, heritage and academic bodies, and Indigenous peoples. Broader distribution may have occurred where recipients circulated the survey link amongst their members or to associated groups.

The survey was sent to over 250 organisations and was open for five weeks to 25 September 2015. In this time, 39 survey responses were received. The highest response rate was from non-government organisations (12). Other prevalent sectors included community groups (5), research organisations (4), and Australian Government agencies (4). Participation in the survey was greatest from individuals or organisations located in Queensland (9) and Victoria (9).

The survey included a series of questions on specific issues with the current Strategy and opportunities for potential improvements. The survey was divided into three segments, which examined the extent to which the Strategy is being utilised, any issues encountered with the Strategy, and views on ways the Strategy could be improved.

Several stakeholders highlighted the ongoing need for a national biodiversity strategy, both as a mechanism for prioritisation and coordination of our biodiversity conservation efforts, and for delivering Australia's international commitments under the Convention.

The views provided through stakeholder's public submissions and survey responses have been considered in the review, and are discussed throughout this report. Stakeholder views should also be considered in any revision of the Strategy.

A summary of issues raised and a full list of the public submissions and survey responses received is in Appendix A. Copies of all non-confidential submissions and responses are available on the Australian Government Department of the Environment's website at https://www.environment.gov.au/biodiversity/conservation/strategy.

1.4. Existing efforts

Each level of government has different responsibilities and plays a distinct role in biodiversity conservation. Australia's federal structure divides responsibilities between our governments. Other non-government groups also contribute to achieving biodiversity conservation outcomes.

The Australian Government is responsible for ensuring Australia meets its international obligations, including those under the Convention. The Australian Government manages our international border, including regulating imports and exports of plants and animals, and has responsibility for Commonwealth and other select areas of land and oceans between the limit of state and territory managed water and the edge of Australia's exclusive economic zone. It designs and implements policies and programs to protect and conserve the environment and also administers the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*, which includes protection of matters of national environmental significance, including threatened species, Ramsar wetlands and World Heritage Areas.

State and territory governments have primary responsibility for the management of land, water and biodiversity within their jurisdiction. This means that state and territory governments have the prime responsibility for ensuring biodiversity conservation across the lands and waters within their boundaries. All state and territory governments have legislation to conserve biodiversity and to retain and manage biodiversity habitats, including through a conservation reserve system involving national parks, nature reserves, conservation parks and marine parks.

State and territory governments also operate native vegetation conservation programs, while also providing for sustainable development of lands and waters within their jurisdictions.

Local governments contribute to biodiversity conservation through a range of activities, including their role in local and regional planning and development approvals, provision of infrastructure and recreation facilities, and environmental and waste management. In addition, there are 56 regional natural resource management (NRM) organisations delivering programs that support healthy and productive landscapes. Regional NRM organisations and local councils both play an integral role in engaging and working with local communities to deliver important environmental outcomes.

Indigenous peoples have significant and unique knowledge, skills and land and sea management responsibilities that contribute to achieving cultural and natural resource management outcomes under the Convention. Aboriginal and Torres Strait Islander communities manage more than 23 per cent of Australia's land[1]. Governments are supporting and collaborating with Indigenous communities to undertake biodiversity conservation through initiatives such as the Western Australian *Kimberley Science and Conservation Strategy* which is facilitating the engagement and participation of traditional owners in creating new national parks and marine reserves in the Kimberley region (see Case Study A). Another example is the Indigenous Protected Areas (IPAs) Programme which has enabled the declaration of 72 IPAs making up more than 44 per cent[2] of the National Reserve System in Australia.

All responsible landholders, managers and lessees contribute to biodiversity conservation through their management of lands and waters across Australia. This contribution ranges from retaining the productive potential of the lands and waters, to conserving particular species or habitats and even providing habitats for native species such as frogs, birds, reptiles and small mammals including in towns and city areas.

Other groups and sectors that invest considerable time and effort to protect biodiversity include community groups, environmental non-government organisations, businesses, and the research and education sector. These groups have considerable local knowledge and technical expertise and play a critical role in on-ground implementation and raising community awareness. Many biodiversity conservation successes are the product of effective partnerships between governments and non-government groups. For example, Greening Australia, the ACT Government, rural landowners and the South East Local Land Services are combining their expertise and resources to restore the Greater Goorooyaroo area in a way that will complement the reintroduction of locally extinct native animals (see Case Study B).

Since establishment of the Strategy in 2010, all jurisdictions have been undertaking biodiversity conservation activities that have contributed to achieving the outcomes of the Strategy. These activities have been complemented by actions undertaken by Indigenous peoples and organisations, businesses, environmental non-government organisations, community groups, and individual citizens. While the review considered there had been progress, consultation revealed it had not necessarily been directly driven by the Strategy.

In the absence of a framework that can monitor and report on the full suite of activities that have contributed to achieving the objectives of the Strategy, its success and progress will continue to be difficult to demonstrate.

The following chapters examine the individual elements of the Strategy, including known successes to date and opportunities for improvement.

1 State of the Environment 2011 Committee, *Australia State of the Environment 2011*, Independent Report to the Australian Government.

2 Department of Prime Minister and Cabinet, Indigenous Protected Areas, Accessed April 2016: https://www.dpmc.gov.au/indigenous-affairs/about/jobs-land-and-economy-programme/indigenous-environment-branch/indigenous-protected-areas-ipas

Case Study A: Kimberley Science and Conservation Strategy, Western Australia

The $81.5 million *Kimberley Science and Conservation Strategy* (the Kimberley Strategy) was launched in 2010 by the Western Australian Government with objectives to:

- conserve the landscapes, plants and animals of the Kimberley;
- facilitate the engagement and cooperation of traditional owners in creating new national parks and marine parks;
- generate employment and cultural tourism opportunities for Aboriginal communities;
- advance the scientific research that underpins the management of protected areas; and,
- expand eco-friendly nature-based tourism to ensure more people have the opportunity to appreciate the region's outstanding attributes.

The Kimberley Strategy is a major state initiative and a focus for implementation of the strategic directions of *Australia's Biodiversity Conservation Strategy 2010–2030*.

The Kimberley Strategy is intended to deliver a series of world significant outcomes, including the creation of Australia's largest national park (over 2 million hectares), a new Great Kimberley marine park of over 3 million hectares, and a series of new conservation reserves across the Kimberley islands, protecting a suite of threatened species, and 48 new plant species that were previously undiscovered.

The Kimberley Strategy is also establishing a new conservation corridor across the Kimberley linking conservation reserves with lands managed for conservation across pastoral and Aboriginal lands under voluntary conservation agreements.

As at the end of 2015 the Kimberley Strategy had achieved the following outcomes:

- Creation of the Lalang-garram/Camden Sound Marine Park on 19 June 2012 and the Eighty Mile Beach Marine Park on 29 January 2013.
- The draft joint management plan for Roebuck Bay was released for public comment on 19 June 2015.
- The draft management plan for the proposed Lalang-garram/Horizontal Falls and North Lalang-garram marine parks and the proposed Oomeday National Park was launched in October 2015.
- A total of 20,000 feral cattle culled under the strategy since 2011, reducing numbers in some areas by up to 44 per cent.
- Over 200 traditional owners engaged in on country land management works and training and over 63 casual fee-for-service jobs implemented for Aboriginal people.
- Improved fire management with, on average 18.9 per cent less country burnt by late season (destructive and hot) fires; 13.4 per cent more country is burnt early; and 5 per cent less of the country is burnt.
- The area covered by high priority weed species infestations has more than halved in the last three years due to collaborative weed control projects, with invasive species such as gamba grass, rubber vine and prickly acacia targeted. This includes a 96 per cent reduction in the Prickly acacia population west of Wyndham.

- Trial of a new feral cat bait "Hisstory" commenced in the Kimberley with assistance from the Australian Government in order to reduce future pressures on small mammals, reptiles and birds from these exotic predators.
- Agreement reached with Rio Tinto and Alcoa of Australia to hand back 175,000 hectares of the Kimberley for inclusion in the proposed Great Kimberley National Park.

Photo: Palm fronds alongside El Questro Creek in the Central Kimberley (© Copyright Cathy Zwick)

Case Study B: Greater Goorooyarroo Restoration, Australian Capital Territory

The 30,500 hectare Greater Goorooyarroo area represents some of Australia's largest, best-connected and floristically diverse Box–Gum Woodland, a critically endangered ecological community. The area includes the Mulligan's Flat and Goorooyarroo nature reserves.

The Greater Goorooyarroo Project seeks to secure the future of the Goorooyarroo landscape by engaging with local people to develop shared understanding of the area and its ecological needs and to implement agreed priority actions.

The project is to restore, connect and create a resilient landscape through:

- rehabilitation and restoration, including 300 hectares of revegetation
- better management of problem plant and animal species including 7000 hectares of invasive species control, including foxes
- active involvement of Aboriginal people in natural resource management
- an informed and actively engaged community.

Funding from the Australian Government is supporting a partnership between Greening Australia, rural landowners, the ACT Government and South East Local Land Services.

The project complements world-leading research in the Mulligan's Flat Woodlands Sanctuary to reintroduce locally extinct native animals such as the Eastern Bettong and Bush Stone-curlew to the ACT (initially within the predator-proof fence of the Sanctuary). The Mulligan's Flat Woodlands Sanctuary is a collaboration between the ACT Government, Woodlands and Wetlands Trust, Australian National University and CSIRO, and attracts funding from Australian Government environment programs and the Australian Research Council.

2. Review of the Strategy's context and operation

The Australian continent is a vast mosaic of different landscapes and seascapes, formed over millennia from both natural and human processes. Australia's is comprised of a range of vastly different ecological and geographic characteristics which exist on a continuum. These range from natural landscapes largely unmodified by human activities, to production landscapes, which harness biological resources to support our agricultural, forestry and fishing industries, to the built landscapes incorporating cities, suburbs and towns. These landscapes, and the unique biodiversity within them, are synonymous with our national and cultural identity.

The Strategy was designed to be a call to action for all sectors and was adopted by Australia's governments for all Australians. The science behind the Strategy is sound and remains relevant. A clearer explanation of the scientific context could better inform application and improve usability across a broader audience.

2.1. Scope of the Strategy

The Strategy was intended to provide a guiding framework for conserving our nation's biodiversity in the coming decades and to be a broad 'policy umbrella' over other more specific frameworks. The review found the way in which the Strategy is framed narrowed its scope to exclude, or lessen the importance of, some aspects of biodiversity conservation in Australia.

To improve the effectiveness of the Strategy, consideration should be given to biodiversity management across the entire continuum of Australian landscapes. This would support governments when faced with decisions that need to balance short and long term outcomes for the community.

Biodiversity in multiple and evolving landscapes

The Strategy is largely focused on protecting natural areas and re-establishing native vegetation in modified landscapes. While the Strategy identified the need to 'mainstream' understanding of biodiversity conservation, it didn't successfully identify the breadth of environments where biodiversity can be conserved in order to better engage and involve all Australians in this pursuit. The Strategy could explore opportunities to enrich biodiversity across the span of Australian landscapes and seascapes, including in urban and rural environments.

The relationship between people and biodiversity is not adequately highlighted in the Strategy. Expanding the focus of biodiversity conservation activities to the landscapes in which Australians live can have important socioeconomic benefits in addition to direct biodiversity outcomes. The Strategy would have greater relevance for a broader audience if clearer linkages between biodiversity and people's livelihoods, health and wellbeing were made.

Interactions with biodiversity can improve our physical and mental health, education outcomes, social relations and overall wellbeing, while providing important insights into managing the environment in a rapidly changing world.[3] For example, in addition to the long established ecosystem services essential to human health, such as the regulation of air and water quality, there is increasing evidence that living in proximity to natural environments and green spaces results in increased rates of physical exercise. Furthermore, evidence is emerging that environmental deprivation may be a contributing factor to mental health issues, and that increased access to biodiversity through public green spaces and parks could form part of the solution[4].

With an aging population, growing life expectancy[5] and increased urbanisation, Australia faces a substantial challenge in meeting the future health needs of its residents and ensuring they enjoy a high quality of life. Investment in biodiversity conservation has an important role in helping meet this challenge and could potentially save billions of dollars per year in avoided health care costs. Biodiversity refuges and green spaces are an effective means of supporting healthy and sustainable inner-city landscapes, and enhancing the liveability of our built environments.[6] Efforts are already being made to increase understanding and awareness of these and other benefits through initiatives such as Victoria's *Healthy Parks, Healthy People* (See Case Study C). Extending these efforts could promote the importance of our interactions with the natural world, and strengthen public support for environmental objectives.[7]

Trade-offs

Governments protect the environment in the context of competing priorities, including human population growth, economic and lifestyle benefits and long term threats to environmental health and human wellbeing. While many Australians have gained considerably from the transformation of our natural assets, if not well managed, the potential negative consequences of overexploitation will increase as we provide for a growing and prosperous population. Our built landscapes are likely to expand both in footprint and density to accommodate more people and industry, and our production landscapes will be managed more intensively for higher output to meet our basic material needs.

While there are opportunities for complementary outcomes, in some cases decision makers will choose not to fully mitigate or offset impacts to nature. The Strategy could help explain the need for governments to consider compromises and balances when planning outcomes for biodiversity. Providing a framework for, and clear explanation of, the trade-offs which occur between biodiversity and other interests, and their short and long term costs and benefits, will help inform community preferences and influence the decisions of government.

One approach that could be explored further in a revision of the Strategy is valuation of biodiversity and ecosystem services in economic terms. Environmental accounting methods may provide a means of more clearly gaining an understanding of these long term trade-offs. The challenge is to derive a system of environmental accounts that considers both the intrinsic value of nature and the

3 Savard et al (2000), *Biodiversity concepts and urban ecosystems*.

4 School of Health and Social Development, Deakin University (2015) *Healthy Parks Healthy People: the state of the evidence*.

5 The Commonwealth of Australia (2015) *2015 Intergenerational Report*.

6 Maller et al (2008) *Healthy Parks Healthy People: the health benefits of contact with nature in a park context*.

7 Miller (2005) *Biodiversity conservation and the extinction of experience*.

socio-economic values of ecosystem services that nature provides. The sum of benefits derived from nature and the risks of undervaluing its importance can, in part, be mitigated through attempting to quantify ecosystems services in terms which can be compared to the costs and benefits of socioeconomic activities.[8] For example, Parks Victoria and the Victorian Department of Environment, Land, Water and Planning have recently undertaken valuation based on best practice environmental accounting to quantify the benefits that parks and their ecosystems provide (See Case Study C).[9]

The Wentworth Group of Concerned Scientists, together with Regional NRM bodies, have developed an alternative approach for establishing regional environmental accounts based on their 'Accounting for Nature' concept. Trials of this methodology are being undertaken in several areas of Australia[10].

While the Strategy does recognise the potential of national biodiversity accounting, its primary focus is on the use of complementary markets and market-based incentives to enhance strategic investments and partnerships across sectors for biodiversity conservation. Robust valuation of ecosystem services and environmental accounting can further strengthen market and non-market policy tools, particularly through increasing recognition of the benefits of biodiversity to humans and identifying cost-efficient investments in ecosystem improvement. There is an opportunity for the Strategy to promote wider use of these valuation techniques in holistic decision making for governments, community groups and individuals using an integrated range of policy tools.

2.2. Communication of the Strategy

The Strategy uses a variety of written communication techniques aimed at conveying key messages to a broad audience, with differing information needs. The full Strategy, as well as a separate summary document, was made available in hard copy and online.

Although the Strategy is intended to communicate to a variety of audiences, its length and format limits its usability and appeal. Key messages in the Strategy are often contained within large blocks of text and not highlighted or emphasised.

While the Strategy is scientifically robust, the technical focus makes it less appealing to a broad audience. For example, the Strategy contains a technical definition of biodiversity, similar to that used in international forums. While this is accurate and can remain for the use of policy makers and experts, there are opportunities to enhance the communication to make the concept accessible to a wider audience and motivate behavioural change. Careful explanation of biodiversity using simple, relevant, and coherent language would help engender broader public engagement with the Strategy.

A recent Australian study using focus groups to test the messages of biodiversity conservation found the term 'nature' appeals to a wider audience than the term 'biodiversity'.[11] The study also highlighted the importance of emphasising how humans rely and depend on nature, especially for our health and wellbeing, and how using tangible examples with illustrative images help communicate this message. Other countries have acknowledged the need to use language that resonates with people. Finland for example, has branded their national biodiversity strategy: *Saving Nature for People*. Incorporating this type of language into the Strategy provides an opportunity to increase engagement with a broader audience and help foster continued public support for investment in biodiversity conservation.

8 World Bank (2004) *Assessing the economic Value of Ecosystem Conservation.*

9 PV and DELWP (2015) *Valuing Victoria's parks*.

10 Wentworth Group—Accounting for Nature (http://wentworthgroup.org/programs/environmental-accounts/)

11 Bennett, E. (2014) *Nature's Infrastructure*. Unpublished report prepared for the Australian Conservation Foundation.

The language used to frame biodiversity in the Strategy and associated communications should help all audiences understand its value and why we should invest in it. Influential and inspiring language can help transform awareness into action and captivating images can be used to effectively illustrate complex concepts and support key points. The most effective approaches to communicating difficult and complex ideas use terms that are easily understood, relatable and present a compelling message.

The Strategy did not include information about how it would be implemented. Some information was provided on the responsibilities of government and other sectors for action, although a framework that would guide the contribution of individual jurisdictions was not provided. This shortcoming was identified by 91 per cent of respondents to the web survey on the Strategy, who indicated there was insufficient information available about the Strategy's implementation.

Further, 67 per cent of respondents to the web survey on the Strategy indicated the Strategy had little to no influence on their activities. This may be improved if the Strategy were more user friendly, both in terms of readability and the availability of its implementation information. Outcomes of the web survey also identified that 61 per cent of respondents supported a single online resource with regularly updated information on biodiversity conservation activities to improve the useability of the Strategy for their organisation.

2.3. Governance and implementation

During the Strategy's operation, there have been several changes to its governance structure and at times no governing body overseeing its implementation. This has contributed to a lack of coordination between governments, and in some cases, no clear alignment between jurisdictional biodiversity conservation activities and the Strategy.

To improve the implementation of the Strategy, consistent high level direction and oversight is required. Ideally, this would be undertaken by a governing body consisting of representatives of the Australian Government, state and territory governments, and the Australian Local Government Association. To ensure delivery of the Strategy is not disrupted, the adopted governance arrangements must be adaptable to allow for changes to institutional arrangements over the Strategy's duration.

Furthermore, implementation could be improved through increased consideration in its design of the different role of the Strategy for different jurisdictions and sectors', ensuring it is fit for purpose and provides participating jurisdictions with value.

As the Strategy is Australia's principal instrument for the implementation of the Convention's Strategic Plan, it should act as a conduit linking local, regional, state and national action to Australia's obligations under the Convention, along with other international biodiversity obligations. These links should be explicit, demonstrating how action taken at all levels is contributing to national and international outcomes.

In addition, increased engagement with a broader range of government departments would maximise the complementary benefits of biodiversity conservation for health, agriculture, the economy and other sectors.

The Strategy's implementation plan should facilitate the coordination of actions at different scales, from local to national, and clearly identify how they contribute to the achievement of the Strategy's national biodiversity outcomes. It should act as a practical tool to guide all levels of government, integrating existing approaches to biodiversity management and provide the flexibility to adapt to changing priorities within the overall objectives of the Strategy. This adaptability would serve to facilitate ongoing commitment to the Strategy's implementation by ensuring it remains relevant and fit-for-purpose to all governments throughout its duration. Such an implementation plan would also provide a mechanism for clearly identifying how actions undertaken at a range of scales contribute to our international obligations.

Initially it may only be practicable for an implementation plan to encompass the actions of Australian, state and territory, and local governments. Over time, relevant actions undertaken by the private sector, non-governmental organisations and community groups could be identified and incorporated, enabling a more comprehensive analysis of the Strategy's implementation. This would help identify opportunities to leverage investment, support future priority setting and enable more effective allocation of resources.

2.4. Monitoring, reporting and evaluation

Evaluating and reporting on the implementation and success of the Strategy relies on our ability to collate information about the efforts of all Australian governments and relevant non-government sectors. Monitoring needs to look at multiple factors of input and outcome in order to measure true success.

Comprehensive assessment of progress towards the Strategy's outcomes and targets requires the establishment of national-scale datasets, including collection of baseline data. While the Strategy included a target to establish a new long term national biodiversity monitoring and reporting system by 2015, this was ambitious within the given timeframe and there was no consideration of how this would be resourced or how existing monitoring efforts could be leveraged or adapted to achieve this. This contributed to challenges in reporting against the Strategy's other targets (further discussed in section 4.5).

An alternative approach could look to utilise the Strategy as a national platform which draws together the full suite of policies and programs delivered in Australia with biodiversity outcomes. This would serve to improve the quality of Australia's reporting capability, including for the national report to the Convention, by improving the discoverability and accessibility of information about activities undertaken and outcomes achieved at all levels of government, as well as the private sector. This would support more efficient and comprehensive national assessments and provide opportunities for jurisdictions to promote their efforts domestically and on an international scale.

As many different stakeholders are engaged in activities to measure aspects of biodiversity, there are significant challenges in aggregating and standardising data from multiple sources to enable national scale assessments of environmental condition and trend. An integrated approach to collect, manage and share environmental data is necessary to enable meaningful assessment of

national-scale trends. There may be also value in considering simpler overall measures of biodiversity that are more easily understood, in preference to complicated reporting models.

Although the Strategy failed to establish a national long term biodiversity monitoring and reporting system within the intended timeframe, progress is being made through the Essential Environmental Measures for Australia Programme and there have been significant advances in technology such as satellite imagery that may support more cost effective monitoring in the future. However, our capacity for robust long term biodiversity monitoring continues to present a challenge.

Improving the quality of State of the Environment reporting will better inform future reviews of the Strategy, by providing more comprehensive national-scale assessments of biodiversity condition. This would provide an indication of the effectiveness of the Strategy, including the benefits of its implementation to society, and identify priorities for future biodiversity management interventions. There is also an opportunity for a revised Strategy to better align its future reviews with the State of the Environment reporting cycles to enable more recent national assessments of environmental condition to be considered.

Key Points

- The Strategy is generally focused on the restoration and protection of natural environments and does not provide a framework for biodiversity conservation in built or production environments.
- The Strategy does not clearly resonate with people living in urban or rural environments or make key linkages to livelihoods and health and wellbeing.
- The Strategy does not adequately recognise that governments must achieve a balance between short and long term social, economic and environmental interests.
- The Strategy is long and often technical, limiting its ability to influence a broad audience.
- There was no ongoing oversight from jurisdictions to facilitate and coordinate implementation of the Strategy.
- An implementation plan, including allocation of responsibility for actions, has not been established and coordinated implementation of the Strategy has been ineffective.
- The expectation that a new, stand alone monitoring and reporting framework would be developed for the Strategy was ambitious and did not build on existing efforts.

Photo: Urban recreation area amongst a housing development in Perth (© Copyright Silver Sun Pictures and the Department)

Case Study C: Healthy Parks Healthy People, Victoria

Victoria has adopted an integrated approach to park management that not only considers the central role parks play in protecting unique biodiversity values, but also recognises the benefits of protecting our environment to the broader community.

The Victorian Government has been actively promoting the health benefits provided by the natural environment since 2010 through their *Healthy Parks Healthy People* initiative. The *Healthy Parks Healthy People* initiative is based on four key principals:

- the wellbeing of our society depends on healthy ecosystems;
- parks nurture healthy ecosystems;
- contact with nature is essential for emotional, physical and spiritual health and wellbeing; and
- parks are key to sustaining balanced economic growth along with vibrant healthy communities.

As part of this initiative, Parks Victoria has established programs fostering broader environmental and social benefits such as Active in Parks. This program was created in 2011 with the aim to connect people living with a disability, or from culturally and linguistically diverse communities with Victoria's parks, open space and biodiversity. Likewise many volunteer programs in parks provide a wide range of volunteers with benefits for their physical, mental and social health while helping conserve our parks.

More recently, the *Valuing Victoria's Parks* project jointly developed between Parks Victoria and the Department of Environment, Land, Water and Planning (DELWP) established a framework to assess the benefits park ecosystems provide to the Victorian community. This project used a framework based on the international System of Environmental-Economic Accounting, which provides best practice methods for reporting on environmental assets and assessing their contribution to society. Environmental-economic accounting is a catalyst for better planning, providing a consistent framework for reporting on our ecosystem assets and the services these provide over time. This approach can help explain and reveal the benefits of environmental assets and demonstrate their importance, beyond their intrinsic values.

In the context of parks, the contribution their ecosystems make to Victoria's economic and social wellbeing was assessed following a three-staged approach:

- Reporting on the stock and condition of environmental assets
- Quantification of the physical flows of goods and services from ecosystems that benefit the community (often referred to as ecosystem services)
- Valuation of the benefits from the provision of ecosystem services from parks

Valuing Victoria's Parks assessed a wide range of benefits that Victoria's parks provide, including water filtration, pollination, carbon sequestration, coastal protection and recreation. For instance, park tourism generates visitor expenditure of $1.4 billion per annum across diverse sectors of the economy, which supports 14,000 jobs in Victoria. In addition, Victoria's parks and reserves store 271 million tonnes of carbon and contain over one million hectares of catchments, which supply water for drinking, food production and other industries. The water filtration services these catchments provide are valued at $83 million per year.

In terms of health benefits, the study indicated that of the over 50 million visits to Victoria's parks each year, about 23 million are primarily for the purpose of physical activity (a 10 per cent increase since 2007). This was valued at up to $200 million per annum in terms of avoided healthcare costs and productivity associated with regular physical activity in parks.

The Victorian Government is committed to continuing work to value and account for Victoria's environment. The approach used in this project provides a better understanding of the contribution of environmental assets to the community and the economy. It will also provide more consistent information to support public land planning and management.

Photo: Adult Orange-bellied Parrot perched in a tree at Melaleuca (© Copyright Graeme Chapman)

Case Study D: Tackling the threat from feral cats, Northern Territory

The Northern Territory is working with the Australian Government Department of the Environment to develop effective methods to reduce the threat from feral cats to some the Northern Territory's most threatened species. A major focus is the central rock-rat, identified in the Australian Threatened Species Strategy as one of two Australian mammal species warranting emergency intervention.

The central rock-rat or Antina (*Zyzomys pedunculatus*) had a broad historic distribution in rocky ranges of central and western Australia but is now restricted to a very small number of sites in the West MacDonnell Ranges and Haasts Bluff area , west of Alice Springs. In fact, by 1995 the species was presumed extinct as it had not been recorded since 1960 despite targeted searches. In 1996 it reappeared in the West MacDonnell Ranges when very favourable conditions allowed a population 'boom' but by 2002 it could no longer be found at monitoring sites. More recently, extensive surveys by NT Government scientists, park rangers and Indigenous ranger groups have located highly localised populations at three sites in the most rugged ridges and peaks of the West MacDonnell Ranges and one at Mt Edward. It is believed that these represent the core habitat or refugia for this species during the contracted phase of its boom-bust life cycle.

The very rugged nature of this habitat appears to provide some shelter for the rock-rats from predators, particularly feral cats. The rugged rocky peaks and ridges form "islands" within the lowland desert ecosystems and this presents an opportunity for carefully targeted strategic baiting to suppress cat numbers and allow rock-rat populations to increase and expand. If population recovery occurs, some animals can ultimately be translocated to former habitat, including within the larger predator-proof exclosure currently being developed by the Australian Wildlife Conservancy at Newhaven Sanctuary.

In 2016–17 the NT Department of Land Resource Management will drop poison baits for feral cats (Eradicat and/or Curiosity) in two 40km2 management areas around rugged ranges in the West MacDonnnell National Park. Monitoring using camera traps over the preceding two years has provided precise occupancy estimates in these areas for cats, rock-rats and other native mammals, so that the effectiveness of baiting can be carefully evaluated. Funding for this trial has been provided under the Australian Threatened Species Action Plan but, if successful, cat baiting in these areas can be maintained at a very modest cost.

Feral cat management typically depends on exclusion by fencing, total eradication from islands or very-broad-scale baiting. The West MacDonnell Ranges presents an unusual opportunity to trial strategic cat suppression in small areas of core habitat for severely threatened species. In addition to protecting the endangered central rock-rat, it is expected that predator suppression may benefit at least three other threatened mammal species using these rocky range refugia.

Case Study E: Save the Tasmanian Devil Program, Tasmania

In the late 1990s observations were made in north eastern Tasmania of the occurrence of an unusual disease in Tasmanian devils. This was followed by increasing concern for the state of Tasmanian devil populations as their abundance appeared to decline in association with what became known as Devil Facial Tumour Disease (DFTD). In 2003 the Tasmanian Government established the Save the Tasmanian Devil Program (STDP) with the objective of determining the cause of decline and options for addressing it. Since that time, and with the development of knowledge, expertise and capacity, the Save the Tasmanian Devil Program has evolved through several stages and has probably been the largest single species recovery activity in Australia.

The initial stage of the STDP focussed on the nature of the disease, the means of its transmission and its impacts on the Tasmanian devil. This was initially work conducted by wildlife biologists, veterinarians and disease specialists. It resulted in the identification of a highly unusual form of disease, a transmissible cancer. This knowledge allowed for an assessment to be made of the impact of the disease in the wild. This pointed to the spread of the disease across the range of the devil and extinction of wild populations within 30 years. This led to the second stage of the STDP which was aimed at securing the species from extinction.

The second stage was preceded by a major workshop involving zoos and wildlife parks, wildlife biologists and researchers. The outcome of the workshop was an ambitious workplan to establish a captive insurance population and to establish populations in a range of extensive environments (some natural and some artificial) to provide disease-free populations that maintained wild behaviours. Through this period, populations of devils across Tasmania were also monitored to assess the impact of disease.

This phase established a very strong partnership between government, environmental non-government organisations (such as the Zoo and Aquarium Association) and individual zoos and wildlife parks. At the end of this phase, the STDP had established a viable insurance population, a successful island translocation and developed assets that supported progress towards the release of animals into the wild. The results of monitoring had also provided further insights into the performance of wild populations with the threat of immediate extinction becoming less likely—this however presented new challenges and the focus for the third stage has become the management of devils in the wild in Tasmania.

This stage has only been possible because of the partnerships that have been developed which allows for coordination across institutions and between captive breeding and wild management that is needed for the successful release of devils to supplement wild populations. Coincidentally, an experimental immune treatment is also being tested with this work.

The Save the Tasmanian Devil Program has also established an ambassador program that has seen a number of leading zoos in the USA become partners and involved directly in conservation activities in Australia. This program is now extending to Europe.

The Save the Tasmanian Devil Program has made significant progress in the conservation of the Tasmanian devil and has transitioned through several distinct phases. While the challenges have changed, the STDP has proved to be a good model for the acquisition and use of knowledge and for the development of the broad partnerships needed to implement recovery actions over a large scale.

3. Review of the Strategy's purpose

The following section discusses the intended purpose and effectiveness of the Strategy for different levels of government and the non-government sector. The Strategy aimed to guide the efforts of the Australian, state, territory, and local governments, and the community and private sector by establishing national priorities for biodiversity conservation.

3.1. International Context

Convention on Biological Diversity

Following the 1992 Earth Summit in Rio de Janeiro, Australia become a signatory to all three "Rio Conventions":

- the United Nations Framework Convention on Climate Change;
- the United Nations Convention to Combat Desertification; and
- the United Nations Convention on Biological Diversity (the Convention).

The Earth Summit was an important milestone in the global environmental movement with the establishment of these key overarching environmental instruments.

The Convention was established in recognition of biodiversity being globally important with immense intrinsic, social and economic value, and of vital importance to the survival and wellbeing of present and future generations.

The Convention provides a framework for global action to conserve and use biological diversity in a sustainable manner and share benefits arising from genetic resources in a fair and equitable way. It addresses the full range of threats to, and conservation of, biological diversity at genetic, species and ecosystem levels in all environments.

The Strategy forms Australia's National Biodiversity Strategy and Action Plan, meeting our primary requirement for implementation of the objectives of the Convention.

In October 2010, the Convention's Strategic Plan was established to enhance global efforts and activities in biodiversity policy and management. Figure 1 illustrates the structure of the Convention's Strategic Plan, including its five strategic goals. These goals are supported by 20 Aichi Biodiversity Targets, provided at Appendix B.

Internationally, there has also been a move to improve effectiveness and cooperation across the Convention and the other biodiversity-related conventions[12], driven by a mandate given by the

12 The other biodiversity-related conventions are:
- Convention on Wetlands of International Importance (Ramsar Convention)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Convention on the Conservation of Migratory Species of Wild Animals
- The International Treaty on Plant Genetic Resources for Food and Agriculture
- The International Plant Protection Convention

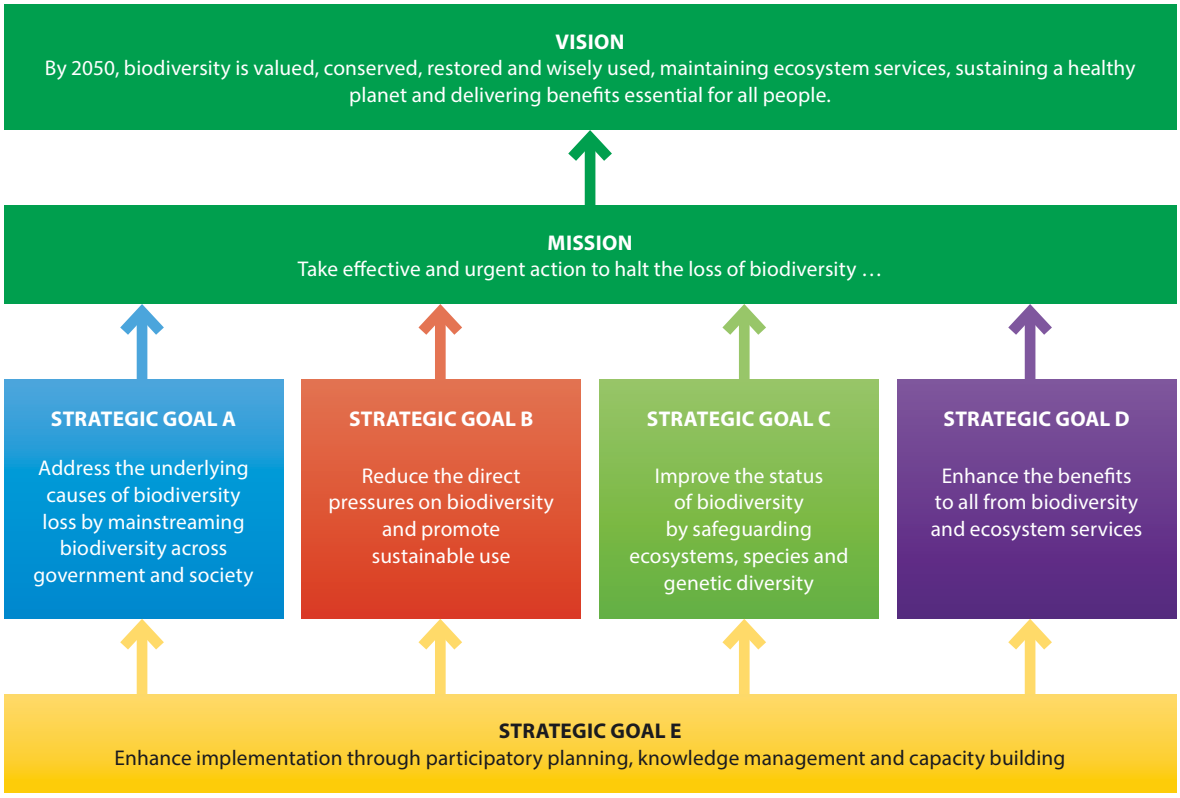
United Nations Environment Programme Governing Council in 2012. While it is recognised each convention stands on its own—with its own specific objectives and commitments—inter-linkages between the issues each addresses, and potential complementarities in their monitoring and implementation processes, provide a basis for cooperation.

One key mechanism being pursued is for National Biodiversity Strategies and Action Plans to be used as the main instruments for implementation of all biodiversity-related convention obligations at the national level. Bringing the focus of implementation of international responsibilities under an overarching national policy provides an opportunity to reduce duplication, and align actions and targets, with a view to increase the effectiveness and efficiency of implementation globally.

Additionally in 2014, the Convention's governing body (the Conference of the Parties) decided to engage other biodiversity-related conventions in discussions on activities for increasing cooperation. There are a wide range of benefits that may be gained by working more strategically such as, streamlining administrative functions and improving information sharing, to achieve cost and resource savings and strengthened national positions on biodiversity issues. Consideration is also being given to other conventions that may benefit from being aligned under this process, such as the recently adopted 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals.

Some Parties to the Convention are already identifying how actions under their National Biodiversity Strategies and Action Plans contribute to the objectives of other biodiversity-related international obligations. For example, South Africa's National Biodiversity Strategy and Action Plan 2015–2025 aligns its strategic objectives and outcomes with the Aichi Biodiversity Targets, the Global Strategy for Plant Conservation, the intergovernmental Platform on Biodiversity and Ecosystem Services and relevant Sustainable Development Goals.

Figure 1: Structure of Strategic Plan for Biodiversity 2011–2020



Effectiveness of the Strategy for implementing the Convention on Biological Diversity's Strategic Plan and Aichi Biodiversity Targets

As Australia's National Biodiversity Strategy and Action Plan for the Convention, the Strategy contributes to global biodiversity outcomes by applying the Convention's objectives domestically within Australia using a framework tailored to our national needs and priorities.

The review considered the alignment of the Strategy with the Convention's Strategic Plan and its Aichi Biodiversity Targets, as well as relevant obligations of other biodiversity-related international agreements.

For Australia, contributing to the Convention's Strategic Plan through the Strategy has proven challenging for two reasons:

1. The Convention's Strategic Plan was adopted after the Strategy was established, and

2. The Strategy has a lifespan until 2030, whereas the Convention's Strategic Plan and Aichi Biodiversity Targets have a timeframe to 2020.

Despite having been developed prior to the Convention's Strategic Plan, the Strategy addresses many aspects of its five strategic goals, and identifies several actions that contribute to delivering the Aichi Biodiversity Targets. For example, the Strategy's priorities for action include raising public awareness and increasing cross-sectoral integration of biodiversity conservation. These outcomes align with the objectives for mainstreaming biodiversity across government and society in Strategic Goal A. Further, safeguarding ecosystems and species are strong themes in both Strategic Goal C of the Convention's Strategic Plan, and the Strategy, both of which aim to protect diversity, maintain and re-establish ecosystem function and reduce threats. The Strategy also prioritises participatory planning, knowledge management and capacity building, in line with Strategic Goal E of the Convention's Strategic Plan.

To comprehensively address all five strategic goals and associated Aichi Biodiversity Targets, the scope of the Strategy would need to be broadened, for example, to better incorporate sustainable use of biodiversity. While the Strategy recognises unsustainable use of natural resources as a threat to biodiversity, it contains few outcomes that directly seek to promote the sustainable use of biodiversity in line with Strategic Goal B of the Convention's Strategic Plan. This is further discussed in section 4.4.

It is also recognised that the Strategy does not capture or directly drive all activities undertaken within Australia with regard to biodiversity conservation. Many aspects of the Convention's Strategic Plan and Aichi Biodiversity Targets which are not directly addressed within the Strategy are being progressed through other policies and regulatory mechanisms. For example, the Australian Government's *Fishery Status Reports* include the most up-to-date assessment of fish stocks managed solely by the Australian Government or jointly with state and territory governments. This supports Australian fisheries being managed within sustainable ecological limits and contributes to delivering Aichi Biodiversity Target 6 (all fish and invertebrate stocks are managed and harvested sustainably). Further, the Reef 2050 Plan includes actions to address nutrient runoff into the Great Barrier Reef catchment, which contributes to achieving Aichi Biodiversity Target 8 (pollution brought to levels that are not detrimental ecosystem function and biodiversity) by reducing the impact of pollution, including from excess nutrients, on ecosystem function and biodiversity.

There are also opportunities for the Strategy to support future efforts to address the various components of the Convention's Strategic Plan and Aichi Biodiversity Targets. For example, under the umbrella of the Strategy, the National Reserve System broadly delivered against Aichi Target 11, by achieving protection of 17 per cent of Australia's terrestrial land mass. There is now scope to enhance the management and ecological representativeness of the National Reserve System.

While the Strategy could more comprehensively address the Convention's Strategic Plan, including its Aichi Biodiversity Targets, it is also important to recognise the full suite of activities that currently deliver against our biodiversity-related international obligations and focus effort on addressing true gaps. The Convention is expected to review its Strategic Plan post-2020. The Strategy will need to build in flexibility to accommodate the Convention's evolving themes and priorities over time.

3.2. National

Role of the Australian Government

Many major biodiversity management issues, including invasive species and habitat connectivity, are transboundary and therefore require national solutions. The Australian Government has a role in facilitating collaborative priority setting across jurisdictions, as well as leading and coordinating action to improve national biodiversity outcomes. For example, the Australian Government is currently working with state and territory governments to develop a common assessment method for listing threatened species and ecological communities, which will improve the listing process and reduce misalignment of listed matters between jurisdictions (See Case Study F).

The role of the Australian Government in setting a national framework for biodiversity conservation and providing policy guidance was strongly supported by stakeholders during consultation, in recognition of the inherent challenges in driving and incentivising action across jurisdictional and sectoral boundaries.

It is also the constitutional responsibility of the Australian Government to ensure our international obligations, including those under Convention, are met. The Australian Government uses legislation, policy and programs to implement these obligations.

Additionally, as a requirement of the *Environment Protection and Biodiversity Conservation Act 1999*, the Australian Government prepares a State of the Environment report every five years. The State of the Environment report informs adaptive management and decision making by providing information about our environment, including its condition, the pressures and drivers of environmental change, the effectiveness of current management initiatives, and emerging issues.

The collective actions of all governments in implementing the Strategy provides the basis for the Australian Government to report on our biodiversity conservation efforts nationally through the State of the Environment Report, and internationally through the Convention.

Effectiveness of the Strategy as a tool for national coordination of biodiversity conservation efforts

The Strategy was intended to provide a mechanism through which national biodiversity actions could be negotiated and coordinated. It includes a set of priorities for action to guide biodiversity conservation efforts across all jurisdictions. For the Australian Government, the Strategy has had some success in guiding biodiversity conservation investment, having been used in the design and implementation of national biodiversity-related policy, program and regulatory activities. For example, the Green Army Programme is an environmental action program that supports local environment and heritage conservation projects across Australia. Green Army projects must be directed toward contributing to meeting relevant international objectives. This includes protecting and conserving Matters of National Environmental Significance as defined in the *Environment Protection and Biodiversity Conservation Act 1999*. The Programme's guidelines encourage applicants to demonstrate alignment with the Strategy to ensure proposed projects advance Australia's international obligations.

As a resource to inform reporting by the Australian Government against national biodiversity activities and outcomes, the Strategy has provided little value. The lack of a mechanism to capture and report on the full suite of government activities contributing to the objectives and targets of the Strategy has made sourcing reliable national level information challenging. Consequently, preparation of national and international reports has required significant resources to identify and collect information on the biodiversity conservation activities of governments, organisations, and the community. This ad hoc method of information gathering may have reduced the comprehensiveness and quality of national and international biodiversity reports.

The ability of the Australian Government to report on national biodiversity conservation efforts could be improved by a provision in the Strategy for a system which consolidates information on the relevant biodiversity policies, programs and regulations of all governments, including how they contribute to the Strategy. This would enable greater oversight of national biodiversity activities, and more efficient and comprehensive reporting to the Convention and the Australian State of the Environment report.

Photo: National Landcare Programme—Volunteers at Lake Claremont (© Copyright Tony McDonough and the Department)

3.3. Sub-national

Role of state and territory governments

State and territory governments have primary responsibility for environmental and biodiversity conservation matters within their jurisdictional borders, including management of parks and wildlife, native vegetation, threatened species, and land and water use. As state and territory governments collectively manage a vast extent of Australia's biodiversity, their contribution is essential to achieving national biodiversity outcomes.

The Strategy was intended to provide a framework for guiding and coordinating state and territory government actions. The Strategy aimed to provide a mechanism for state and territory governments to align their actions with national and international environmental priorities and obligations, as well as promote support for their actions within their governments or organisations.

State and territory environmental protection laws provide the legislative framework for the management of biodiversity. Additionally, many states and territories have developed their own biodiversity strategies as their principal instrument for biodiversity management.

Effectiveness of the Strategy as a tool for guiding state and territory efforts

The Strategy's ability to inform and guide jurisdictional priorities and activities was limited due to a lack of clear accountability for implementation. In many cases, the Strategy sets out collective action by all governments, without identifying the expected contribution of each party for delivery of each action. Feedback from some stakeholders reflected this view, advising it was unclear who was responsible for each action under the Strategy. For example, it was the position of some stakeholders that specifying collective action by all governments without identifying who would lead has enabled some actions to be overlooked until the Strategy's review.

State and territory governments have implemented a range of biodiversity conservation measures within their jurisdictions over the period in which the Strategy has been in operation which have achieved positive outcomes for biodiversity. While many of these actions align well with the Strategy, it is difficult for them to be attributed to it for a number of reasons. No reporting mechanisms were established to allow jurisdictional biodiversity conservation activities to be recorded as part of the Strategy's implementation. As a result, there is no clear correlation between jurisdictional action and the Strategy.

While the Strategy's success in directly driving biodiversity activities at the state and territory scale has been limited, the involvement of jurisdictional governments in developing the Strategy provided value by helping to shape their thinking about biodiversity management. Some governments have developed their own strategies to inform the management of biodiversity within their state or territory. Others do not have a jurisdictional equivalent, and rely on the Strategy as a substitute. In some cases, the Strategy provided the basis from which state and territory biodiversity strategies were developed. Consequently several state and territory strategies are aligned with the Strategy's priorities and objectives.

There is an opportunity to improve the usefulness of the Strategy by redesigning it with consideration of the different role it has for different jurisdictions. To better guide and coordinate action, the Strategy could provide an adaptable implementation framework that enables national priorities and international obligations to be translated at a more local level. This would involve all governments committing to a mechanism that supports both collective and individual implementation based on the priorities of individual governments.

3.4. Regional and local

Role of regional organisations and local governments

The Strategy aimed to support Natural Resource Management (NRM) bodies, regional authorities and local governments by providing a framework to align regional and local action with national and international environmental priorities, and promote support for their actions at the local level.

Effectiveness of the Strategy as a tool for supporting regional and local scale efforts

Australia's 56 regional NRM organisations are central to the delivery of Australian Government NRM programs such as the Reef Trust, Green Army and the National Landcare Programme. They also act as delivery partners for state and territory NRM programs.

In working with the Australian Government, regional NRM organisations must show that their projects align with national and regional plans and policies, such as the Strategy. Some regional NRM organisations have also used the Strategy to guide the development of their regional NRM plans.

In addition to the contribution of NRM groups in delivering Australian Government and jurisdictional programs, NRM groups and other regional organisations have played an essential role in the implementation of *Priority for action 1: Engaging all Australians*, through building local community and industry engagement, and supporting Indigenous participation, in biodiversity conservation activities. For example, the Ngarrindjeri Regional Authority co-designed the Ngarrindjerri engagement strategy for the Coorong, Lower Lakes and Murray Mouth Recovery Project. The engagement strategy ensures Ngarrindjeri values, interests and cultural knowledge influence biodiversity conservation actions in the region (see Case Study G).

Local governments, along with NRM organisations and other regional organisations, are recognised by the Strategy as the critical scale for progressing some outcomes and targets. Local governments are responsible for the management of urban areas, as well as being well placed to provide local leadership on biodiversity conservation. The importance of urban landscapes is recognised globally, for example, by the stand-alone urban Sustainable Development Goal 11 to make cities and human settlements sustainable, and the closely related Sustainable Development Goal 12 to ensure sustainable consumption and production patterns, including through sustainable urban landscapes. This puts local governments in a strong position to support biodiversity and sustainable use within urban landscapes, and contribute to international commitments.

There is an opportunity for the Strategy to better identify how it will engage regional organisations and local government in managing biodiversity and ecosystem services.

3.5. The community and private sector

Role of the community and private sector

The Strategy presents a long term view in which the Australian community, including Indigenous peoples, academic and scientific bodies, business and industry, private landholders and non-government organisations, are contributing to efforts to conserve biodiversity. This recognises that while governments can set priorities, and guide and support activities, their actions alone cannot conserve biodiversity.

The Strategy aimed to build on the increased involvement of the community and private sector, through *Priority for action 1: Engaging all Australians*. This priority intended to direct efforts towards enhancing community engagement, engaging Indigenous peoples, and supporting partnerships between sectors. The Strategy outlines broad expectations for its implementation by key industry and community sectors.

The Strategy recognises the importance of the natural environment to the health, wellbeing and continuing the culture of Aboriginal and Torres Strait Islander peoples. It includes a number of actions aimed at building capacity and increasing engagement of Australian Aboriginal and Torres Strait Islander peoples in the conservation of biodiversity. These actions include training, supporting traditional knowledge transfer and improving opportunities for employment in the environment sector.

As the vast majority of the Australian landscape is privately managed, the contribution of farmers, primary industries, community groups and individuals is essential to the success of the Strategy. The Strategy calls on all Australians to take action, as a society, and as individuals, to contribute to enhancing our biodiversity's health and resilience. For businesses, the Strategy was designed to guide private sector biodiversity policies and integrate biodiversity into their central decision making processes. This was largely to be achieved through the use of markets and incentives. For individuals, the Strategy's call to action seeks for us to each act to reduce our ecological footprint. The Strategy identifies a role for individuals as part of the general community, to contribute personally to biodiversity conservation. Examples of contributions are learning more about how to live sustainably, or supporting, joining or forming groups concerned with issues such as conserving particular species or areas. However, there is no clear role for individuals in the Strategy's priorities, outcomes or actions.

The Strategy recognises the continued contribution of the community and private sector is critical in meeting the challenge of halting the decline in biodiversity. Stakeholders supported the Strategy's focus on increasing community engagement as a way to encourage partnerships and participation at the local level. The community and private sector are looking for leadership to direct their resources to the right priorities.

Effectiveness of the Strategy as a tool for engaging the community and leveraging private investment

The Strategy lacked clear accountability for the implementation of actions. In many cases, the Strategy's actions are assigned to governments collectively, with broad reference to others such as the community and private sectors where applicable. Stakeholders commonly raised the framework for delivery, including funding responsibilities, as an issue with the Strategy's

design as it is unclear who is responsible for action. Feedback received also advised the lack of accountability by government placed a greater strain on the under resourced conservation and land management sector.

There is an opportunity for the Strategy to make a stronger connection to its delivery mechanisms and funding arrangements, to better connect our international obligations with local action, and better recognise the opportunities to involve the community and private sector in biodiversity conservation. A good example is the NSW *Saving our Species* program (see Case Study H). *Saving our Species* sets the NSW Government's strategic management framework, outlining management actions needed to secure NSW's threatened species in the wild for the next 100 years. The program is innovative in applying a rigorous and transparent approach to prioritising investment, as well as aiming to align the efforts of stakeholders in the community to a common objective. Annual reporting of outcomes and investment where a project is being implemented will be available each year.

The Strategy should be clear in its purpose as a tool for governments or a tool to inspire and motivate change in individuals, as it will be difficult to be all things to all people. If the Strategy is to be primarily for the use of governments, channels should be established for engaging with other sectors, including non-government organisations, communities, businesses and individuals.

Key Points

- Timing of the Strategy's release was not ideal as it preceded the adoption of the Convention's Strategic Plan, making its implementation through the Strategy challenging.
- The Strategy could more comprehensively align with the Convention's Strategic Plan and be adaptable to evolving themes and priorities.
- The Strategy does not clearly articulate its intended use for different levels of government and other relevant sectors.
- There is inadequate guidance for decision makers to determine how best to direct investment for biodiversity conservation.

Photo: Piti with Mangata (Desert Quandong) (Parks Australia, Uluṟu-Kata Tjuṯa National Park)

Case Study F: Common Assessment Method, all jurisdictions

Through a collaborative effort across the Australian jurisdictions, a nationally consistent approach to assessing the risk of extinction of species and ecological communities and assigning them to threat categories is being developed.

The "Common Assessment Method for Listing Nationally Threatened Species and Ecological Communities" is based on the best practice standard established by the International Union for Conservation of Nature adopted in an Australian context. The method provides significant progress toward Action 22 of *Australia's Biodiversity Conservation Strategy 2010–2030* which is to "Harmonise approaches to listing threatened species and ecological communities across jurisdictions".

The application of the Common Assessment Method will ensure consistency of process and outcomes for listing assessments. Currently the Australian government, and each of the state and territory governments maintain separate statutory lists of threatened species, and in some cases, ecological communities. Differences in assessment methods across the jurisdictions result in misalignment in some of the taxa which are included in these lists.

Under the Common Assessment Method, an assessment undertaken by one jurisdiction could be adopted by any other state or territory or the Australian government, removing the need to re-assess threatened species and ecological communities in every jurisdiction. In future this will reduce the misalignment of listed matters that exists under the current arrangements.

To date, Western Australia, Tasmania, the Australian Capital Territory, the Northern Territory and the Commonwealth have entered into an intergovernmental agreement committing to implement the Common Assessment Method. The other states are working towards this formal commitment.

All jurisdictions, including those which have not yet become parties to the agreement, continue to participate in implementation activities. An inter-jurisdictional working group is actively working on the implementation of the Common Assessment Method, focussing on developing policy and operational procedures to ensure the assessment of species is done in a consistent manner to avoid creating further discrepancies between lists.

Case Study G: Ngarrindjeri Engagement Strategy, South Australia

Ngarrindjeri are the traditional owners of the Lower Murray, Lakes, Coorong and surrounding region and have occupied, enjoyed and managed their customary lands and waters since time immemorial. Ngarrindjeri philosophy sees the lands, waters and all living things as connected. The lands and waters are a living body and Ngarrindjeri are part of its existence. For Ngarrindjeri to be healthy, the lands and waters must be healthy.

In 2009 the Ngarrindjeri Regional Authority (the Authority), the peak Ngarrindjeri organisation, and the South Australian Government entered into the Kungun Ngarrindjeri Yunnan Agreement or Listen to Ngarrindjeri people speaking agreement (the Agreement). The Agreement is a consultation and negotiation framework and has been critical in establishing a new relationship between Ngarrindjeri and the State for matters relating to natural resource and cultural heritage management. At its heart the Agreement seeks to enable Ngarrindjeri cultural values to become integral to all planning and future management arrangements in the Ngarrindjeri and Others Native Title claim area.

As a key commitment under the Agreement, the Authority and the South Australian Government co-designed the Ngarrindjeri engagement strategy for the Coorong, Lower Lakes and Murray Mouth (CLLMM) Recovery Project. The CLLMM Ngarrindjeri Partnerships Project (Partnerships Project) has sought to build the core organisational capacity of the Authority to engage in the CLLMM Recovery Project and broader natural resource and cultural heritage management in the region.

The Project has utilised Statement of Commitments to guide Ngarrindjeri engagement in CLLMM Recovery Project activities including its large scale revegetation program, monitoring and adaptive management, Ruppia translocation as well as the updating of the Coorong, Lakes Alexandrina and Albert Ramsar site Ecological Character Description.

The CLLMM Recovery Project is part of the South Australian Government's Murray Future Program and funded by the Australia Government.

The Statement of Commitment's have acknowledged the unique cultural knowledge Ngarrindjeri hold of the CLLMM site and established joint initiatives to support the integration of Ngarrindjeri values and interests. These initiatives have been supported by Cultural Knowledge Agreements that protect and promote the ethical application of Ngarrindjeri knowledge.

The Partnerships Project has supported Ngarrindjeri to shape the development and implementation of CLLMM Recovery Project actions, ensuring they protect the unique Ngarrindjeri cultural heritage and support Ngarrindjeri rights and responsibility to speak and actively care for country.

These approaches have enabled Ngarrindjeri philosophies of interconnectivity to influence biodiversity conservation in the CLLMM region. Critically the integration of Ngarrindjeri knowledge and values into regional biodiversity planning seeks to better place human (Ngarrindjeri) wellbeing and interconnectivity as a key aspect of managing the CLLMM site. This is supported by the Ngarrindjeri's participation in the process of updating the CLLMM's Ecological Character Description Report. This approach creates a hopeful future where the wellbeing and liveliness of the Ngarrindjeri nation is a key consideration in natural resource management—an approach that will benefit the whole community and the CLLMM sites unique biodiversity.

Case Study H: Saving our Species, New South Wales

Saving our Species (SoS) is the NSW Government's program to secure as many threatened species as possible in the wild for the next 100 years. It sets a transparent and rigorous approach to prioritising investment based on peer reviewed science as well as aligning the efforts of all stakeholders in the community to a common objective.

Key attributes of the SoS program include:

- aligning efforts under a single banner, so investment in threatened species conservation can be accounted for and directed most effectively
- assigning threatened species to different management streams so the individual requirements of each species can be met
- inviting the NSW community and businesses to participate, recognising that projects to save threatened species are collaborative efforts.

Under SoS, threatened species in NSW are allocated to one of six management streams according to their distribution and ecology, and how much is known about them. Targeted actions are then developed for each species in each stream. The management streams approach enables resources to be directed to securing species that are at highest risk in NSW. A similar approach is being developed for threatened ecological communities and key threatening processes.

The NSW Government launched SoS in December 2013 and allocated $4.8 million to on-ground activities for more than 70 threatened species in addition to our experienced scientists and field staff. In March 2015, the NSW Government committed to $100 million in additional funding for SoS over five years to fund activities to protect the state's threatened species, commencing on 1 July 2016. This will allow the program to expand to cover more species and also threatened ecological communities and key threatening processes. The funding will enable practical on-ground habitat restoration, fencing and control of feral animals in targeted and specific locations.

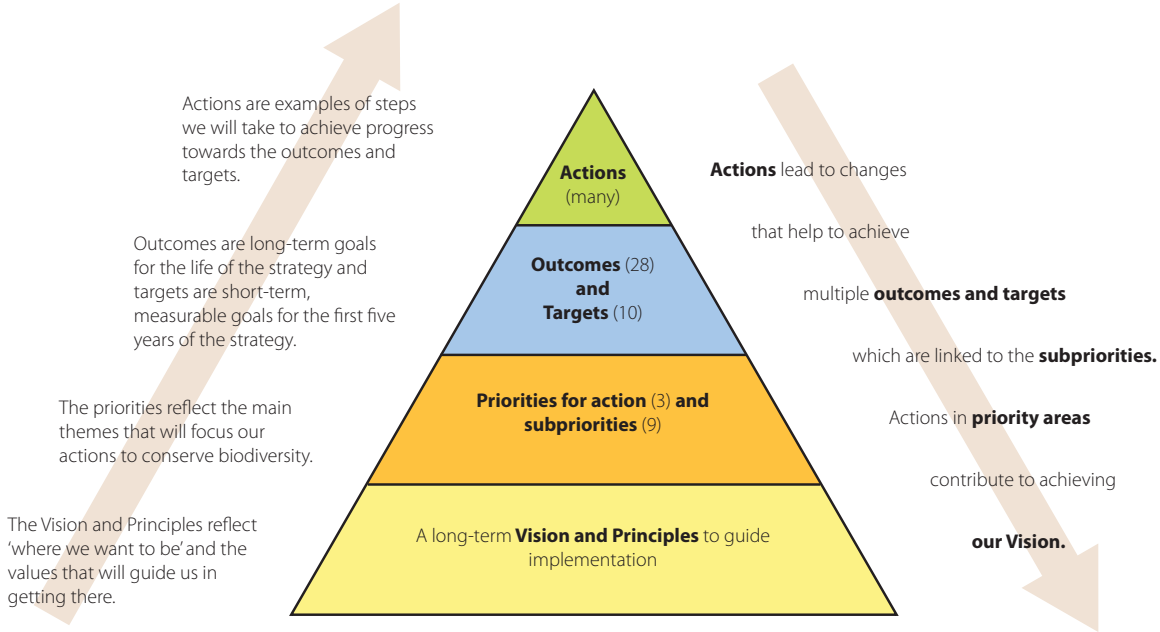
The NSW Government will work in partnership with skilled organisations such as local councils, experienced non-government organisations and individual landowners. Underpinning the expanded program will be improved information which is rigorous, accessible and useful. A monitoring, evaluation and reporting framework is already in place for the existing projects and a more detailed program based approach will be developed in 2016.

4. Review of strategic settings of the Strategy

The Strategy is structured in three sections, *Setting the Context, Priorities for Action and Implementation and Action*. *Setting the Context* includes the vision for the Strategy, principles to guide the Strategy and its implementation and identifies six main threats to Australia's biodiversity. *Priorities for Action* includes the Strategy's three national priorities for action to help stop Australia's biodiversity decline, each supported by three sub-priorities. Within each sub priority, outcomes and interim national targets are identified. *Implementation and Action* provides detail on the implementation of the Strategy and includes an indicative set of actions to achieve the Strategy's outcomes and targets.

The elements of the Strategy are intended to provide a strategic focus for our efforts as outlined in Figure 2 (from page 36 of the Strategy). The Strategy does not go on to articulate how the specific actions, outcomes, targets and priorities relate to each other and to the threats, principles and vision; nor how they were prioritised as the most important issues to address immediately. Clear articulation of the rationale behind these strategic settings could have been used to inform more effective interventions and establish pathways for the achievement of the Strategy's long term goals. To increase transparency, the Strategy would have benefited from the use of a program logic methodology to map the links, underlying assumptions and relationships between the elements of the Strategy.

Figure 2: Structure of Australia's Biodiversity Conservation Strategy 2010–2030



The following sections consider the elements of the Strategy's structure, and the interaction and operation of these elements.

4.1. Vision

The Strategy's vision is *Australia's biodiversity is healthy and resilient to threats, and valued both in its own right and for its essential contribution to our existence*. While clear and succinct, it is idealistic and does not reflect competing environmental, social, and economic objectives. The sustainable use of biological resources is an important component of biodiversity management, one of the three objectives of the Convention and is reflected in the vision of the Convention's Strategic Plan. The Strategy's vision could be clearer that the objectives for biodiversity to be healthy and valued do not mean its strict protection, but instead, are best achieved by investing in conservation and sustainable use in a way that best achieves balance between short and long term outcomes.

The vision describes an end-state of biodiversity as its overarching goal. In reality, managing biodiversity is an ongoing and dynamic process. Different approaches are required to manage the different forms of biodiversity across our natural, production and built landscapes. These approaches will need to adapt over time in response to developments in our understanding and use of biological resources, and the ongoing trade-off with competing social and economic objectives. In this way, the vision could better reflect the ongoing process of managing and conserving biodiversity. That is, to manage biological resources in a way that meets our current needs whilst ensuring their long term health and viability.

An effective vision needs to quickly and easily convey a strategy's purpose and aspirations to a broad audience, whereas the Strategy's vision speaks to a specific set of stakeholders who understand the concepts and values of biodiversity to which it refers. Alternative terminology could enable the Strategy's vision to reach a broader audience. For example, an anthropocentric framing of the Strategy and its vision could be used to describe the different values to humans. Without excluding or devaluing the intrinsic value of biodiversity, it would allow it to be better supported in all contexts. Other countries are using this approach, for example, the European Union's vision statement highlights the essential contribution of biodiversity to economic prosperity. Similarly, Finland's vision describes biodiversity as a source of human wellbeing.

4.2. Principles

The Strategy contains a set of eight principles to guide its implementation. The principles are generally consistent with the other elements of the Strategy. Links can be drawn between each of the three priorities for action and one or more of the principles. However, explanation is not provided in the Strategy about how the principles interact with other elements such as the outcomes and targets. As a result, it is difficult to determine how the principles have operated and been applied.

Principles in a long term strategy must also maintain relevance over time. They should provide high-level statements of intent and avoid prescriptive approaches to biodiversity conservation. This is true of the Strategy's principles, however updated principles could reflect our broadening understanding of the conservation opportunities beyond natural environments to include the full continuum of landscapes.

There could be increased focus on the anthropocentric values of biodiversity and explicit recognition to the trade-offs between long term objectives, such as biodiversity protection or intergenerational equity, and short term objectives, including social and economic interests. For example, South Africa's National Biodiversity Strategy and Action Plan 2015–2025 is based on principles that recognise the contribution of biodiversity to social development, economic growth and the wellbeing of South Africa's people.

4.3. Threats to biodiversity

The Strategy describes six main threats to Australia's biodiversity:

- Habitat loss, degradation and fragmentation,
- Invasive species,
- Unsustainable use and management of natural resources,
- Changes to the aquatic environment and water flows,
- Changing fire regimes, and
- Climate change.

These threats align with the main threats to biodiversity identified in the most recent edition of the Australian State of the Environment Report (2011). Noting the most significant pressures on biodiversity have not changed greatly since the first edition of the State of the Environment in 2001, it is likely the threats identified in the Strategy will continue to remain relevant as a basis for prioritising future biodiversity conservation efforts. Despite this, the Strategy could expand its consideration of emerging threats to biodiversity and the underlying drivers of those threats. For example, the threats to biodiversity described in the Strategy do not comprehensively reflect those recognised under the Convention, such as the impact of pollution.

The State of the Environment Report (2011) identifies climate change, population growth and economic growth as the main drivers of environmental change in Australia. While the Strategy recognises the significance of climate change, it does not adequately address the pressures of population and economic growth as driving the threats that more directly cause biodiversity decline. For example, the Strategy describes unsustainable use and management of natural resources as a threat, but fails to adequately recognise population pressures as a driver of increased natural resource consumption, land clearing and other land use change.

4.4. Priorities for action and outcomes

The Strategy's three priorities reflect how it proposes to address the main threats to biodiversity in Australia. The priorities for action and associated outcomes provide the basis for governments, and others, to align their actions and investments within agreed national priorities for biodiversity conservation.

Generally, the Strategy's priorities remain relevant. They broadly reflect the objectives of the Convention, and the strategic goals of the Convention's Strategic Plan, though the Strategy could better incorporate outcomes for sustainable use of biodiversity. The Strategy states that the three priorities provide the basis for sustainable living, however most of the Strategy's outcomes relate more strongly towards protecting, maintaining, and restoring biodiversity and ecosystem function.

Priority 1: Engaging all Australians

The first priority for action is to engage all Australians, and seeks to focus efforts to integrate consideration of biodiversity into decision making, increasing Indigenous engagement through employment, participation and partnership, and enhancing strategic investments and partnerships between sectors.

There are outcomes under this priority which seek to enhance strategic investments and partnerships with the private sector and increase the use of ecosystem markets. While these go some way to delivering economic benefits through sustainable use of biodiversity, there is scope for the Strategy and governments to increase focus in this area to achieve complementary outcomes across all sectors.

The first priority also seeks to increase awareness and participation in biodiversity conservation with the aim of improving the way Australian's value and use biodiversity. Whilst awareness and engagement in biodiversity are important, on their own they are not sufficient to drive the behavioural change required to sustain Australia's biodiversity.

Priority 2: Building ecosystem resilience in a changing climate

The second priority for action is to build the capacity of ecosystems to adapt to and recover from the impacts of climate change, to the extent that improving resilience will enable biodiversity to be healthy and resilient to threats. Many stakeholders considered this priority remains important for achieving ecosystem resilience, maintaining ecosystem services and better supporting landscape scale planning.

While outcomes under this priority make reference to terrestrial, aquatic and marine ecosystems, overall there is a bias towards outcomes for terrestrial ecosystems in the Strategy. There are few outcomes in the Strategy that are designed to specifically improve the health and resilience of marine and aquatic ecosystems.

Similarly, while the Strategy identifies a need to manage biodiversity in multiple use land and seascapes, overall, its outcomes and actions are focused towards conservation in natural landscapes. The Strategy could provide greater emphasis on the opportunities for enhanced biodiversity outcomes in built environments and production landscapes. The extent and function of biodiversity, and consequent benefits to other sectors, is different in each of these landscapes. There are opportunities to manage production landscapes in ways that optimise agricultural and environmental outcomes. Similarly, with an increasing urban population, the Strategy could include outcomes for enriching biodiversity within Australia's built environments to benefit our physical and mental health, lifestyle and overall wellbeing.

Priority 3: Getting measurable results

The third priority for action is to get measurable results to help prioritise and target investment in actions that will produce the greatest long term benefits. It recognises there are significant gaps in our knowledge of biodiversity and science and research play an important part in the protection of biodiversity. Several stakeholders considered monitoring and reporting remains a priority in guiding the strategic direction of biodiversity conservation in Australia, with some calling for increased resourcing to improve the efficacy of biodiversity monitoring and reporting systems.

Outcomes within the priority recognise if we are to mainstream biodiversity, we need to be able to quantify the benefits and values for all sectors in order to better take these into account in decision making. To this effect, the Strategy includes outcomes which aim to improve our capacity to measure, evaluate and understand the effectiveness of our biodiversity conservation efforts, and improve representation of biodiversity and ecosystem services in national accounting systems. Such outcomes remain a priority, and existing efforts to establish methods for assessing the benefits of biodiversity to our society, such as *Valuing Victoria's Parks* (See Case Study C), provide a basis for expanding work in this area.

The following section explores some of the issues experienced with monitoring and reporting against the Strategy, and identifies that greater consideration could be given to improving mechanisms for integrating data and information from various sources to support assessments of biodiversity condition and trend.

4.5. National targets

The Strategy contains 10 interim targets for the first five years, 2010–2015. The targets were intended to focus the collective efforts of all governments towards the delivery of the Strategy's priorities for action and associated outcomes. The Strategy includes a provision, as part of its 2015 review, to consider whether the interim targets remain suitable for progressing implementation of the Strategy.

The review found there were significant challenges in reporting progress against the interim targets. As the targets sought national-scale outcomes, their achievement was reliant upon the combined efforts of all Australian governments and other sectors. Difficulties in collating and integrating data collected by multiple governments and institutions, across many disciplines and scales, has meant a quantitative assessment of achievement towards each target was not possible for the review. Notwithstanding, many activities contributing towards the delivery of targets have been undertaken within all jurisdictions. Examples are demonstrated in case studies throughout this report.

To assess the ongoing suitability of the interim targets as a tool for implementing the Strategy's priorities for action, the review considered both the effectiveness of their design, and their suitability for driving progress towards the Strategy's long term outcomes.

Photo: Green Turtle (© Copyright Arthur Mostead and the Department)

Effectiveness of design

For targets to be effective drivers of change, they need to be well defined, relevant to the desired outcomes and include clear parameters that enable progress toward their achievement to be measured. To increase the likelihood targets will effectively deliver the intended outcomes, they must contain SMART characteristics—that is, they should be:

- **S**PECIFIC—Target is well defined so its goal can be easily understood
- **M**EASURABLE—Target has clear parameters that can be measured to track progress
- **A**TTAINABLE—Target is challenging but realistically achievable with available resources
- **R**ELEVANT—Target aids in achieving desired long term outcomes and is consistent with other associated goals
- **T**IMELY—Target includes a timeframe for achievement to keep progress on track

An assessment of how the Strategy's interim targets compare against the SMART criteria is provided at Appendix C. This assessment identifies the Strategy's interim targets did not generally satisfy the SMART criteria. Some targets could not be clearly interpreted or easily monitored to track trends, while others could not realistically be achieved in the given timeframe.

Most of the interim targets contain quantitative parameters for change, however many lack the specificity needed to effectively guide the efforts of parties contributing to their achievement. Further, capacity to measure progress against the interim targets relied heavily on the establishment of national datasets, including appropriate baselines from which to measure progress. The Strategy's target to establish a national biodiversity monitoring and reporting system was challenging in the given timeframe, and contributed to difficulties in reporting against targets that relied on such a system to effectively track progress.

Capacity to utilise existing monitoring and reporting systems to measure progress must be a key consideration in target design. For example, progress against Target 4 could be quantitatively measured using information collated and stored in the Collaborative Australian Protected Areas Database. The Australian Government maintains the currency of this data by routinely collecting information from all state and territory governments and other protected area managers about the location and management of protected areas.

Suitability for driving progress towards outcomes

The Strategy's interim targets were included as a means of promoting implementation of the Strategy and enabling performance to be monitored over time. However, the targets do not align fully with the Strategy's outcomes, meaning their achievement alone is unlikely to result in comprehensive implementation of the Strategy. For example, Target 4—which sought a national increase in areas managed for biodiversity conservation—has largely been achieved through the expansion of Australia's network of protected areas under the National Reserve and Commonwealth Marine Reserve systems. While this has contributed towards the Strategy's outcome to increase the number, extent and condition of ecosystems protected under secure conservation tenure, increasing the reserve estate by itself is unlikely to be sufficient to deliver against the Strategy's associated outcomes for protecting diversity, including an improvement in the conservation status of listed threatened species and ecological communities.

Many stakeholders also considered the targets were not comprehensive enough for achieving the Strategy's full suite of outcomes. For example, several submissions identified habitat restoration targets were not supported with goals for limitations on land clearing and therefore were unlikely to achieve the Strategy's outcome for a net national increase in the extent and condition of native habitat across tenures.

The Strategy emphasises the importance of the targets for achieving its three priorities for action and associated outcomes. While targets provide a useful tool for establishing a sense of urgency and accountability for implementation, it is important they not restrict ability to reprioritise efforts as new issues emerge. Adequate attention and resourcing must also be allocated towards outcomes that are not aligned with specific targets. In some cases, activities that progress outcomes not driven by specific targets are already being delivered by all levels of government across a range of portfolios. For example, the activities of the Commonwealth Environment Water Holder (see Case Study I) and other governments responsible for implementation of the Murray-Darling Basin Plan are contributing to the Strategy's outcome to improve the provision of environmental water allocations. Such activities may not be recognised as contributing to the Strategy's implementation if reporting is focused only on progress against targets.

Some stakeholders supported the intent of the targets as a mechanism for driving the delivery of the Strategy's outcomes. They considered the targets had provided their organisation with a framework to guide and prioritise their activities in support of biodiversity conservation. Conversely, other stakeholders considered the national targets did not provide an appropriate framework for progressing the Strategy's outcomes because they lacked the specificity to guide on ground efforts and enable effective reporting on progress. They also identified the lack of accountability for the achievement of targets, and the inability to measure progress, as primary obstacles to their usefulness for delivering the Strategy's outcomes.

As the targets sought national-scale outcomes, their achievement was reliant upon the combined efforts of multiple parties, most of which operate at sub-national scales. Specific responsibilities for delivery of targets were intended to be identified in an implementation plan. Without this, governments and other relevant sectors had no clear guidance or accountability for their contribution towards the achievement of each target, and no established process for reporting their efforts. This has meant many sub-national scale initiatives have not been explicitly identified as contributing to the Strategy's outcomes, and this has led to difficulties in identifying and collating relevant data to assess progress against targets.

Establishing a complete picture of national and sub-national actions that contribute to implementation of the Strategy would provide an essential starting point for collating information to report against national targets and outcomes. It would better recognise how individual and multilateral efforts contribute towards the Strategy's implementation and provide a useful guide for prioritising future investments to address true gaps in biodiversity conservation.

Noting that pressures on biodiversity differ geographically within Australia, each jurisdiction will have a necessarily varied set of priorities for biodiversity conservation based on their unique circumstances. Collective action may therefore be better focused on a small set of well specified national-scale priorities that would progress outcomes that are important in all jurisdictions and may be supported by targets. This may also ease the inherent challenges in achieving consensus to national targets without the need to dilute what they set out to achieve. Consideration could also be given to the inclusion of targets designed to achieve sub-national outcomes, with only relevant jurisdictions assuming responsibility for their implementation. For example, the Reef Water Quality Protection Plan has been designed to improve the condition of the Great Barrier Reef (see Case Study J). While only the Queensland and Australian Governments are responsible for its implementation, it contributes significantly to nationally important outcomes for marine biodiversity.

Key points:

- The Strategy is generally focused on the restoration and protection of natural environments and does not provide a framework for biodiversity conservation in built or production landscapes.
- The Strategy includes few outcomes designed to specifically improve the health and resilience of biodiversity in marine and aquatic environments.
- The Strategy does not adequately recognise that governments must achieve a balance between short and long term social, economic and environmental interests.
- Overall, the Strategy's targets did not effectively guide the efforts of governments, other organisations or individuals. Some targets were unclear or difficult to measure, while others were not tightly tied to the Strategy's outcomes.
- An implementation plan, including allocation of responsibility for actions, has not been established and coordinated implementation of the Strategy has been ineffective.

Photo: Fencing along the Murrumbidgee River to restrict stock damage and protect native vegetation.

Case Study I: Commonwealth Environmental Water, Australian Government

As part of the suite of reforms aimed at achieving a healthy Murray-Darling Basin (the Basin), the Australian Government has been acquiring water for the environment through investments in water-saving infrastructure and purchases on the water market. This water is used to protect and restore the rivers, wetlands and floodplains (and the native animals and plants they support) across the Basin. This includes providing water to wetlands recognised as being of international importance under the Ramsar convention. The Australian Government's environmental water is managed by the Commonwealth Environmental Water Holder (the CEWH).

Since 2009, over 5,000 gigalitres of Commonwealth environmental water has been delivered to rivers, wetlands and floodplains across the Basin. This water has already contributed to the following environmental outcomes:

- supported native fish survival, breeding and migration with record numbers (over 10 times the number recorded in recent history) of the threatened Murray hardyhead in the South Australian Riverland in 2015
- supported native waterbird breeding and feeding habitat with environmental water enabling the completion of colonial waterbird breeding events in the Macquarie Marshes in 2010–11, the Gwydir Wetlands in 2012 and Yanga National Park in 2014
- improved the condition of vegetation such as river red gum forests and woodlands. In 2013 the Lachlan River was reconnected to lakes, creeks and wetlands throughout the catchment, providing benefits to 60,000 hectares of floodplain wetlands and inundating river red gums, black box, lignum and other wetland vegetation communities
- improved water quality through the flushing of salt, sediments and excess nutrients out of the Basin through the Murray Mouth.

To assess the outcomes from environmental water, the CEWH has established a robust monitoring, evaluation, reporting and improvement programme. This includes monitoring for all Commonwealth environmental watering actions as they occur and a $30 million 5-year intervention monitoring programme.

In addition to having environmental water delivered to the Basin's rivers and wetlands, the CEWH also actively engages in the water market. Through water trading (selling water in one catchment to buy water in another catchment or in the future) the resource can be flexibly managed to best meet the highest environmental demands across the Basin and across years.

The planning, management and monitoring of Commonwealth environmental water is supported by a range of local partners which include; state government agencies, catchment authorities, river operators, local governments, Aboriginal communities, environmental and irrigation groups, and landholders. These partnerships support the on-ground delivery of water and the achievement of environmental outcomes, while also helping to identify opportunities to achieve complementary social, cultural and economic outcomes.

One example of such a partnership arrangement is the agreement between the CEWH and the Ngarrindjeri Regional Authority, the peak regional organisation of the Ngarrindjeri people (the traditional owners of the River, Coorong, Lakes Alexandrina and Albert and adjacent areas of South Australia). Signed in November 2015, the agreement establishes a framework for coordinating environmental watering between the two parties. It includes a process for the Ngarrindjeri Regional Authority to submit watering proposals and sets out the arrangements for managing the transfer, delivery and monitoring of Commonwealth environmental water for agreed watering events.

Photo: Kings Park and Botanic Garden, Perth.

Case Study J: Best management practice (BMP) programs, Queensland

The Reef Water Quality Protection Plan (Reef Plan) is a joint commitment of the Queensland and Australian Governments that coordinates projects and partnerships to improve land management in reef catchments, to reduce non-point source pollution and minimise the risk to the reef from declining water quality.

Reef Plan sets ambitious but achievable targets for improved water quality and land management practices and identifies actions to improve the quality of water entering the reef.

Additionally, the Reef 2050 Long-Term Sustainability Plan provides an overarching strategy for management of the Great Barrier Reef. It is based on science and the lessons learnt from managing the Reef over the past four decades. This plan describes the actions judged necessary to maintain and enhance the Outstanding Universal Value of the Great Barrier Reef World Heritage Area.

The Queensland Government contributes to the delivery of many Reef Plan actions, significantly supporting the development and implementation of voluntary best management practice (BMP) programs for the sugarcane and grazing industries within Great Barrier Reef catchments.

To date, the Queensland Government has committed $18.5million to support the cane and grazing BMPs. The BMP process consists of self-assessment modules whereby producers assess themselves as at, equal to or above industry standard for key management practices. The self-assessment allows the producer to identify areas where they could change their practices to achieve better environmental, ethical or economic outcomes.

The self-assessment process is accompanied by extension and training workshops, on-farm demonstrations, field days and one-on-one extension. These activities provide producers with the opportunity to identify and implement the key farm practices that will enhance enterprise productivity and minimise losses to the environment of nutrients, pesticides and sediments. This support enhances the roll-out of the BMP programs and moves the industry towards best practice.

The BMP programs provide the opportunity for agricultural industries to proactively lead change within their own sectors. Auditing and accreditation systems developed for both BMP programs, enable ratification of the data collected through the reporting process and provide assurance that each program is resulting in on-ground adoption of program principles and standards.

Smartcane BMP, developed by the CANEGROWERS industry organisation, is being delivered across all cane-growing areas in Queensland, with a specific focus on the catchments flowing into the reef.

There are more than 1000 enterprises registered in the Smartcane BMP program, industry facilitators are rolling out workshops and assisting growers to complete a self-assessment of the Smartcane BMP modules. As of 31 August 2015, 773 growers had completed the nutrient, herbicide, and irrigation and drainage modules—the modules most critical to reef health. Additionally, 18 growers had been accredited in these critical modules.

The Grazing BMP was developed by a partnership consisting of AgForce, the Fitzroy Basin Association and the Department of Agriculture, Fisheries and Forestry. Initially delivered in the Burdekin and Fitzroy catchments—the major contributors to sediment loads in the Great Barrier Reef lagoon, the program has now expanded into the Burnett Mary and South East Queensland catchments.

As at 31 August 2015, 1071 graziers had completed at least one module, 319 had already completed all five modules, which address all the aspects of running a grazing enterprise. Eighteen graziers had been independently audited and accredited against the key industry standards across all modules.

In partnership with scientific and agricultural communities, the department has scoped, contracted and funded science projects to support improved on-ground management including the BMP programs, aimed at increasing productivity and profitability, while strongly contributing to reef water quality improvement.

The imperative to sustain a strong reef science program was made clear in the 2013 Scientific Consensus Statement and the renewed Reef Plan 2013 and Reef 2050 Long-Term Sustainability Plan. The science continues to show that the major cause of the current poor state of many key reef species is due to a decline in reef water quality linked to the loss of fertiliser, pesticides and sediment from broad-scale agriculture. The science program firstly targeted agricultural management systems specifically nutrients and pesticides (cane) and sediment management (grazing) and secondly addressed critical gaps in understanding of agricultural contributions to reef water quality including mapping, water quality data collection and assessment, all of which helps guide investment in management interventions and programs.

By 30 June 2014, 42 projects in a portfolio had been completed or had reached required milestones. Since 2009, the program has allocated $8.9 million to science projects. In the 2015–2019 science program, investment will build on the 2009–2014 program by extending information to deliver on-ground practice change and undertaking additional science projects which address knowledge gaps and prioritise future investment and responses in reef catchments.

The projects—conducted by government, academic and private research institutions—aim to give producers reassurance and suitable tools with which to assess their current management against best practice. For example, the Department of Science, Information Technology and Innovation produced mapping of erodible soils, prevalence of gullies and traced sources of fine sediment in the Burdekin grazing lands enabling identification of priority areas for management practice improvement and extension activities. From May 2015, a suite of property scale reports have been made available online for Queensland graziers and their extension networks. Information provided in these reports includes historical ground cover, mapping of erodible soils, regional climate forecasting and modelled pasture growth forecasting.

Information from the science program has been shared with agricultural advisors and industry extension programs to deliver support to graziers and cane farmers, particularly about the economic and business benefits associated with change on the farm. This paddock-level support is designed to encourage and support growers to take advantage of BMP-based productivity opportunities while reducing their impacts upon reef catchments.

5. Summary and conclusion

The Strategy was intended for use by governments, the private sector, land owners and individuals as a guiding policy for biodiversity conservation activities. In several areas the Strategy has been successful against this purpose. Within the Australian Government, the Strategy has informed the design of national biodiversity and land management programs and been used to target investment in projects which advance the Strategy's objectives. Within state and territory governments the Strategy has, at times, been used to inform biodiversity management, forming the basis of, or being a substitute for, sub-national biodiversity policies. Although the Strategy has provided value in these and other areas, it has not done so in a consistent or systematic way.

The key findings of the review outline the major issues which have impeded the Strategy's success. The review **recommends** the Strategy be revised in light of these findings, recognising the Strategy remains uniquely placed to:

- manage transboundary environmental issues,
- deliver on biodiversity-related issues that require Australian Government authority or cooperation from multiple jurisdictions, and
- coordinate effort and leverage investment on shared priorities for biodiversity management.

Summaries of each key finding are provided below, along with approaches that may be considered for a revised Strategy.

1. The Strategy did not engage, guide, or communicate its objectives to all audiences in a useful way

- *The Strategy is long and often technical, limiting its ability to influence a broad audience.*

The Strategy length, presentation and use of complex language limited its ability to capture and influence its stakeholders. The Strategy could more succinctly communicate its key concepts and use images and other visual aids to enhance and streamline content. More balanced language that better reflects the range of environmental, social and economic values held for biodiversity may also enhance appeal across a broader audience.

The Strategy could provide better guidance for stakeholders about how they can identify and build on existing efforts to implement the Strategy and contribute to addressing gaps. Consideration could also be given to using different mediums, such as a web-based format, to provide broader reach and usage.

- *The Strategy does not clearly articulate its intended use for different levels of government and other relevant sectors.*

While the Strategy is clear in its objective to encourage involvement by all, the specific role of each stakeholder in delivering biodiversity conservation outcomes is not clearly identified. The Strategy could be more effective if its overall intent, including what it sets out to achieve, who the stakeholders are, and the role of each stakeholder in implementing the Strategy, is clearly articulated. To achieve commitment to coordinated action for biodiversity conservation, the Strategy must clearly identify how all levels of government and other relevant sectors can contribute and benefit from its implementation.

At the outset, decisions must be made about whether the revised Strategy is intended to guide the actions of some or all levels of government, businesses, non-government organisations and NRM groups, as well as inspire and motivate change in individuals. It may be appropriate for the Strategy to initially focus on coordinating the efforts of governments before progressively incorporating other sectors.

- *There is inadequate guidance for decision makers to determine how best to direct investment for biodiversity conservation.*

There remains a place for a national direction for biodiversity conservation by establishing desired national outcomes and agreed priorities for implementation. The challenge lies in clearly identifying how actions delivered at multiple scales combine to achieve national outcomes.

In revising the Strategy, program logic methodology should be utilised to map the links between actions and outcomes, ensuring this information is displayed in a way that is transparent and easy to understand. Clearly identifying actions that contribute to achieving each outcome will enable future interventions to be better targeted towards priorities and minimise duplication, while also helping to inform monitoring and reporting.

- *Overall, the Strategy's targets did not effectively guide the efforts of governments, other organisations or individuals. Some targets were unclear or difficult to measure, while others were not tightly tied to the Strategy's outcomes.*

The Strategy's targets were intended to focus the collective efforts of all governments towards the delivery of the Strategy's priorities for action. For targets to be effective drivers of change, they need to be well defined, relevant to the desired outcomes and include clear parameters that enable progress to be measured. Many of the Strategy's targets could not be clearly interpreted or easily monitored to track trends, and therefore had limited success in guiding the efforts of those contributing to their implementation.

While targets may provide a useful tool for prioritising effort and measuring progress, it is important to ensure commitment to action is comprehensive enough to deliver against the Strategy's broader set of outcomes. A revised Strategy could be more action-orientated, and may consider a smaller set of well-specified targets for more efficient collective action towards nationally agreed priorities.

2. The Strategy is too focused on preventing the loss of biodiversity in natural terrestrial environments and does not consider biodiversity contributions across all landscapes

- *The Strategy is generally concerned with the restoration and protection of natural environments and does not provide a framework for biodiversity conservation in built or production landscapes.*

Recognising there continues to be immense value in the restoration and protection of natural landscapes, the Strategy could more comprehensively address the full continuum of Australian landscapes, including production and built landscapes. It could also benefit from better emphasising the sustainable use of biodiversity as an important part of biodiversity management.

Desired outcomes and expectations for biodiversity management in different landscapes types should be fit-for-purpose, recognising the different values, needs and opportunities in each landscape. In built landscapes, biodiversity management may focus on delivering health and wellbeing outcomes for people, while in production landscapes it may be more important to focus on natural processes that support production. While the focus is different, there will be biodiversity benefits from management in these landscapes.

- *The Strategy does not clearly resonate with people living in urban or rural environments or make key linkages to livelihoods and health and wellbeing*

The Strategy could have greater meaning for the broader Australian public by supporting biodiversity management across other landscapes, including urban and rural environments where most Australians live. There are opportunities to deliver more meaningful biodiversity outcomes and achieve goals for mainstreaming biodiversity conservation considerations by establishing key linkages to livelihoods, health and wellbeing.

- *The Strategy includes few outcomes designed to specifically improve the health and resilience of biodiversity in marine and aquatic environments.*

While there are references to aquatic and marine ecosystems, overall there is a bias in the Strategy towards outcomes for terrestrial ecosystems. A revision of the Strategy provides an opportunity to better address biodiversity conservation in aquatic and marine environments by including more targeted and specific outcomes.

- *The Strategy does not adequately recognise that governments must achieve a balance between short and long term social, economic and environmental interests.*

The Strategy would benefit from a clear and realistic explanation of the trade-offs which occur between biodiversity and other interests, and their short and long term costs and benefits. Better recognition of biodiversity as a determinate of our economic prosperity, and health and wellbeing is necessary to ensure consideration of long term benefits is integrated into shorter-term decision making. Government objectives for biodiversity will vary in urban, rural and remote regions, and the challenge lies in integrating collective local decisions in way that achieves balanced regional and national level outcomes.

3. The Strategy has not effectively influenced biodiversity conservation activities

- *There was no ongoing oversight from jurisdictions to facilitate and coordinate implementation of the Strategy.*

A durable and well-supported governance structure is required to ensure the Strategy is successfully implemented over its lifespan. Ideally, the Strategy's implementation would be jointly managed by the Australian Government, state and territory Governments, and the Australian Local Government Association. To ensure delivery of the Strategy is not disrupted, the adopted governance arrangements must be valued by participants, adaptable and allow for changes to institutional arrangements over the Strategy's duration.

- *An implementation plan, including allocation of responsibility for actions, has not been established and coordinated implementation of the Strategy has been ineffective.*

While the strategy identifies actions for achieving its outcomes, these needed to be supported by the development of an implementation plan to establish transparency and accountability for each jurisdiction's contribution towards delivery of targets and outcomes.

A successful implementation plan should be a dynamic and practical tool, which leverages existing biodiversity management approaches practiced by governments and has the support of all jurisdictions. Implementation of the Strategy must be adaptable to local contexts and allow for actions to be adjusted and amended over time as priorities change and situations evolve. This adaptability will increase the Strategy's relevance to governments throughout its duration.

- *The expectation that a new, stand alone monitoring and reporting framework would be developed for the Strategy was ambitious and did not build on existing efforts.*

Rather than resourcing an entirely new system, as implied by target 10, a monitoring and reporting framework for the Strategy should enhance existing monitoring systems already in operation within jurisdictions. Establishing the Strategy as a national platform which draws together the full suite of biodiversity policies and programs delivered in Australia would improve the availability of information on the actions to implement the Strategy and their outcomes. This would enable greater oversight of national biodiversity activities and support more efficient and comprehensive national and international reporting. Better visibility of current, ongoing and future efforts will also provide an opportunity to identify gaps at a range of scales to inform priority setting and support robust decision making across all sectors.

4. Alignment of the Strategy with the Convention on Biological Diversity, and other related international obligations, could be enhanced

- *Timing of the Strategy's release was not ideal as it preceded the adoption of the Convention's Strategic Plan, making its implementation through the Strategy challenging.*

Noting the Convention will seek to review their Strategic Plan post-2020, the Strategy would benefit from an adaptable framework which can accommodate the Convention's evolving themes and priorities over time.

- *The Strategy could more comprehensively align with the Convention's Strategic Plan and be adaptable to evolving themes and priorities.*

To comprehensively address the Convention's Strategic Plan and associated Aichi Biodiversity Targets, the scope of the Strategy would need to be broadened to include, for example, the sustainable use of biodiversity.

Any effort to alter the Strategy's framework to improve alignment with the Convention and its Aichi Biodiversity Target should also aim to build in adaptability which would allow for emerging international priorities to be addressed within the national context.

Improving alignment of the Strategy with the Convention's Strategic Plan may also facilitate more coordinated national implementation of other biodiversity-related conventions that have already moved to align with the Convention on Biological Diversity. This provides an opportunity to reduce duplication and better align actions that deliver against our international biodiversity responsibilities.

Appendix A—Public submissions and survey responses

List of public submissions received
Australian Association for Environmental Education
Australian Conservation Foundation
Australian Land Conservation Alliance
Birdlife Australia
Bruce Boyes
Daniel Faith Australian Museum Research Institute
Frances Guard Dilkusha Nature Refuge
Fungimap
Gecko Gold Coast and Hinterland Environment Council
Glen Eira Environment Group
Griff Foley Merewether Landcare
Housing Industry Association
Humane Society International
Indigenous Land Corporation
Martine Maron University of Queensland
Mary River Catchment Coordinating Committee
Nikki Bennetts
NSW Aboriginal Land Council
Peel Harvey Catchment Council
Queensland Mycological Society
Society for Conservation Biology (Oceania)
Tasmanian Conservation Trust
The Wilderness Society
Thelma Bridle Adelaide Fungal Studies Group
Wheatbelt NRM

List of survey responses received
Adelaide Fungal Studies Group
Amanda Cornwall & Associates
Anonymous
Anonymous
Anonymous
Anonymous
Anonymous
Anonymous
Arid Lands Environment Centre
Bev Robinson
Christine Elizabeth Fraser
Clarence Environment Centre Inc
Courtney Jackson Positive Change for Marine Life
David Salt ARC Centre of Excellence
Elaine Davison
Environmental Farmers Network
Jill Redwood Environment East Gippsland Inc
John Woinarski Charles Darwin University
Mackay Conservation Group
Max Chappell Wet Tropics Management Authority
Nature Conservation Society of SA
Nature Conservation Society of SA (supplementary)
NRM Regions Australia
Richard John Petheram
Sapphire McMullan Fisher Fungimap

Common stakeholder views:

- The Strategy lacks detail on responsibilities for implementation, including monitoring and reporting arrangements.
- The Strategy lacks commitment and prioritisation of funding and resources for implementation of its priorities for action.
- Targets lack the specificity needed to track and measure progress towards their achievement.
- The Strategy could better emphasise the importance of biodiversity to the Australian economy, as well as ensuring biosecurity and improving human health outcomes in urban landscapes.
- The Strategy needs to better articulate the role and interaction of relevant legislation, policies, and programs, at all levels of government, to ensure Australia's framework for biodiversity conservation is comprehensive without being duplicative.
- The Strategy should be revised to better deliver against the Convention on Biological Diversity's Aichi Biodiversity Targets, ensuring the full content of each target is addressed.
- Additional targets for threatened species recovery should be included, and existing habitat restoration targets should be revised to require 'net' increases.
- A revised Strategy should prioritise efforts to ensure Australia's National Reserve System is comprehensive, connected and ecologically representative.
- The Strategy should encourage the use of Traditional Ecological Knowledge in biodiversity conservation decision making and provide a framework for the equitable sharing of benefits arising from the use of that knowledge.
- The Strategy should prioritise the development of environmental economic accounts to better describe the relationship between the environment and the economy and improve decision making.
- The Strategy should recognise fungi, as distinct from plants and animals, and prioritise research to improve our understanding of its role in building ecosystem resilience.

Appendix B—Strategic goals and Aichi Biodiversity Targets

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Target 1
By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2
By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3
By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Target 4
By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

Target 5
By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 6
By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7
By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8
By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9
By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10
By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11
By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12
By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13
By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

Target 14
By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15
By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16
By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

Target 17
By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18
By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19
By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20
By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011–2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Appendix C—Assessment of interim targets against 'SMART' criteria

Criteria	Assessment of national target design against criteria
SPECIFIC Target is well defined so its goal can be easily understood.	Many of the Strategy's targets lack the specificity needed to effectively guide the efforts of parties contributing to their achievement. For example, Target 4 seeks to increase the area of native habitat managed for biodiversity conservation by 600,000km^2 across terrestrial, aquatic and marine environments. As the desired increase for each environment type is not specified, this target could be achieved without delivering substantial biodiversity outcomes in all three environments. In addition, the target could have provided better guidance to individual governments by explicitly identifying the intended contribution towards this target within each jurisdiction. Further, some of the targets are subject to interpretation because key terms are not explicitly defined. For example, Target 3 seeks to achieve a doubling of the value of complementary markets for ecosystems services. This is difficult to interpret because the term "complementary markets" has not been defined. It is unclear what types of markets (biodiversity, water, carbon) and other activities (incentives, offsets) would contribute to its achievement. Issues with specificity have also impacted the measurability of certain targets. For example, Target 7 – which aims to reduce the impact of invasive species on threatened species and ecological communities by 10% – is not easily measured because the impact of invasive species on threatened species is difficult to determine separately from other threats.
MEASURABLE Target has clear parameters that can be measured to track progress and assess whether the goal was achieved.	Most of the Strategy's targets contain quantitative parameters for change. For example, Target 1 seeks a 25 per cent increase in participation in biodiversity conservation, while Target 5 aims to achieve restoration of 1000km^2 of fragmented landscapes and aquatic systems. Despite this, progress against some targets has been difficult to measure because adequate baseline data could not be established, or data was not available at a national scale. For Target 1, efforts were made to establish national baseline data through the inclusion of specific questions about participation in biodiversity conservation activities in the 2011–12 ABS household survey. However, no further surveys were undertaken to enable a comparative assessment of participation rates in 2015. Considering substantial resources are required to facilitate national scale surveys, this target may have been better focused on participation rates in NRM programs, which have existing mandatory reporting frameworks in place. Although many relevant and ongoing monitoring systems exist, they are delivered at a range of scales by numerous institutions. Significant challenges in collating and standardising data from these multiple sources has meant reporting against some of the national targets was not possible. For example, at the time Target 5 was developed, a variety of existing data sources were available to determine the extent of restored terrestrial landscapes, however it has proven difficult to aggregate relevant datasets to enable a national scale assessment . In addition, while there has been substantial effort made towards improving the connectivity of aquatic systems since 2010, accounting for the contribution of environmental flows towards this target is difficult because they are delivered seasonally and are reported on a volumetric (rather than area) basis.

Criteria	Assessment of national target design against criteria
ATTAINABLE Target is challenging but realistically achievable. This involves considering whether there are appropriate levels of commitment and available resources.	At the time of their development, it was considered that many targets could be achieved with ongoing investment in existing NRM programs and initiatives. For example, projected increases in terrestrial protected areas under the National Reserve System, together with likely increases to Commonwealth Marine Protected Areas suggested Target 4 could be realistically met by 2015. Target 2, which sought to increase employment and participation of Indigenous peoples in biodiversity conservation by 25 per cent, was also considered achievable with continued investment by governments in Indigenous NRM programs. In response to changing priorities, some programs have ceased in order to reallocate resources to new initiatives. For example, it was intended Target 6, which sought to establish four continental-scale linkages to improve ecological connectivity, would largely be delivered via the National Wildlife Corridors Plan. While the achievement of connectivity outcomes remains a priority, these are being delivered through a range of new initiatives, including the Green Army Programme and 20 Million Trees Programme. While these programs contribute to national-scale connectivity targets, projects under these programs are implemented at regional and local scales. Each government, and other contributing parties, will necessarily take different approaches to delivering against the national targets, based on individual priorities and available resources. Coordinating these efforts requires effective collaboration across multiple agencies and organisations. This has proven to be resource intense and has meant the achievement of some targets was unrealistic in the given timeframe. For example, Target 10 sought to establish a national long term biodiversity monitoring and reporting system to address known challenges in collating and standardising data for national-scale assessments. Difficulties in establishing consensus on a set of biodiversity indicators, measurement methods and a standardisation process for aggregating data from multiple sources has meant that this target was not delivered by 2015.
RELEVANT Target aids in achieving desired long term outcomes and is consistent with other relevant goals.	Each of the Strategy's targets has been aligned with one of its nine sub-priorities for action. In most instances, each target aids in achieving only one of the multiple outcomes identified within each sub-priority. For example, Target 2 aims to increase Indigenous employment and participation in biodiversity conservation, but does not provide a driver for achieving other relevant outcomes, including increasing the use of traditional ecological knowledge in decision making. Further, Targets 5 and 6 aim to increase connectivity in fragmented terrestrial landscapes, however are not specified in a way that would provide meaningful improvement in aquatic connectivity, nor do they address the use of ecological fire regimes to conserve biodiversity. While they do not deliver against all of the Strategy's long term outcomes, the targets were intended to focus initial efforts for the first five years on addressing priority issues, with the review providing an opportunity to adapt priorities in response to new information and emerging issues. Target 8 remains relevant in this context, as continued commitment to well-targeted research is needed to identify emerging risks and effective interventions to mitigate them. Significant progress towards this target over the course of the Strategy was made through the National Environmental Research Programme, with funding being continued under the National Environmental Science Programme.

Criteria	Assessment of national target design against criteria
TIMELY Target includes a timeframe for achievement and may include milestones to keep progress on track.	All of the Strategy's targets specify 2015 as the timeframe for their achievement. At the time, this was intended to ensure urgent prioritisation of resources towards implementation of the Strategy's priorities for action. Targets were not supported by the establishment of milestones to keep progress on track and in some instances the 5-year timeframe was too ambitious. For example, Target 9 required all jurisdictions to review relevant legislation, policies and programs to maximise alignment with the Strategy. The process of alignment proved challenging in this timeframe, as jurisdictions attempted to address the views of a range of stakeholders together with their own priorities. All targets have the same timeframe for implementation, yet capacity to report on some targets relies on the achievement of others. For example, Target 10 sought to establish a national biodiversity monitoring and reporting system to address challenges in collating and standardising data from multiple sources. This would have enabled more effective assessment of progress towards other targets.