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AUSTRALIAN CONSERVATION FOUNDATION

**ACF Submission to the House of Representatives Climate Change, Environment and the Arts Committee Inquiry**

# Australia's Biodiversity in a Changing Climate

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## Overview

The current and likely future impacts of climate change on Australia's biodiversity are well documented. The problem is not a lack of understanding, nor of formal federal government recognition of the threats and avenues to address these. There are four key challenges:

1. The scale of public and private investment is not enough to halt and reverse the decline in the condition of ecosystems and biodiversity, and the environmental services they provide to the Australian economy. Climate change will bring new threats and intensify the degradation of environmental services vital to human well-being;

2. Investment timeframes of Australian Governments into the people and institutions caring for priority ecosystems are too short and inconsistent to secure long-lasting environmental benefits, and institutional capabilities;

3. Research, monitoring and reporting on the condition and economic value of environmental services provided by ecosystems and biodiversity is generally excluded from Australian Government decision making processes;

4. The scope of public and private conservation ambition does not adequately integrate, coordinate and monitor the action needed to protect ecosystems and biodiversity from existing and emerging climate change threats.

# Background to Recommendations – Trends, Causes, Solutions

TRENDS

**Threats to Biodiversity from Business as Usual Approach**

The best available scientific advice in Australia has concluded in a detailed report to the Australian Government in 2009 that "*a business-as-usual approach to biodiversity conservation under a changing climate will fall short of meeting the challenge*". (1)

ACF strongly supports the conclusion in this report that

"*a transformation is required in the way Australians think about biodiversity, its importance in the contemporary world, the threat presented by climate change, the strategies and tools needed to implement biodiversity conservation, the institutional arrangements that support these efforts, and the level of investment required to secure the biotic heritage of the continent*."

Biodiversity loss and climate change are two of the greatest problems facing the planet (2). Australia is home to 570,000 terrestrial and marine species, which are part of a global ecosystem containing close to 11 million species (3). Australia's part of global biodiversity is particularly significant as a biodiversity hotspot and with high endemism of species – species that are found nowhere else in the world as a result of millions of years of isolation. The estimate of endemism for Australian mammals is 87 per cent and 92 per cent for vascular plants. These species live in highly diverse marine and terrestrial environments, from the Southern Ocean to the Tropics.

Australia's biodiversity is threatened on many fronts, even without climate change. These stressors include:

- vegetation clearing,
- introduced pests and weeds,
- highly modified and overcommitted water resources,
- widespread use of fertiliser and other chemicals,
- changed fire regimes,
- urbanisation,
- mining, and
- over-harvesting.

In the absence of climate change, the loss of biodiversity that Australia has experienced in the last two centuries is massive by international standards. Land use change and the introduction of pest and weed species have led to the extinction of over a hundred species of plants and animals, in addition to the dramatic reductions in the distribution of many other species.

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1 Steffan, W. (et al), Australia s Biodiversity and Climate Change: Summary for Policy makers 2009, Australian Government, Department of Climate Change, Canberra, 2009, p.2.

2 Rockström J (and 28 others) (2009) A safe operating space for humanity. Nature, 461, 472-475

3 Numbers taken from Chapman, AD (2009) Numbers of Living Species in Australia and the World. Report for the Australian Biological Resources Study, Canberra. 84 pp

Globally, two thirds of the mammals that have become extinct since the 1600's are Australian. Despite some recent positive outcomes in threat abatement, recent national assessments of the condition and trend of biodiversity in Australia indicate that it is in more peril than ever, with greater than a thousand entire regional ecosystems now recognised as threatened. About 50 per cent of woodland and forest ecosystems and 70 per cent of remaining forests are ecologically degraded from logging.[4]

Some of Australia's iconic and significant ecosystems that are under threat include:

- Highly populated coastal ecosystems, the Great Barrier Reef, Fraser Island, Kakadu National Park and Shark Bay in Western Australia[5]
- 16 internationally significant wetlands in the Murray-Darling Basin that provide $2.1 billion dollars in benefits to regional economies[6]

**The added and compounding impacts of climate change on Australia's biodiversity**

Climate change introduces new uncertainties for Australia's species (7), such as changes in species distribution and abundance, evolution of interactions between species, changes in ecosystem processes, dynamics of changes and changing threats (e.g., exotic species introduction, altered fire regimes, land use change and altered hydrology). Some effects are already observable, such as:

- Eight major coral bleaching events, unknown prior to 1979, have badly affected Australia's coral reefs;
- Fire regimes are changing in line with expected climate changes and are causing huge devastation and vegetation regime change, particularly in south east Australia;
- Alterations in species' genetic constitution, geographic ranges, life cycles, populations and growth rates.

Of greatest concern are national and international assessments that indicate that Australian biodiversity loss to date may be moderate in relation to predicted losses in coming decades. The 2009 report on Australia's Biodiversity and Climate Change concluded that Australia is "*pushing the limits of our natural life support system.*" (8)

The Intergovernmental Panel on Climate Change (IPCC) has increasingly warned about the dangers of human-induced climate change. The latest synthesis of climate science, the Copenhagen Diagnosis 2009, (9) indicates that changes are taking place faster than previously expected. The best estimate of annual warming over Australia by 2030 relative to 1990 is about 1 degree C. By 2070 the annual warming expected is around 1.8 degrees C for a low emissions case and around 3.4 degrees C for a high emissions case (10). Rainfall changes are more uncertain, but decreases are considered likely in southern regions with the chance of modest increases in northern regions.

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4 "Extinction Crisis Looms In Oceania" http://www.sciencedaily.com/releases/2009/07/090728102301.htm

5 Climate Change Risks to Australia s Coast, Australian Government, 2009, http://www.climatechange.gov.au/en/publications/coastline/~/media/publications/coastline/4-chapter.ashx, p. 51

6 ACF, "Economic benefits of a healthy river worth billions", http://www.acfonline.org.au/articles/news.asp?news_id=3189

7 Based on research done by Dunlop M and Brown PR (2008). Implications of climate change for Australia s National Reserve System: A preliminary assessment. Report to the Department of Climate Change, February 2008. Department of Climate Change, Canberra. 188 pp.

8 Steffan, W. (et al), Australia s Biodiversity and Climate Change: Summary for Policy makers 2009, Australian Government, Department of Climate Change, Canberra, 2009, p.2
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9 The Copenhagen Diagnosis (2009) Updating the World on the Latest Climate Science. Allison I (and 25 others) The University of New South Wales Climate Change Research Centre (CCRC), Sydney, Australia, 60pp

10 From: CSIRO and BoM (2007) Climate change in Australia: observed changes and projections. Technical Report. Commonwealth Scientific and Industrial Research Organisation and Australian Bureau of Meteorology, Melbourne

**Australia's adaptation policy - acting on the prioritisation of biodiversity and ecosystems**

ACF strongly supports the listing of "Natural Systems of National Significance" as one of the six national priorities for adaption action in the 2010 Australian Government Position Paper "Adapting to Climate Change".

This report recognises that:

"*Climate change is already affecting Australia's natural ecosystems, and given their high vulnerability to climate change, natural significance, such as the Great Barrier Reef and Kakadu, will require ongoing priority attention. In addition to these important places, the interconnectedness of natural systems points to the need for holistic landscape approaches that maintain ecosystem functions as ecosystem adapt*. "

This 2010 Position Paper included a commitment by the Government to track our progress on positioning Australia to adapt to climate change by commissioning a regular Climate Futures Report as a mechanism for evaluating how effective our collective adaptation efforts are. This report is to be produced at least every five years, with the first to be produced by the end of 2010. ACF notes that the first of the Climate Futures Reports has not yet been produced. The Critical Decade report produced by the Climate Commission in 2011 does provide updated information of the faster changes and more serious risks that threaten Australia's ecosystems and biodiversity.

UNDERLYING CAUSES

**The failure of our economic systems to value environmental services and biodiversity**

The great weakness of modern economics is the failure to appropriately value items not traded in the market place. By default, much of the modern practice of economics continues to assume that, where there is no price, there is little or no value. This point was recently highlighted by the now former Secretary to Australia's Treasury Department, Dr Ken Henry, who in a speech entitled "The Value of the Environment", concluded that "we've made a start… [but] much more needs to be done if we are to be able to say that the wellbeing of future generations is not to be threatened by poor valuation of the environment".

Professor Ross Garnaut, in Paper 4 of his 2011 Climate Change Review Update series Transforming Rural land Use recognises:

"*Just as greenhouse hgas emissions without a carbon price represent a market failure, the decline in Australia's biodiversity can also be attributed at least in part to a failure to correct through public policy the market's failure to value the natural estate*"

The non valuing or under valuing of the natural estate leads to decision-making that erodes our natural systems. These so called 'externalities' are the negative by-products of the human economic system. Many are not immediately visible - like the services provided for free by a well functioning environment (ecosystem services) - and so traditionally have been ignored, unrecognised and undervalued by business and government.

A full calculation of costs and benefits, including those ecosystem services not traded in a market, allows for a more informed decision as trade-offs become explicit. It may indeed show that, for example, the protection of a high conservation value forest is both good economic policy as well as good ecological policy.

**The Economics of Ecosystems and Biodiversity – foundations to address the failures**

In 2010 the UN Environment Programme with the support of the European Commission launched a major project to value the benefits of ecosystems and biodiversity known as The Economics of Ecosystems and Biodiversity (TEEB). The program of work aimed to address the problem of the unsustainable path of consumption of natural resources and deterioration of the world's ecosystems. TEEB started from the premise that nature underpins the economy - but also our health, culture and spirituality - and yet the benefits from nature remain unvalued and outside of markets. Throughout 2010, the TEEB project released a significant body of work outlining examples and methods for full consideration of the environment in economic frameworks.

As an example, TEEB presents a case study of the global fisheries industry where poor valuation has resulted in environmentally destructive and economically unsound outcomes. Global fisheries continue to face a steady decline with 75% of global commercial fish stocks now over-exploited, in part due to continuing government subsidies to support the industry. This has led to ever larger numbers and size of fishing vessels as well as illegal fishing. The result of this over exploitation of fisheries is an annual net loss of potential economic benefits of $50 billion per year. That is, if the global fishing industry was reformed to one that is more sustainable, the industry has the potential to generate an additional $50 billion annually. Due to poorly targeted policies based upon poor valuation, both the economic and the environmental outcomes are far from optimal.

The Australian Government needs to properly value our environmental assets. While it remains an asset outside of our accounting systems, the environment and the services it provides are likely to be run down be to maximise short term economic return, rather than invested in and maintained to continue delivering value over the long term.

However, it is important that a process to address the failures of our economic system by valuing ecosystem services is balanced with the recognition that not everything that is of value can be given a monetary value. Reducing all environmental values to dollar values will oversimplify the complexity of our planet. The intrinsic value of biodiversity also needs to be recognised beyond the balance sheet.

SOLUTIONS

ACF welcomes the commitment to the $1billion (over 6 years) Biodiversity Fund, as part of the clean energy future package, as a useful first additional step to addressing the threats to biodiversity and recognising the multiple benefits of managing and protecting bio-diverse ecosystems with their carbon stores.

A summary of the key steps required to help value and rebuild the resilience of Australia's natural environment in a changing climate is as follows:

<u>1. Build the foundations for understanding and responding to changing climate and its impacts on the environment</u>

- Create a set of National Environmental Accounts and a systematic process for their use in

developing national policy and budgets;
- Complete the bioregional assessments for Australia's 85 bioregions;
- Invest in Research and Development to support management of the Australian landscape and the impacts of climate change.

2. Mitigate existing threats

- Use markets and regulations to promote large scale bio-diverse revegetation, reductions in land clearing and appropriate ecological fire regimes;
- Implement abatement and recovery plans for threatened and endangered species.

3. Maintain well functioning ecosystems by targeting action to conserve biodiversity and carbon storage in biodiversity hotspots

- Invest in strategic expansion and improved management of Australia's terrestrial, freshwater and marine protected area networks;
- Integrate Water for the Future's environmental flows buyback and infrastructure programs with the strategic expansion of the National Reserve System.

4. Invest in people and their skills and knowledge to deliver regional protection and restoration of land, water and marine environments

- Invest in regional capacity to plan and deliver bio-sequestration and other ecosystem resilience projects, both through markets (such as Carbon Farming Initiative) and complementary programs.

Recent analysis of various types of investment to protect threatened species has found that species with greater distributional overlap with strictly protected areas had proportionately more populations that were increasing or stable [11]. In other words, there is now evidence that a strategic expansion and improvement of Australia's protected areas network will have a positive impact in helping to reverse the decline of our biodiversity and will help to build resilience to the impacts of climate change.

[11] Taylor, M. F. J., Sattler, P. S., Evans, M., Fuller, R. A., Watson, J. E. M., Possingham, H. P., 2011, What works for threatened species recovery? An empirical evaluation for Australia, Biodiversity and Conservation, Vol. 20, 768.

RECOMMENDATIONS

**Addressing Terms of Reference:**

- **terrestrial, marine and freshwater biodiversity in Australia and its territories**
- **connectivity between ecosystems and across landscapes that may contribute to biodiversity conservation**
- **how climate change impacts on biodiversity may flow on to affect human communities and the economy**
- **strategies to enhance climate change adaptation, including promoting resilience in ecosystems and human communities**

RECOMMENDATION 1

ACF commends to the Committee the findings and conclusions of the 2009 Report of the Biodiversity and Climate Change Expert Advisory Group to the Natural Resource Management Ministerial Council.

Specifically, ACF supports the criteria advanced in this report to guide priority setting and use of funds to build resilience:

- Maintain well-functioning ecosystems
- Protect a representative array of ecosystems
- Remove or minimise existing stressors
- Build appropriate connectivity
- Identify and protect refugia

RECOMMENDATION 2

The Australian Government increase investment to protect and restore Australia's natural environment over the next decade to at least $1 billion per year, to match the scale of threats that are causing a decline in our biodiversity, and which undermine our essential life support systems.

RECOMMENDATION 3

That the Commonwealth Government, with all state and territory governments, develop a National Climate Change and Ecosystem Protection Plan to coordinate and guide increased investment including to:

- Expand and improve management of the National Reserve System (NRS) and National Representative System of Marine Protected Areas;
- Protect high conservation value aquatic areas by including these within the NRS, supported by a new National Wetland Program;
- Expand investment in the establishment and ongoing management of Indigenous Protected Areas and in other initiatives to support Indigenous land management;
- Implement a National Wildlife Corridors Program to link conservation on and off the national reserve system and secure carbon stores across private and public lands.

RECOMMENDATION 4

The Australian Government prepare a Climate Futures Report as promised in the Australian Government Position Paper "Adapting to Climate Change", by no later than mid 2012, to inform how well Australia is placed to deal with climate change risks and to evaluate the effectiveness of policy measures taken by governments to date to improve resilience to climate change impacts, particularly of natural systems of national significance.

**Addressing Term of Reference:**

- **mechanisms to promote the sustainable use of natural resources and ecosystem services in a change climate.**

RECOMMENDATION 5

Ensure that information about Australia's environment is integrated into Australia's national accounts so that it drives Government decision making by:

- Ensuring the National Plan for Environmental Information is adequately resourced and supported to deliver a set of national environmental accounts;
- Responding to the recommendations of the international Commission on the Measurement of Economic Performance and Social Progress, including advice on how Australia's national accounts should be changed to incorporate natural assets.

RECOMMENDATION 6

The Australian Government undertake a process to map and assess the state of Australia's ecosystems and their services by 2014, including an assessment of the economic value of these ecosystem services, with a plan to integrate these values into the policy making and budget development process of all Australian governments.

RECOMMENDATION 7

Recognising that climate impacts on Australia's biodiversity are interconnected with other stressors that are undermining the health and sustainability of our life support systems, that solutions to the climate change impacts on biodiversity need to be embedded into broader whole of government policy on sustainability, and consistent with the recommendations of the 2007 Parliamentary Report into a Sustainability Charter:

The Australian Government initiate an inclusive process by mid 2012, to develop a Sustainability Charter as our national vision and principles for decisions that affect the environment together with a detailed implementation agreement containing specific science-based targets for:

- Carbon pollution and energy efficiency
- Water
- Biodiversity
- Sustainable cities and buildings
- Transport

- Waste and recycling
- Ecological footprint
- Economics and taxation
- Social equity and health
- Community, culture and heritage

**Addressing Term of Reference:**
- **mechanisms to enhance community engagement.**

RECOMMENDATION 8

The Australian and State and Territory Governments resource and implement an effective national communication and community engagement plan commencing in 2012 aimed at significantly increasing community understanding of the threats to our biodiversity, the value of life support services provided by healthy ecosystems, and the goals and progress of environmental protection programs in protecting these values, including the National Reserve System, Wildlife Corridors, Marine Protected Areas and other biodiversity conservation programs.

RECOMMENDATION 9

The Australian Government resource and lead a process to increase the understanding of the role and value of Australia's biodiversity and ecosystems by strengthening the integration of this into the national school curriculum, supported by increased resources and programs to enable teachers and students to experience and understand a range of ecosystems and the services they provide, including through participation in biodiversity monitoring and reporting programs.

RECOMMENDATION 10

The Australian and State and Territory Governments increase investment in building community capacity, knowledge and skills to engage in conservation planning. This investment should be guided by clear objectives to improve the skills and knowledge of volunteers in programs to protect and restore habitats and ecosystems and to increase meaningful community participation in biodiversity conservation planning and management.

**Addressing Term of Reference:**
- **an assessment of whether current governance arrangements are well placed to deal with the challenges of conserving biodiversity in a changing climate**

RECOMMENDATION 11

The Australian Government lead a process to increase the coordination between the national and state/territory governments to protect and restore biodiversity and ecosystem values in relation to the following programs under an agreed National Climate Change and Ecosystem Protection Plan:
- Australia's Biodiversity Conservation Strategy 2010-2030
- The National Reserve System Strategy 2009-2030

- The National Wildlife Corridors Plan
- Caring for Our Country programs
- Adapting to Climate Change in Australia – Government Position paper 2010

This should include the linking of Commonwealth payments to reforms that align State and Territory Government laws, policies and practices to the achievement of agreed national ecosystems and biodiversity conservation targets.

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