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Thank you for the opportunity to contribute to this important inquiry into the vulnerability of Australia's biodiversity in a changing climate.

Summary

- Australian biodiversity is at high risk of degradation from climate change via both direct impacts and amplifying and compounding other existing threatening processes.
- Current management approaches (such as restoration corridors, carbon farming, and habitat management) aimed at increasing the resilience and adaptive capacity of ecosystems to adjust to climate change are poorly resourced, and based on inadequate monitoring, evaluation and scientific research.
- There is urgent need to improve research and monitoring at a national level and to plan land management and conservation interventions based on the best available science.
- This requires a nationally coordinated approach and organisation that is not limited by short-term funding cycles (perhaps a 'Bureau of Biodiversity') tasked to capture the skills and experience of the Australian management and research community. Such a centre, if adequately resourced, could provide evidence-based evaluation and analysis of the efficiency of potential adaptation strategies.

This submission was written by the Steering Committee of the Terrestrial Biodiversity Research Adaptation Network (see below for list of committee members) that is part of the National Climate Change Adaptation Research Facility (NCCARF). The network involves over 1100 members across Australia comprised of researchers, managers, policy makers and other stakeholder groups who have an interest in adaptation action that will protect Australia's biodiversity in a changing climate. Our submission is based on the collective experience and expert knowledge of the network Steering Committee and broader network membership. The submission also takes into account the results of a national series of stakeholder workshops that we conducted over the last year to identify stakeholder concerns and priorities about the vulnerability of terrestrial biodiversity to climate change. These workshops were attended by almost 500 stakeholders representing local, state and federal governments, research institutions and NGOs in every state.

Background

Australia's biodiversity is unique and there is strong evidence to demonstrate that negative impacts due to climate change are already occurring across many taxonomic groups and environmental processes, and that these impacts will continue to get significantly worse in the future.

Consequently, Australian natural ecosystems are highly vulnerable to global climate change and it is recognised that they have a low capacity to adapt compared to other settings such as agricultural and urban environments. Several national-scale initiatives have already compiled and reviewed this evidence (e.g. Biodiversity Vulnerability Assessment; NCCARF National Adaptation Research Plan – Terrestrial Biodiversity) and this information is currently being updated for the next IPCC report.

These negative trends compound the pressures on ecosystems that are already stressed by invasive species, habitat loss and fragmentation, fire, feral animals and natural climate variability. Clearly we need to halt and reverse the terrible decline that has been a hallmark of biodiversity conservation in Australia over the last century.

Key ecosystems

Although all ecosystems need to be considered because of the considerable, if diffuse, biodiversity benefits provided across considerable environmental diversity in Australia, we would like to emphasise the importance of some key ecosystems that are globally important and yet face significant threats to their biodiversity value under predicted future climate change. There is significant evidence now to highlight the importance and the threats to our biodiversity World Heritage estate and other critically important ecosystems, particularly the Wet Tropics Rainforests, south-west Western Australia, South-west Tasmania, the Australian Alps, Kakadu, Great Western Woodlands, the Blue Mountains, tropical savannas, central Australian deserts and the Coorong. Many of these sites are already WHAs and/or RAMSAR sites and represent a potential case-study focus for this inquiry.

Protected area network

The current protected areas network is a critical component of any strategy aimed at protecting biodiversity in a changing climate and the logical starting point for strategic planning. Under a changing climate, the protected area network is of ever increasing importance and will require both increased resourcing for management to maintain resilience and a strategic expansion. Expanding the national protected area network must be guided by robust conservation planning to maximise the best “bang-for-our-buck” in achieving biodiversity outcomes that consider both spatial and temporal changes in climate and evolutionary history of the Australian flora and fauna.

What can, and should, we be doing?

Mitigation, the reduction of greenhouse gases in the Earth's atmosphere, is the ultimate solution to reducing the threat of climate change. However, global emissions have already committed us to levels of climate change that will further damage Australia's biodiversity. Therefore, an integrated combination of mitigation and adaptation is necessary to reduce negative impacts. Nationally, a strong, whole-of-government commitment to a strategic adaptation strategy is required that includes the following three steps:

1. Development of a national biodiversity and climate change adaptation plan that identifies and prioritises adaptation strategies for optimal efficiency of biodiversity outcomes per dollar of investment;
2. Resourcing to implement management interventions;
3. Monitoring, evaluation and modification of interventions.

The above could be coordinated by a dedicated institution that is able to be cross-cutting through the whole of the Australian Government that provide factual evidence in the same manner as the Bureau of Meteorology (i.e. a "Bureau of Biodiversity").

Our proposal needs to make maximum use of the considerable resources and expertise that have already been applied in this endeavour within other initiatives such as the Biodiversity Vulnerability Assessment and the NCCARF National Adaptation Research Plan. Indeed, the aim of the NCCARF Terrestrial Biodiversity Adaptation Research Network is to co-ordinate the knowledge and capacity to provide government with the information necessary to prioritise adaptation actions and to maximise the positive outcomes of adaptation resources.

This plan will need to carefully evaluate the potential of the reserve system to protect biodiversity and complement this with the most cost-effective strategy of building the reserve system to specifically maximise the biodiversity benefits in projected future climates. We believe we have the information, the analytical techniques and the main infrastructure elements required to tackle this complex problem and produce a "no-regrets" strategy that allows for the high uncertainty in future predictions. It will be necessary to:

- increase our ability to make robust assessments of the relative vulnerability of species and ecosystems in order to inform prioritisation processes;
- assess the location, efficacy and relative importance of potential biodiversity refugia and their capacity to buffer biodiversity from extreme climatic events such as fire and drought;
- identify important new reserves and evaluate the potential and tradeoffs involved in other forms of off-reserve management;
- manage the threats to ecosystem resilience due to existing stressors such as drought, invasives and extreme climate events;
- enhance our understanding of the relative value of different landscape structures and restoration options, for example the relative cost-benefits of small and large scale habitat corridors and environmental gradients;
- ensure that the necessary resources for long-term monitoring, evaluation and data infrastructure are in place, co-ordinated and have guaranteed longevity to provide reliable and comprehensive access to the information necessary for effective and timely decision making;

- develop low risk strategies that could assist in developing resilience such as increased control of invasives and genetic translocation;
- conduct the necessary research now that will increase the chances of success in the future of the riskier adaptation options like translocation so that they are possible if required.

Resourcing – the carbon farming opportunity

We applaud the \$900m+ investment in biodiversity adaptation already promised by the government and we think it is an excellent start to dealing with this complex issue. We believe that effective levels of future resourcing can be achieved by tying biodiversity benefits to carbon farming incentives and simultaneously provide a significant opportunity to combine both mitigation and adaptation. It will be crucial that carbon farming is integrated with biodiversity conservation planning right from the start to maximise both the biodiversity and carbon benefits. We believe this can be effectively done if biodiversity is considered from the outset in all aspects of carbon farming initiatives. There would be significant benefits possible by a major expansion of a biodiversity credit system (for example, the Biodiversity Banking initiative in NSW) to be part of any carbon credit system and particularly if biodiversity credits are aimed at delivering increasing resilience.

Existing capacity

To achieve the ambitious goals described above it will be critical to make the maximum use of the significant capacity already developed within Australia in this rapidly developing sector of research and management. The NCCARF National Adaptation Research Network represents a crucial resource that includes a wide diversity of research expertise, institutions, conservation managers, policy makers and other stakeholder groups across Australia and includes expertise in all major ecosystems. The terrestrial biodiversity network also has strong links to the other NCCARF networks, particularly the freshwater and marine biodiversity networks. Data infrastructure and environmental monitoring is another rapidly developing and important part of this plan and includes important capacity currently contained within the Terrestrial Ecosystem Research Network (TERN) facility and data infrastructure like the National Plan for Environmental Information (NPEI).

We believe that with the timely development of this plan and the utilisation of existing expertise and capacity Australia could take a globally-leading role in development and implementation of strategies to protect biodiversity under a changing climate.

Yours sincerely,

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