Submission to the Senate Inquiry into Australia’s faunal extinction crisis
10 September 2018

Thank you for the opportunity to make a submission to the Inquiry into Australia’s faunal extinction crisis.

The Ecosystem Science Council was established to advance the goals of Foundations for the future: a long-term plan for Australian ecosystem science [1,2], a task we achieve by working collaboratively with individuals, groups and organisations across the ecosystem science and management communities. We therefore make this submission in the interests of applying ecosystem science to the conservation of biodiversity in Australia, and in this particular context, to reversing the faunal extinction crisis that is the focus of this inquiry.

A fundamental truth is that people everywhere depend on healthy ecosystems because they support our own health and prosperity, as well as nature [3,4]. Biodiversity is not a luxury, but rather is essential to the function of ecosystems [5,6,7], and hence there is an urgent need to effectively combat the faunal extinction crisis in Australia. The public understands the need for clean air, clean water and healthy soils to ensure that nature can continue to provide what people need to stay safe and healthy. Environmental policy needs to better reflect this public concern and give more attention to the values of private citizens who want to walk lightly on the planet for the benefit of future generations [8]. These values are reflected in the UN Sustainable Development Goals (SDGs), and their implementation by Australia [9].

The stakes are high as we live in a period of unprecedented change due to an exponential rate of growth of the human population, dangerous global warming, loss of basic functions of ecosystems, loss of ecosystems, critical losses of potable water, declining soil condition and quality, declining agricultural terms of trade, and a global and Australian crisis of extinctions of wild species, caused by these human-induced factors. Many warnings have been expressed by ecologists across the world, and in Australia, about these crises. The latest was the World Scientists’ Warning to Humanity: A Second Notice, signed by more than 15,000 scientists world-wide [10].

Australian governments have repeatedly recognized threatened species and ecosystems and their sustainability as high research and management priorities. Australia has a proud history in ecosystem science, and we have had a general and specific consensus for several decades on the need to protect and manage for threatened species. We also have a collective improved knowledge of the causes and potential solutions to the extinction crisis. Yet we are experiencing a faunal extinction crisis that has been exacerbated over the past decades which Council is deeply concerned about.

The reasons that this knowledge is not being applied to the detriment of species, is a lack of consistent policy and legislative commitment from successive governments, and the consequent lack of resources needed to apply the actions required.

We are alarmed that many of the initiatives developed over the past decades have been weakened through changes to legislation and policies and through reductions in budgets to the Department of Environment, the CSIRO, and associated entities. These reductions have led to serious losses of scientific knowledge, and to neglect of urgent threatened species conservation issues. These problems are of the highest order and will result in the inevitable loss and extinctions of further species and ecosystems if nothing more is done to remedy the situation.
Key recommendations to address the faunal extinction crisis in Australia:

1) Independent and trusted institutions – a new framework is needed for the Department of Environment to ensure that it can effectively deliver environmental stewardship in perpetuity.

Key elements of this will be:
- Independent governance that is not subject to political interference in charging its responsibilities.
- National coordination over all jurisdictions that have responsibility for managing biodiversity.
- Transparent and robust evidence-based decision making processes.
- Accountability for the improvement in biodiversity outcomes and ecosystem health, and for any losses due to extinction.
- Development of national goals, indicators of change, and standards for reporting.
- Holistic approaches to managing threatened species, ecosystems, and threatening processes.
- Improved biodiversity monitoring through the collection and reporting of accurate data.
- Retention of staff with discipline knowledge and experience.

2) Strong policy and effective management –

Implementation of policy and management actions that:
- Directly address the underlying causes of species extinctions such as land clearing and climate change.
- Revise legislation to require industries that extract resources from, or in any way modify the environment, to account for the resultant environmental degradation and to fully fund the remediation as part of their business plan. The public commons should not be degraded for private profit.
- Commit adequate resourcing to undertake long-term research to understand what the trends in biodiversity change mean and how to mitigate adverse outcomes.
- Implement a national ecosystem surveillance monitoring program to report on the state of the environment and to anticipate and prepare for future unanticipated threats to our environment.
- Support a National Environmental Prediction System to undertake risk analyses to better safeguard our ecosystems from ongoing degradation and future threats.

3) Stronger protection of biodiversity under a revised EPBC Act. Key items to address include:
- Improved environmental legislation that prioritises ecologically sustainable development and protection of ecosystems over short-term outcomes.
- Recovery plans for all threatened species and ecosystems, and abatement plans for all threatening processes.
- Renewed commitment to the international Aichi targets to prevent biodiversity loss.

4) Increased resourcing for biodiversity conservation – Given the strong economic prosperity in Australia we have a global obligation to do more for the unique biodiversity that we are fortunate to enjoy.
- Funding of at least 2% of GDP should be invested in safeguarding our biodiversity.
- New flexible and agile funding models that have provision for carryover of funds to meet exceptional environmental conditions need to be available. For instance, after wildfires there is an increased need to protect small fauna from feral predators. Similarly, pulses of productivity in high rainfall years require additional resources for monitoring of biodiversity responses to long-standing management interventions.
Detailed responses to the Threatened Species Senate Inquiry Terms of Reference:

a) The ongoing decline in the population and conservation status of Australia’s nearly 500 threatened fauna species

Australia is, to our shame, one of the world leaders in faunal extinctions, with more than 10% of terrestrial mammals already extinct since European colonization, and more than 20% now threatened. We have recognized these alarming trends for decades, yet there has been declining commitment to and investment in arresting threatened species declines and recovery. Successive governments have variously invested in short-term funding. Without ongoing commitment we have lost the momentum to make substantive changes to the conditions leading to species heading towards extinction.

We know that the key drivers of species loss are habitat loss, degradation through altered ecological processes and invasive feral species. Without early intervention, the costs for mitigation escalate and the likelihood of successful outcomes for biodiversity are diminished. We need policies that are proactive, and resilient, not just responding to the few species that make the national critically endangered list. Even with that, much of the heavy lifting is left to the private sector through volunteer fund-raising efforts. It is not acceptable to hold a ‘bake-off’ to protect threatened species, and no amount of awareness raising will make the crisis go away, if it not followed up by swift and effective on-ground actions. **Australia urgently needs a national strategy and long-term commitment to change this woeful state of biodiversity conservation.**

b) The wider ecological impact of faunal extinction

Healthy ecosystems and their component species are essential for agriculture and ecosystem services such as clean water, healthy soils and air quality. Losses of species, as they become more threatened, is of great concern to our whole ecosystem and the services such as agriculture that they support. Species demise can have far reaching impacts on ecosystems and their services. These impacts will likely include elevated biosecurity risk with losses of some species creating opportunities for other to increases species to become pests and can carry agricultural diseases. For example, flying foxes, several of which are threatened, are vital pollination vectors for eucalypts and for fruit crops. Flying fox populations are vulnerable due to heatwaves and diseases which are occurring more frequently and extremely, and crashes are likely to increase with climate change. If these species are lost, so are the ecosystem services that they provide as pollinators.

Improved biodiversity monitoring, across a range of ecosystems and at appropriate scales to inform us of environmental change will help to identify when intervention is needed in order to prevent perverse outcomes across ecosystems and their services arising from faunal extinctions.

**Australia needs a nationally coordinated ecosystem surveillance monitoring program that is agreed to, and implemented, over the multiple jurisdictions that have responsibility for managing biodiversity.**

c) The international and domestic obligations of the Commonwealth Government in conserving threatened fauna

Australia ratified the United Nations Convention on Biological Diversity [11] in 1993, recognizing the importance of our unique natural ecosystems and biodiversity and the need to encourage actions which will
lead to a sustainable future. This international legally-binding treaty has three main goals: 1) conservation of biodiversity; 2) sustainable use of biodiversity; and 3) fair and equitable sharing of the benefits arising from the use of genetic resources. Australia refused to commit to each of the Aichi targets [12], instead issuing a general statement of commitment. **Australia should commit to the next generation of equivalent targets under the Convention on Biological Diversity.**

The Australian governments developed the first National Strategy for the Conservation of Australia’s Biological Diversity (1996) In response to the Convention on Biological Diversity, with the aim of providing a national approach to biodiversity conservation. The government’s 5-year review of the Biodiversity Conservation Strategy [13] found that it failed to achieve any of the key outcomes.

Despite each of the State of the Environment reports since 1983 recognizing the urgency of the need to address biodiversity conservation, the warnings have not translated into any effective strategies leading to beneficial outcomes.

State Governments need to have greater accountability for environmental conservation. In particular, there is a lack of accountability for extinctions. No department, authority nor person can be charged with an offence for an action that leads to the extinction of a species. There is also a lack of public accountability, such as a public inquiry or investigation, into species declines and extinctions. These need to change.

The Australian government’s National Science Statement of 2017 [14] recognizes the importance and value of long-term science and monitoring, as does the Developing Northern Australia policy [15] and Australia’s Assessment of Terrestrial Biodiversity 2008 [16], and these are to be commended. The recent roadmap [17] developed for Australia’s National Collaborative Research Infrastructure Scheme requires the development of a national environmental prediction system. Without long-term data, the development of a reliable and accurate environmental prediction system is impossible, particularly for biodiversity.

It is clear these strategies are ineffective in their ability to ensure Australia’s fauna thrive. **Australia needs to redefine its international and domestic obligations through holistic planning to ensure species are not considered in isolation to their habitats and ecosystems, that threats such as habitat loss through clearing and modification are seriously addressed, and that resources are committed to long-term science and monitoring so that we can adequately target ecosystem management.**

**d) The adequacy of Commonwealth environment laws, including but not limited to the Environment Protection and Biodiversity Conservation Act 1999, in providing sufficient protections for threatened fauna and against key threatening processes**

The **Environment Protection and Biodiversity Conservation Act 1999** (EPBC Act) is in need of a substantial revision. There is an urgency to reviewing and revising the environmental legislation pertaining to the conservation of biodiversity, particularly threatened species, in accordance with the recommendations for a comprehensive review made by the Australian Panel of Experts in Environmental Law [18].

Recovery plans for all threatened species were mandated under the EPBC Act prior to changes passed in 2006 (*Environment and Heritage Legislation Amendment Act (No. 1) 2006*). The changes made recovery plans discretionary by the Minister. Recovery plans were replaced for most species by ‘conservation advices’, which do not deliver the same standard of protection. These conservation advices are now mandatory for all listed
threatened species. The perverse side of these changes is that the Act requires the Minister to not make declarations that are inconsistent with any recovery plan, whereas the Minister is not required under the legislation to give the same due regard to conservation advices (it's discretionary). The Act should be amended to restore these protections for threatened species. Recent studies have shown conclusively that Recovery Plans help drive efforts and funding for threatened species. Recovery plans should be developed with full resourcing and with adequate timeframes to draw on scientific evidence and best-practice.

The development of threat abatement plans for key threatening processes should be developed for a wider suite of species and ecosystems than they currently address. This will assist with tackling the underlying drivers of faunal extinction through clearing, climate change, feral species and other key threats. The Act should be amended also to address the cumulative effects of threats, which are currently not addressed, nor permitted for consideration, under the Act.

**e) The adequacy and effectiveness of protections for critical habitat for threatened fauna under the Environment Protection and Biodiversity Conservation Act 1999**

Critical habitat, or ecosystems, are vital for threatened species survival. Without habitat species are unable to thrive. Currently the EPBC Act fails to protect critical habitat adequately. Threat abatement plans and recovery plans should be required to identify key areas of critical habitat for threatened species, and prescribe management actions to ensure their conservation. The management outcomes should incorporate landscape connectivity, ecosystem function and climate change adaptation in delivering better outcomes for biodiversity. Best available knowledge and technology could be used to understand synergies across landscapes to identify areas of critical habitat for conservation prioritizations where threatened species, ecosystems and biodiversity conservation can be maximized.

**f) The adequacy of the management and extent of the National Reserve System, stewardship arrangements, covenants and connectivity through wildlife corridors in conserving threatened fauna**

Aichi Target 11 states that 17% of terrestrial and inland water and 10% of coastal and marine areas should be reserved in protected areas by 2020. Many of Australia’s bioregions remain poorly represented in the National Reserve System (NRS) and the national marine protected area system. Protected areas remain integral to species conservation providing secure tenure for long term conservation of habitat and ecosystems. The 2010-2030 national Strategy and the current draft strategy have both retreated from this fundamental principle, removing it from the list of principles. The Council believe that this principle must remain fundamental to Australia’s national strategy and must be reinstated and elaborated. Biodiversity offsetting that utilize agreements to conserve land in perpetuity also play a role at the national and state levels providing an opportunity for connectivity through the landscape.

While protected areas are important for species conservation, reservation alone is not sufficient to maintain species. Threats often operate within protected areas or more broadly across the landscape and thus targeted threat mitigation remains an important part of conservation management.

In recent years there has been a substantial increase in private conservation reserves and Indigenous Protected Areas. These have been included to an increasing degree in the accounting for the National Reserve System. While private conservation makes an important and significant contribution to environment
conservation these reserves are funded mostly by private individuals with no on-going commitment. In addition, most of the private reserves lack resources and expertise to adequately conserve threatened species. Substantial increases in resources are needed if these lands are to be effective in achieving threatened species conservation outcomes. Furthermore, these private reserves do not have a legislative obligation to apply the principles of nature conservation on protected areas. They also lack transparency and accountability in terms of the intended outcomes of a National Reserve System.

Sufficient funding should be made available to formally extend Australia’s protected area system to ensure that we meet the Aichi targets. In concert, private conservation initiatives should be expanded and supported to enhance capacity of private conservation enterprise. Biodiversity offsets should be monitored and managed in perpetuity and ensure they are considering landscape connectivity.

**g) The use of traditional knowledge and management for threatened species recovery and other outcomes as well as opportunities to expand the use of traditional knowledge and management for conservation**

The use of traditional knowledge and management is essential for the threatened species recovery for large parts of Australia. Indigenous people must be included as part of the conversation around threatened species conservation. Traditional knowledge is strong in some places, but is being reconstructed or has been lost in other places. This unevenness needs to be acknowledged and addressed. Traditional ecological knowledge, where it is strong, can contribute to threatened species conservation, but the declines of species and habitat are due to modern processes, such as anthropogenic climate change, extensive agriculture and grazing, and so must be coupled with scientific knowledge, monitoring and research. Even where traditional knowledge is lost, environmental conservation can provide an opportunity for reconnection to country. One specific example is through the reintroduction of locally extinct mammals which has provided reconnection to the historic landscape of traditional owners. There must also be room for contemporary expression of indigenous heritage to be included in environmental conservation. Cultural burning, sharing of contemporary cultural practices and engaging with Local Aboriginal Land Councils are essential to achieving a holistic solution to the fauna extinction crisis.

**h) The adequacy of existing funding streams for implementing threatened species recovery plans and preventing threatened fauna loss in general**

Australia has been ranked as one of the worst in the world for underfunding biodiversity conservation, and it has been shown that this translates directly to poor biodiversity conservation outcomes [19]. Australia currently spends about 0.8% of its budget on biodiversity conservation. This is substantially below that OECD and G20 average. Australia should commit around 2% of its GDP to environment and biodiversity conservation.

The past half-decade has seen a substantial (~40%) decline in funding for the Federal environment and biodiversity conservation program. These funding cuts have been made at a time when biodiversity conservation is at a crisis point. Funding needs to be restored so that 2% of GDP is committed to environment and biodiversity conservation.
i) The adequacy of existing monitoring practices in relation to the threatened fauna assessment and adaptive management responses

Australia has multiple localized ecosystem monitoring projects and programs focussed on particular management issues or jurisdictions. They are conducted by government departments, non-government organisations, universities, resource businesses and consultants. There is, however, no consistent or standardized measures or indicators across Australia so that there is little way of comparing information accurately across programs, organisation, States or nationally.

Australia has the expertise among scientists and land managers to conduct adequate monitoring [20,21,22]. The challenge is that the sector lacks the resources to conduct this monitoring, and much of the effort that does go into monitoring for compliance with environmental legislation is never made available in a coordinated way for reuse and for the tracking of large scale trends. This is a missed opportunity.

The existing Terrestrial Ecosystem Research Network program has a network of sites and instrumentation to monitor a limited set of ecosystems, and this important national infrastructure is a step in the right direction. This facility is currently funded under the National Collaborative Research Infrastructure Scheme, through the Department of Education, but has to deliver national environmental datasets that ought to be core business for the Department of Environment. This is basically one arm of government procuring services from another but under the guise of funding research. Another limitation is that TERN is grossly underfunded compared to its counterpart in the USA, which services a similar continental area. TERN is also very limited in its ability to monitor fauna.

Australia recently lost its only Long-term Ecological Research Network program, which was decommissioned in 2018 [23]. While this was not comprehensive, it represented a substantial aggregation of the few long-term ecological research sites across Australia. The community is attempting to formulate a plan to reinvigorate a community of practice, but there is as yet, no funding for this work.

Therefore, Australia has very few long-term ecosystem monitoring programs with data collected, at regular time periods, and in standardised ways. Regrettably, we also have no national system for the collection, analysis, evaluation and reporting of threatened species status and trends. We need to fund a long-term, comprehensive ecosystem surveillance program that will allow us to detect trends in environmental change that will trigger the need for research or targeted management. We also need national direction to set minimum standards for monitoring and implementation to allow consistency.

j) The adequacy of existing assessment processes for identifying threatened fauna conservation status

Established scientific review and assessment processes for threatened species appear to be generally adequate under the EPBC Act. There has been some diminishment in the departmental and ministerial regard to the expert advice. Expert advice is the most reliable means of assessing the status of species and the management needs for species recovery. Adequate resourcing of the Department of Environment and Energy is required to ensure the support of expert advisory bodies and implementation of research, monitoring and management actions.

Accurately identifying threatened fauna conservation status requires on-going monitoring. While there are monitoring, evaluation and reporting processes that will feed into understanding threatened fauna
conservation status for many species they lack the resources required to make them scientifically rigorous (so that they operate over time frames and with sufficient data collection to be accurate).

Without ecosystem surveillance in place, there is little understanding of the broad scale changes to threats, as well as little understanding of non-threatened fauna populations. Without an understanding of threat management effectiveness there is little way of knowing if non-threatened entities are declining also, potentially to levels where more species are becoming threatened.

**k) The adequacy of existing compliance mechanisms for enforcing Commonwealth environment law**

We have recommended above that the EPBC Act should be substantially revised to reflect current knowledge. Compliance mechanisms are often inadequate to deal with situations where baseline and trend information is lacking. For instance, if there are no records of a threatened species on a parcel of land proposed for development, even if there have been no studies conducted, then the provisions of the Act are not triggered. This can be disastrous for a threatened species if it does occur on the land to be developed, but simply has not been detected due to lack of surveys.

Compliance mechanisms also need to address the impacts of clearing or damaging essential habitat, currently poorly addressed. The Act mostly protects the threatened species as an entity, but not the habitat on which it depends. The Precautionary Principle and a risk assessment process both need to become part of compliance assessments, and enshrined in legislation.

Enforcement of breaches of the Act are mostly inadequate, due to insufficient resources to employ the skilled staff and conduct the necessary investigations. Enforcement officers need special training and skills, and the resources to carry out their tasks. The Department of Environment needs to substantially improve its enforcement and compliance sections.

In conclusion, the ecosystem science community have the collective knowledge and skills, backed by sound science, to avert many of the declines of species. What is needed is strong national leadership and coordination to oversee a robust and independent Department, that is adequately resourced to monitor and report on trends in biodiversity and to undertake effective on-ground management interventions in a timely and efficient way to prevent the declines and eventual extinction of our precious species.

The Ecosystem Science Council would be available to attend the Senate inquiry to provide expert advice to the inquiry and to answer questions from senators.

Yours faithfully,

[Signature]

Professor Glenda Wardle
Chair, Ecosystem Science Council
The Ecosystem Council – background to who we are and what we do

The Ecosystem Science Council has made a number of submissions related to this crisis over the past few years. Those of particular relevance include our submission to the Australia's Strategy for Nature 2018-2030 review by the Department of Environment and Energy, and our submission to the review of the National Research Infrastructure Roadmap (NCRIS).

We have also proposed the development of a national Ecosystem Monitoring Management Agency in an attempt to redress this situation.

The Council arose from the ecosystem science community’s strategic planning process across 2013-2014, which resulted in Foundations for the future: a long-term plan for Australian ecosystem science (attached; see also www.ecosystemscienceplan.org.au). This strategic plan was formed from extensive national consultation across the research, industry and government sectors that clearly showed the extent to which industry, agriculture, tourism and resource extraction depend on functioning natural and managed ecosystems.

In accordance with the Ecosystem Science Council’s charter, we emphasize the need for stronger science and translation of that science to policy (Delivering maximum impact), long-term commitment (Supporting long-term research), better national monitoring frameworks (Enabling ecosystem surveillance), better capacity to bring together and make use of disparate data (making the most of data resources), and national coordination (facilitating coordination, collaboration and leadership).

Australia lacks a national system of long-term research to guide wise decision making. Long-term ecological research is needed because many fundamental ecosystem processes that support threatened species operate over decadal timescales. This is especially the case for our land of droughts, fire and floods, where extreme events are a dominant factor in ecosystem dynamics. The Council has produced a brochure outlining the importance of long-term research.

The Council has identified sustainable funding for long-term ecological research as a priority issue to be addressed. This is especially the case following the withdrawal of funding for long-term research from the TERN (Terrestrial Ecosystem Research Network) NCRIS facility. The Council understands that the Australian Research Council’s charter does not allow it to provide sustained, long-term funding for ecological research. One option for consideration by the Inquiry is an amendment to the ARC’s Act to add a new funding stream dedicated to supporting long-term ecological research.

References


12. *Aichi Biodiversity Targets*


