

Submission in response to:

Senate Inquiry on Australia's faunal extinction crisis

Submitted by:

National Environmental Science Program Threatened Species Recovery Hub

The National Environmental Science Program (NESP) is a long-term commitment by the Australian Government to environmental and climate research to provide evidence to support enhanced management and policy. NESP funding of \$145 million over the six years from 2015 to 2021 supports six themed research hubs, along with projects to address emerging environmental research needs.

The NESP Threatened Species Recovery Hub welcomes the opportunity to provide input into this Inquiry. Our Hub is a consortium of ten of Australia's leading academic institutions and the Australian Wildlife Conservancy, delivering a program of over 100 research projects. The Hub's research aims to support recovery of terrestrial and freshwater threatened species and biodiversity.

Among the more than 180 leading researchers who contribute to the Hub's projects are many individuals who have devoted decades of their lives to understanding threatened species and the factors that affect them, and worked with many policy-makers, on-ground managers and the community to help conserve these species.

The Hub has many research projects whose research closely relates to each of the Terms of Reference that are the focus of this inquiry. These research teams have separately authored individual responses to each of the Terms of Reference (combining (d) and (k) as they are closely related). In this Summary submission, our Hub leaders have drawn together the key issues and implications identified within each of these individual submissions.

Thank you once again for the invitation to provide input to this inquiry.

Regards,

Professor Brendan Wintle
Director, NESP Threatened Species Recovery Hub
The University of Melbourne and The University of Queensland



Submission to the Senate Inquiry on Australia's faunal extinction crisis

Summary of information contained in the submissions of the National Environmental Science Program Threatened Species Recovery Hub

National Environmental Science Program Threatened Species Recovery (TSR) Hub

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The NESP TSR Hub welcomes the opportunity to provide input into this Inquiry. Our Hub is a consortium of ten of Australia's leading academic institutions and the Australian Wildlife Conservancy, delivering a program of over 100 research projects. The Hub's research aims to support recovery of terrestrial and freshwater threatened species and biodiversity. Among the more than 180 leading researchers who contribute to the Hub's projects are many individuals who have devoted decades of their lives to understanding threatened species and the factors that affect them, and worked with many policy-makers, on-ground managers and the community to help conserve these species.

The Hub's research closely relates to many of the elements that are the focus of this inquiry.

Summary Submission Authors: Professor Brendan Wintle (TSR Hub Director, University of Melbourne and University of Queensland), Professor John Woinarski (Hub Theme Leader, Charles Darwin University, Assoc. Professor Sarah Legge (Hub Theme Leader, Australian National University and University of Queensland), Assoc. Professor Martine Maron (Hub Theme Leader, University of Queensland), Professor Stephen Garnett (Hub Theme Leader, Charles Darwin University), Professor David Lindenmayer (Hub Director of Research, Australian National University), Dr Rachel Morgain (Hub Knowledge Broker, Australian National University)

This submission addresses terms or reference (a)-(l) for the Inquiry.

Outline

This document summarises authors, key issues and recommendations/conclusions from across the submissions of the NESP Threatened Species Recovery Hub to this inquiry.

Submission A: The ongoing decline in the population and conservation status of threatened fauna

Response to Term of Reference (a) - the ongoing decline in the population and conservation status of Australia's nearly 500 threatened fauna species

Submission A: Authors

Professor John Woinarski (TSR Hub Theme Leader, Charles Darwin University), Assoc. Professor Sarah Legge (TSR Hub Theme Leader, Australian National University and University of Queensland), Professor Stephen Garnett (TSR Hub Theme Leader, Charles Darwin University), ARC Laureate Professor David Lindenmayer (TSR Hub Theme Leader, Australian National University), Dr Ben Scheele (TSR Hub Research Fellow, Australian National University), Dr Heather Keith (TSR Hub Research Fellow, Australian National University), Dr Ayesha Tulloch (TSR Hub Research Fellow, University of Sydney and University of Queensland), Natasha Cadenhead (TSR Hub Researcher, University of Melbourne), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University), Professor Brendan Wintle (Hub Director, University of Melbourne)

Submission A: Premise of Submission

The submission provides context to the Inquiry by reporting on and interpreting information about the extent of ongoing decline in the status of Australia's threatened species. Since the inception of the EPBC Act there have been extinctions and ongoing declines in threatened species populations, indicating a need to adjust legislative, policy, management, and practice settings to achieve the Act's objective of preventing extinction.

Submission A: Key Issues

- In a global context, the rate of extinctions for mammals in Australia is exceptionally severe.
- Extinctions of Australian animal species are continuing: in the last decades, two Australian endemic mammal species have been rendered extinct, one reptile species has been made extinct and two other Australian reptile species have been rendered extinct in the wild. Again, this number of recent extinctions of vertebrates is exceptional by global standards.
- The number of animal species listed as threatened under the EPBC Act has increased by ca. 57% since the Act's inception and is continuing to increase.
- Only 13 animal species have been de-listed since the Act's inception, and only one of these (Muir's corella) may be considered a case of genuine improvement.
- The EPBC Act conservation status of five animal species has been down-listed (i.e. to a less threatened status) since the Act's inception, mostly due to taxonomic review or new information indicating that the species was not as imperilled as originally thought. In contrast, 46 species have had their conservation status up-listed, mostly because of ongoing and severe deterioration in their conservation outlook.
- Where recent population trajectory information is available, the overwhelming trend for EPBC Act-listed animal species is for ongoing population decline (174 species); in contrast, only three listed species are considered to be increasing. Extinction is a likely end result of ongoing population decline for threatened species. The evidence is clear: recovery – the goal of threatened species management – is not being achieved for the vast majority of listed species.

What is working?

- For a small minority of species (mostly highly imperilled mammals), intensive management (such as exclosure fencing and translocations to cat-free islands) is producing some recovery.
- The ongoing incremental increase in the number of species listed as threatened is slowly remedying the lack of comprehensiveness of the original EPBC Act list.

Submission A: Implications

- A1. Following IUCN guidelines, the explicit basis for de-listing, down-listing or up-listing should be given for all cases where the EPBC Act conservation status of a taxon is changed, or reviewed and not changed, in a manner that can readily be used to determine whether such change is due to real recovery (or decline) or other factors such as taxonomic changes. Such reporting has recently been undertaken, but is not currently mandated under legislation.
- A2. Regularly reporting the population trajectory of all EPBC Act listed species (along with the reliability of such trajectory information), would act as a measure of the benefits (or otherwise) of listing, could guide intensive recovery efforts, and help prioritise actions to conserve consistently declining species.
- A3. A formal process of regular (e.g. every 10 years) re-assessment of the conservation status of all listed threatened species would ensure that a species' listed status provides a timely and accurate indicator of a species' changing extinction. Rapidly declining species could be re-assessed more frequently.
- A4. The listing under the EPBC Act of *Extinct* species be reviewed and updated more frequently to ensure that it more properly reflects the known extent of loss of Australian biodiversity since European settlement.

- A5. Data about trends in listed species should be included in a national System of Environmental-Economic Accounts that are used together with the System of National Accounts in decision-making about natural resource management.

Submission B: Ecological impacts of faunal extinction and decline

Response to Term of Reference (b) - the wider ecological impact of faunal extinction

Submission B: Authors

The Hub's research aims to support recovery of terrestrial and freshwater threatened species and biodiversity. The Hub conducts research into the contributions of threatened species to ecosystems, including work led by several of the authors of this submission.

Professor Chris Johnson (TSR Hub Chief Investigator, University of Tasmania), Professor John Woinarski (TSR Theme Leader, Charles Darwin University), ARC Laureate Professor David Lindenmayer (TSR Hub Theme Leader, Australian National University), Assoc. Professor Sarah Legge (TSR Hub Theme Leader, Australian National University and University of Queensland), Natasha Cadenhead (TSR Hub Researcher, University of Melbourne), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University)

Submission B: Premise of Submission

Species have intrinsic value, but also provide benefits to other species and to ecosystems. These benefits are lost when species become extinct, and they mostly disappear when common species become rare.

Note that the Term of Reference relates explicitly to fauna extinctions. However, many of the same issues are involved for threatened species that have disappeared from most of their former ranges (many are 'regionally extinct'), so we have also considered in this submission the ecological impacts of declines in threatened species. This expansion of the Term of Reference is also useful, because considered management may be able to recover the ecological roles played by threatened species, but this is impossible for extinct species.

Submission B: Key Issues

- Species have intrinsic value, but they also provide benefits to other species and to ecosystems. These benefits are lost when species become extinct, and they mostly disappear when common species become rare.
- Australia's faunal extinction crisis is characterised not just by extinction itself, but also by large and continuing declines in abundance and range of many surviving species. Maintaining small populations of threatened species in small parts of their original ranges is important because it prevents extinction; however, it does little to return the ecological services once provided by those species across their extensive former ranges.
- Many Australian animals vanished, or declined drastically, so soon after European arrival that the environmental effects of their loss cannot be known with certainty. However, studies of currently threatened species reveal that many have important ecological roles. This suggests that past extinctions and declines caused substantial ecological change, and also that recovery of threatened species will have environmental benefits.
- Many threatened species are responsible for dispersal of seeds of native plants and spores of beneficial fungi. Others affect the composition of vegetation through processes such as seed-eating and pollination.
- Other species are ecosystem engineers, improving the structure and fertility of soil. Some of these engineers may also reduce the risk and intensity of bushfire.

- Native predators have declined in most Australian landscapes. Predators have important roles in regulating abundance of other species and stabilizing ecosystems, including controlling pest species.
- The combined ecological impacts of decline of native fauna are difficult to estimate, but they are probably very significant.
- Many extinct and threatened species were intimately associated with other species, which have declined or become extinct along with their biological partners. Biodiversity loss due to known declines is therefore likely to be much greater than is formally recognised.

Submission B: Implications

- B1. Outcomes for threatened species would benefit from recognition by policy settings that conservation of threatened animal species serves two goals: the preservation of our rich and unique heritage of species and the maintenance and restoration of ecosystem health.
- B2. Outcomes for threatened species would benefit from recognition by policy settings of the need, not only to prevent rare species from becoming extinct, but also the need to place species on trajectories of recovery that will regain as much as possible of their original abundance, geographic range and contribution to ecosystem stability and function.
- B3. Prioritisation of threatened species for recovery is based on current levels of threat. This approach is an essential response to the primary challenge of preventing species loss, but would be augmented by a commitment to recovery of certain species that have key ecological functions.
- B4. The current focus on status of and threats to individual species can be complemented by a commitment to restoration of landscapes, achieved by coordinated restoration of ecologically important species to recover the ecological processes lost due to historical declines.
- B5. Conservation efforts for threatened animal species could improve outcomes by also considering the conservation of other species that may be dependent upon them, such as host-specific parasites.

Submission C: International obligations

Response to Term of Reference (c) - the international and domestic obligations of the Commonwealth Government in conserving threatened fauna;

Submission C: Authors

The authors of this submission include researchers leading the delivery of key Hub research projects that aim to support improvements in threatened species policy.

Associate Professor Martine Maron (TSR Hub Theme Leader, University of Queensland), Professor Brendan Wintle (TSR Hub Director, University of Melbourne and University of Queensland), Associate Professor Sarah Legge (TSR Hub Theme Leader, Australian National University), Professor John Woinarski (TSR Hub Theme Leader, Charles Darwin University), ARC Laureate Professor David Lindenmayer (TSR Hub Research Director, TSR Theme Leader, Australian National University), Natasha Cadenhead (TSR Hub Research Associate, University of Melbourne), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University)

Submission C: Premise of Submission

A strong and enduring national framework is essential for Australia to meet its international obligations to protect its biological diversity including the prevention of extinctions and the recovery of threatened species.

Submission C: Key Issues

- Australia's contribution towards international targets and goals relevant to halting declines of threatened fauna (notably the Sustainable Development Goals and the Aichi Targets under the Convention on Biological Diversity) is poor.
 - The explicit and resolute international targets relating to the prevention of extinction are not comparably highlighted in relevant Australian policy.
 - Australia lacks a full complement of national targets that map onto Aichi targets, meaning our national policy does not align with international agreements.
(<https://www.cbd.int/countries/targets/?country=au>)

Submission C: Conclusions

- C1. Ensuring our National Biodiversity Strategy and other national policy settings align with Sustainable Development Goals and Aichi targets, with appropriate targets and measures embedded within national policy settings, would introduce more resolute framing of our international obligations in national policy.

Submission D: Environment laws and compliance

Response to Term of Reference (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; and (k) – the adequacy of existing compliance mechanisms for enforcing Commonwealth environment law;

Submission D: Authors

The authors of this submission include researchers leading the delivery of key Hub research projects that aim to support improvements in threatened species policy.

Authors: Associate Professor Martine Maron (TSR Hub Theme Leader, University of Queensland), Professor Brendan Wintle (TSR Hub Director, University of Melbourne and University of Queensland), Associate Professor Sarah Legge (TSR Hub Theme Leader, Australian National University), Professor John Woinarski (TSR Hub Theme Leader, Charles Darwin University), ARC Laureate Professor David Lindenmayer (TSR Hub Research Director, TSR Theme Leader, Australian National University), Associate Professor Sarah Bekessy (TSR Hub Chief Investigator, RMIT University), Natasha Cadenhead (TSR Hub Research Associate, University of Melbourne), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University)

Submission D: Premise of Submission

A strong and enduring national legal framework is essential for Australia to meet its national and international obligations to protect its biological diversity including the prevention of extinctions and the recovery of threatened species. To ensure that these objectives are met, the implementation of that national legal framework and associated strategies needs to be adequately resourced and then subject to regular independent assessment and external audit of performance.

Submission D: Key Issues

- Australia's EPBC Act has sound objectives and yet its implementation is failing to prevent continued declines of threatened fauna through a combination of deleterious permitted actions, risky inaction, and pervasive threats that cannot easily be regulated through the Act. In particular:
 - The EPBC Act is variably effective for managing impacts from intensive development and resource use. However, ongoing declines in threatened species indicate implementation has

- been less effective for managing the threats posed by invasive species, altered fire regimes, and broad scale agricultural impacts on habitat;
- KTPs and TAPs could be a mechanism to galvanise the coordinated management of many pervasive threats; however, their effectiveness could be much improved by changes to policy, strategic preparation and implementation;
 - Approaches to avoiding 'death by 1000 cuts' recommended by the Hawke Review (Commonwealth of Australia 2009) including bioregional planning and strategic assessment are underutilised;
 - Approval conditions rarely require a specific ecological outcome;
 - There is a lack of monitoring and evaluation of biodiversity offsetting as a response to permitted impacts on Matters of National Environmental Significance;
 - Biodiversity offsetting appears frequently to be used as a default measure, and not only as a last resort for unavoidable impacts and where there is evidence of feasibility and likely effectiveness;
 - Biodiversity offsetting as currently implemented maintains faunal declines.
- Enforcement of the EPBC Act appears focused on particular industries, with very large losses of potential habitat for threatened fauna receiving limited or no scrutiny.

Submission D: Conclusions

- D1. A threatening process is eligible for listing as a Key Threatening Process (KTP) under the EPBC Act if it could cause one or more unlisted species to become eligible for listing as threatened, cause a listed species to become eligible for uplisting, or adversely affect two or more listed threatened species. A well-designed and funded Threat Abatement Plan (TAP) for a KTP can benefit multiple threatened species and ecological communities. The effectiveness of KTPs could be improved; for example, by investing in national coordination across jurisdictions to effect strategic responses to KTPs and delivery of TAPs; with policy support to direct Commonwealth funding towards programs that deliver elements of well-designed TAPs; and by adding provisions that require threat abatement to be demonstrated in regulatory and recovery processes.
- D2. Improving processes for strategic assessments and greatly expanding the application of strategic approaches would provide multiple benefits for threatened species, most notably helping to curtail 'death by 1000 cuts' (Commonwealth of Australia 2009).
- D3. Improving and expanding the use of bioregional planning would provide multiple benefits for threatened species.
- D4. Without clear specification of required ecological outcomes for MNES as approval condition/s, and a clear and enduring liability to achieve and maintain those outcomes, approving impacts with offsets is likely to have a net negative impact on threatened species.
- a. In order to ensure that desired outcomes are achieved and that the application of outcome-based conditions for offsetting is effective, monitoring for compliance with conditions would need to include not only monitoring of actions, but also monitoring of outcomes.
- D5. Implementation of outstanding recommendations from the Senate Inquiry into Environmental Offsets, including implementation of a public register of offsets, enhancing resources for the collection and digitisation of current and previous environmental monitoring data, and undertaking scheduled reviews of the Environmental Offsets Policy and Offsets Assessment Guide, would substantially improve compliance monitoring and evaluation of environmental offsets policy.
- D6. Preserving and enforcing the principle that offsets be used only as a last resort following demonstrated avoidance and impact minimization steps, and ensuring that strong evidence be provided that offset actions will achieve benefits sufficient to counterbalance impacts will reduce the impacts of approvals on threatened species. Requiring that offsets be secured

before the impact on the MNES occurs would significantly improve offset outcomes for threatened species.

D7. The use of offsets based on increased protection of existing habitat or 'avoided loss' locks in declines of threatened species. The long-term goal of ceasing and reversing declines of threatened species therefore requires that it be used sparingly and only where other options are not available, not as a general mechanism for offsetting habitat loss.

D8. Use of the EPBC Act to scrutinize and make appropriate determinations on all proposals that appear likely to have significant impacts on MNES is important if the Act is to achieve its objectives of protecting Australia's threatened species and preventing extinction. Assessment and compliance sections would need to be properly resourced to fulfil this task.

Submission E: Critical habitat for threatened fauna

Response to Term of Reference (e) - the adequacy and effectiveness of protections for critical habitat for threatened fauna under the Environment Protection and Biodiversity Conservation Act 1999

Submission E: Authors

The authors of this submission include researchers leading the delivery of key Hub research projects that aim to support improvements in threatened species policy.

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Submission E: Premise of Submission

Protecting critical habitat is important for many threatened species, but vital to the survival of species confined to a small number of dwindling habitats. Protection for critical habitat is important to threatened species recovery, regardless of land tenure or causes of habitat loss.

Submission E: Key Issues

- Habitat identified on the Register of Critical Habitat is only protected by the Commonwealth if that habitat is on Commonwealth land or sea.
- Recovery plans are required to identify 'habitat critical to survival'. However, there is no systematic approach to achieve this and it rarely rigorously identified or mapped. There are no special protections mandated to habitats critical to survival under the Act.
- Critical habitat designations are used much more widely under the US Endangered Species Act. This has been identified one of the reasons why recovery of listed threatened species in the USA has been more successful than observed in Australia (Taylor *et al.* 2005)

Submission E: Implications

E1. Increasing protections for critical habitat under EPBC Act provisions in recognition of their importance for threatened species would significantly reduce the risk of extinction for a number of species that are currently restricted to a small number of dwindling habitats. This could be achieved by expanding the definition of Matters of National Environmental Significance to include 'habitats critical to the survival of threatened species and ecological communities'.

Submission F: The management and extent of the National Reserve System

Response to Term of Reference (f) - the adequacy of the management and extent of the National Reserve System (NRS), stewardship arrangements, covenants and connectivity through wildlife corridors in conserving threatened fauna

Submission F: Authors

The Hub includes projects investigating the effectiveness of reserves for threatened species conservation and recovery. The authors of this submission include many of the people leading this research.

Professor John Woinarski (TSR Hub Theme Leader, Charles Darwin University), Professor Brendan Wintle (TSR Hub Director, University of Melbourne and University of Queensland), Dr Heini Kujala (TSR Hub Senior Research Fellow, University of Melbourne), Dr Heather Keith (TSR Hub Senior Research Fellow, Australian National University), ARC Laureate Professor David Lindenmayer (TSR Hub Theme Leader, Australian National University), Assoc. Professor Sarah Legge (TSR Hub Theme Leader, University of Queensland and Australian National University), Assoc. Professor Ben Phillips (TSR Hub Chief Investigator, University of Melbourne), Professor Chris Johnson (TSR Hub Chief Investigator, University of Tasmania), Natasha Cadenhead (TSR Hub Research Associate, University of Melbourne), Assoc. Professor Michael Bode (TSR Hub Chief Investigator, Queensland University of Technology), Professor Sarah Bekessy (TSR Hub Chief Investigator, RMIT University), Dr Jeremy Ringma (TSR Hub Research Fellow, RMIT University), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University)

Submission F: Premise of Submission

Loss of suitable habitat is a major underpinning cause of species extinctions. An adequate and well-managed National Reserve System (NRS) is therefore the enduring foundation for the conservation of Australia's biodiversity, including its threatened species.

Submission F: Key Issues

- The NRS, including the Indigenous Protected Area network, is fundamental for the conservation of Australia's threatened species and must be maintained, as it secures many species from threats operating outside the reserve system.
- The NRS is not comprehensive in its representation of environments, and many threatened species do not occur in it.
- Although successive iterations of the NRS framework have called for a comprehensive, adequate and representative reserve system, the adequacy dimension has never been appropriately defined or implemented. The existing reserve system is inadequate for the long-term conservation needs of many species.
- Some of the principal factors driving the decline of threatened species are tenure-blind, and – unless appropriately and effectively managed – the reserve system provides no or inadequate protection for threatened species against these threats. Hence, the reserve system has failed to ensure the viability and persistence of at least some threatened species occurring in them.
- An effective National Reserve System that maintains conservation values, including threatened species persistence, is underpinned by adequate management resources and consistent and clearly-defined management goals. In many instances, gazettal decisions are not sufficiently well justified and published and do not lead to direct additions in other areas.
- The National Reserve System will lose its biodiversity values if it operates as a series of isolated fragments; its enduring value depends upon maintaining or re-building landscape-scale connectivity.
- The effectiveness of the reserve system is contingent upon complementary off-reserve management, and this complementarity is not being delivered effectively.
- A network of predator-free islands and fenced exclosures provides a necessary short-term complement to the reserve system, and is required to prevent the extinction of many

predator-susceptible threatened mammal species. However, many more predator-free islands and fenced exclosures are needed to adequately protect Australia's predator-susceptible threatened species.

Submission F: Implications

- F1. Maintaining a commitment to the long-term security of the National Reserve System will be crucial for conserving Australia's biodiversity, including threatened species.
- F2. Strategically increase the comprehensiveness of the NRS to remedy its environmental bias by adding reserves in environments that are currently unreserved or poorly reserved, especially those environments occurring on highly productive landscapes, and by encompassing populations of all presently-unreserved threatened species, is essential for the long term conservation of Australian biodiversity.
- F3. Incorporating a working definition of adequacy into reserve design and NRS evaluation criteria, and expanding the reserve system to ensure that it meets such an adequacy criterion is necessary to ensure the reserve system contributes to the persistence of threatened species.
 - a. A definition of adequacy should include the criterion that individual reserves and the reserve system as a whole are sufficiently large to maintain viable populations of threatened species occurring within them.
- F4. Through the development, implementation and measurement of performance of park management plans, ensure that threats affecting threatened species in reserves are managed effectively such that populations of threatened species in reserves are maintained or recovered.
- F5. Ensuring systematic and sufficiently powerful monitoring of threatened species and threats in reserves and the reserve system will enhance the effectiveness of park management and its national contribution to threatened species conservation.
- F6. Ensuring resourcing of park management is sufficient to meet conservation objectives; and securing the NRS against downgrading, downsizing and degazettal is essential for the long term persistence of many threatened species.
- F7. Maintaining and restoring native vegetation linkages between reserves, for example by resurrecting the National Wildlife Corridors Program, would help ensure the quality and viability of parks and the species that depend on them;
- F8. Ensuring that off-reserve policy, law, regulations, and management practices deliver conservation outcomes that are complementary to the NRS is crucial to securing many threatened species. If complementary management cannot be achieved to an adequate level, then the extent of the formal reserve system would need to be increased in these environments to ensure the persistence of many threatened species.
- F9. Enhance the use of strategic regional planning, to ensure that the conservation reserve system is comprehensive, adequate and representative at regional level, attuned to regional factors, and complemented by appropriate off-reserve management.
- F10. Providing government support and coordination to increasing the comprehensiveness, adequacy and representation of the network of predator-free islands and fenced exclosures will be crucial to ensuring the conservation of Australia's many threatened mammal species that are susceptible at population level to introduced predators.

Submission G: The importance of Indigenous Peoples to the conservation of Australia's threatened species

Response to Term of Reference (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

Submission G: Authors

The Threatened Species Recovery (TSR) Hub includes projects on Indigenous leadership and partnerships for threatened species recovery. The authors of this submission are among the researchers leading this work.

Bradley Moggridge (TSR Hub Indigenous Liaison Officer), Professor Stephen Garnett (TSR Hub Theme Leader, Charles Darwin University), Dr Stephen van Leeuwen (TSR Hub Indigenous Reference Committee), Assoc. Prof Sarah Legge (TSR Hub Theme Leader, Australian National University), Dr Anja Skroblin (TSR Hub Research Fellow, University of Melbourne), Tom Duncan (TSR Hub PhD student), Professor Sarah Bekessy (TSR Hub CI, RMIT University), Dr Rachel Morgain (TSR Hub Knowledge Broker, Australian National University), Professor Brendan Wintle (TSR Hub Director, University of Melbourne and University of Queensland)

Submission G: Premise of Submission

The submission provides context to the Inquiry on the importance of Indigenous Peoples to the conservation of Australia's threatened species. Current policy, management and practice settings need to be changed if the potential for Indigenous people to be fully involved in the conservation of threatened species and communities is to be realised.

Submission G: Key Issues

- Traditional knowledge and its use for management of threatened species or other aspects of conservation cannot be separated from the traditional Indigenous owners of that knowledge.
- Australia will not halt declines of threatened fauna or meet the Sustainable Development Goals and the Aichi Targets under the Convention on Biological Diversity without active participation of Indigenous people.
- Indigenous Peoples have an enduring commitment and cultural responsibility for the management of their land and wildlife, however the implementation of that commitment is often subverted or frustrated through lack of long-term commitment from governments and resources needed to protect their Country and recover threatened species.
- Mandating Indigenous-led threatened species recovery research in future research programs will enhance the value, effectiveness and relevance of those programs for threatened species recovery and bring benefit to Indigenous people.
- Indigenous priorities relating to threatened species cannot be adequately incorporated unless they are included at the planning phase of management and research; co-design and co-delivery of threatened species research and on-ground management is essential to successful threatened species management and research and to supporting the values and needs of Indigenous communities Caring for Country.

As is proper, the EPBC Act provides a basis for listing of species that are threatened at national level. But many Indigenous communities are also deeply concerned about the decline or loss on their lands of native species that are significant to them because of their cultural, spiritual and/or social-economic value (bush tucker, bush meat, medicinal usage, ceremonial value). If such species do not yet meet the thresholds for listing as threatened at national level, the Act offers no mechanism for the recovery of such culturally significant species. In addition, the Common Assessment Method, which seeks to harmonise listing assessments across the Commonwealth, state and territories, will generally reduce the regulatory burden and improve

listing efficiency; however, opportunities to list species important to Indigenous groups at state or territory level may become more constrained.

What is working?

- The Indigenous Protected Area (IPA) and Indigenous Land and Sea Ranger programs are empowering Indigenous people to become involved with threatened species conservation, and to bring the benefits of traditional knowledge and management practices to the recovery of threatened species. Support for these programs represents a substantial injection of employment and economic opportunities to regional and remote Australia, generating a 3-fold return on investment.
- The National Environmental Science Program TSR Hub (authors of this submission) is an example of a research program that has improved its approach to Indigenous engagement and leadership over predecessor programs. NESP requires all Hubs to develop an Indigenous Engagement Plan and invest substantively in Indigenous engagement. In TSR Hub, an Indigenous Reference Group is in place to support an Indigenous Liaison Officer in ensuring meaningful Indigenous engagement and leadership across the Hub's research plan. The success of this model has helped to extend Indigenous research governance structures, which can inform future program design. This highlights the opportunity and importance of engaging Indigenous people in all aspects of threatened species conservation research and management at all phases from conceptualisation and design, through to implementation.

Submission G: Implications

- G1. Resourcing and empowering Indigenous people to participate fully in threatened species management; and to carry out Indigenous led research, enabling them to apply their whole of Country knowledge, will deliver significant benefits for threatened species.
- G2. Key environmental programs supporting Indigenous people to effect threatened species recovery, such as Working on Country and Indigenous Protected Areas, will be significantly more effective if they obtain the same institutional status and security as Commonwealth protected areas, including long-term funding security.
- G3. Threatened species research will be greatly enhanced by including the views of Indigenous people who hold those species as significant. Activities to manage species and threats will be more effective when co-designed and co-delivered with the cultural authority of the owners of the land.
- G4. Future revisions of the EPBC Act should provide scope for the listing and recovery of wildlife that is culturally significant and declining on Country, but not yet meeting thresholds for listing as threatened.
- G5. Indigenous knowledge and Intellectual property used and accessed through threatened species management or recovery must be protected and remain the property of the original knowledge holder and to ensure that the knowledge provided is given true acknowledgement.
- G6. Including Indigenous-led research as a top priority for the future of national environmental science programs would allow Indigenous people to establish their own research priorities and undertake research and monitoring to inform the recovery of threatened species.
- G7. Institutions including research and funding institutions need to prioritise and facilitate the opportunity for Indigenous Bio-cultural Knowledge to be included on an equal footing with mainstream western science, through a cultural shift in thinking and pedagogy.
- G8. Future research on threatened species, communities and threatening processes should be required to comply with guidelines for ethical research, such as the AIATSIS Guidelines for Ethical Research for Australian Indigenous Studies, and the Department of the Environment and Energy's National Environmental Science Program's Indigenous Engagement and Participation Strategy Guidelines.

Submission H: The adequacy of funding streams for implementing threatened species recovery plans and preventing threatened fauna loss

Response to Term of Reference (h) - the adequacy of existing funding streams for implementing threatened species recovery plans and preventing threatened fauna loss in general

Submission H: Authors

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Submission H: Key Issues

- Australia has the second highest rate of species losses on the planet, yet has a low expenditure on preventing extinctions relative to other western nations and the size of our extinction problem, as outlined in a 2017 study published in the international scientific journal *Nature* (Waldron *et al.* 2017).
 - Global studies (Taylor *et al.* 2005), and direct comparison of return on investment in threatened species in the USA (Bottrill *et al.* 2011), indicate a need to increase funding for threatened species conservation in Australia by approximately one order of magnitude to reduce the likelihood of future extinctions.
 - Comparison with the USA demonstrates strong scientific evidence that listing under the USA Endangered Species Act leads to successful species recovery (Taylor *et al.* 2005). In contrast, the available evidence suggests that listing species under Australia's EPBC Act is not leading to species recovery (Bottrill *et al.* 2011). One of several reasons for Australia's poor performance in this area is that such listing is not accompanied by mandated and adequately-funded recovery actions (refer to ToR (a)).

- Budget papers are unclear on exact Australian Government expenditure on threatened species conservation, but indicate that federal expenditure *relevant* to preventing extinction is in the range of \$41–400M in 2018/19 budget (Commonwealth of Australia 2018; and see Table 1). The upper bound represents estimated spending when all programs that could reasonably be considered to contribute to reduction in extinction risk are included (Supplementary Information S1 provides clarification of how estimates were derived). Most of these programs do not directly target threatened species.
- For comparison, in 2016, the USA spent \$US1.5B (AUD 2.03B) on conservation actions targeted at threatened species. The USA Endangered Species Act lists 1600 species as threatened and endangered (USFWS 2016), while Australia's EPBC Act lists 1775 species as threatened (and an additional 91 species that are extinct).
- The exact scale of investment required in Australia could be refined through conducting scientifically rigorous studies of the funding required to prevent further extinctions.
- To date, funding streams for threatened species recovery have been short-term, sporadic, and allocated according to a shifting set of priorities. However, species recovery requires long-term and consistent funding.
 - With the possible exception of birds and mammals, current listing of species under the EPBC Act does not encompass all species that merit listing because data on many less well-known species is insufficient to support listing decisions, and because established single-species listing processes are resource- and data-intensive (see our submission on TOR (j)) (Walsh *et al.* 2013). The number of animal species listed as threatened or extinct under the EPBC Act has increased from 327 in 2000 to 511 in 2018, an increase of 56% in less than 20 years. Without further investment, many more species are likely to decline rapidly and be eligible for listing in the future. Funding needed to conserve and recover Australia's threatened species is thus likely to grow substantially over coming decades.
 - Recovery plans are a critical foundation for preventing extinction. However, the effectiveness of recovery plans for conserving Australia's threatened species is compromised by a lack of funding to prepare and implement recovery actions (Bottrill *et al.* 2011). Standardised budget estimation for recovery planning would help increase transparency about conservation spending. Furthermore, because of changes in the EPBC Act, recovery plans are now not mandated for the recovery of Australia's threatened species. Available evidence suggests that species without recovery plans are less likely to be monitored or managed effectively (Legge *et al.* 2018).
 - Community interest and commitment, as well as a sound knowledge base of threats and of actions that can be taken effectively to control those threats, are core ingredients in the prevention of extinction and recovery of threatened species. However, such knowledge and interest are ineffective if there are insufficient funds to take appropriate remedial actions in a timely, resolute and enduring manner (Woinarski 2018).
- The EPBC Act names the conservation of threatened species as a Matter of National Environmental Significance, reflecting that the Australian Government has accepted a primary role in ensuring threatened species recovery.
 - It is highly appropriate that there are other contributors beyond the Australian Government to the conservation of Australia's threatened species, notably state and territory governments, conservation NGOs, philanthropic trusts, industry and the public generally. These contributions bolster the expenditure described above. Nevertheless, the need for consistency in investment in supporting threatened species as a Matter of National Environmental Significance suggests a core role for Australian Government investment.
- There is a need for greater transparency and public availability of comprehensive information on national and Australian Government expenditure on threatened species in order to progress discussion about appropriate levels of funding for threatened species conservation in Australia.

What is working well?

- There have been some areas of strength in Australian Government investment in threatened species, most notably in national leadership on feral cat management through the Australian Government's Threatened Species Strategy and the National Feral Cat Taskforce, which represents a model that could be applied more broadly to other invasive species and threat management. The National Environmental Science Program provides a nationally-leading model for outcomes-driven and engaged environmental research. It includes investments in research contributing to improving threatened species recovery across several Hubs, including \$60M over six years committed through the Australian Government and partners to support Threatened Species Recovery Hub (authors of this submission).

Submission H: Conclusions

- H1. To match direct spending on threatened species conservation with other developed western economies, Australia's investment would need to increase to \$1.2-1.5B/year. Such expenditure would have a reasonable chance of averting further avoidable extinctions and of recovering those species currently listed as threatened.
- H2. Accountability for expenditure on conservation of threatened species and threatened ecological communities, and for its outcomes, would be improved by transparent budget documentation along the lines of that provided for similar purposes by the US Fish and Wildlife Service.
- H3. There is urgent need for detailed costing of conservation actions necessary to prevent any further avoidable extinctions in Australia. In the absence of such analysis investments are at risk of being ineffective.

Submission I: The adequacy of threatened fauna monitoring

Response to Term of Reference (i) - the adequacy of existing monitoring practices in relation to the threatened fauna assessment and adaptive management responses

With relevance to Terms of Reference: (j) - the adequacy of existing assessment processes for identifying threatened fauna conservation status; and (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

Submission I: Authors

The Hub has carried out a series of research projects that aim to support improvements in monitoring for threatened biodiversity. The authors of this submission include those leading the delivery of key parts of this program.

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Submission I: Premise of Submission

Monitoring is the foundation on which conservation management of threatened species is built. It informs listing assessment, helps identify causes for species declines, measures the effectiveness of management, thus informing investment and policy decisions. Without monitoring, or with inadequate monitoring, species may become imperilled without managers being aware of their plight, leaving no opportunity for effective responsive intervention. Monitoring can be used to engage with the broader public over threatened species conservation.

Submission I: Key Issues

- Existing policy and legislative settings do not explicitly prioritise or support monitoring for threatened biodiversity. This undermines decision making because necessary scientific evidence is often missing.
- National expenditure on monitoring of biodiversity has been severely reduced (Pickerell 2017).
- Funding insecurity means there are few long-term monitoring programs, yet monitoring requires decadal continuity in investment.
- National assessment of the status of monitoring of threatened biodiversity, carried out by the NESP TSR hub, shows a parlous situation in monitoring for threatened biodiversity stemming from these policy and funding deficiencies:
 - One in four threatened species are not monitored at all. Where monitoring does occur, its quality is generally poor. This situation affects every part of conservation management for threatened species. In the extreme case, it means that species could slide to extinction without us knowing.
 - The presence and quality of monitoring for ecological communities is even poorer.
 - Across all threatened biodiversity, we have no national overview of trends in Australia's natural legacy. The poor record of long-term monitoring for threatened species compounds the long-running and well-recognised deficiencies in environmental reporting. The most recent State of The Environment Report (2016) noted that: *"The lack of data and information from long-term monitoring of biodiversity is universally acknowledged as a major impediment to biodiversity conservation. The lack of effective monitoring and reporting has been raised in every jurisdictional report, and multiple other reports and papers as a major impediment to understanding the state and trends of Australian biodiversity (Commonwealth of Australia 2016)."* (Creswell & Murphy (2017).

Submission I: Recommendations

11. Ensuring national biodiversity policy documents explicitly recognise threatened biodiversity as targets for action, with monitoring a critical component of their recovery, will deliver significant benefits for threatened species; as will clearly aligning national policy with international agreements. If the Threatened Species Strategy is to be maintained, it should be broadened to cover all taxonomic groups.
12. Reforming recovery planning processes, so that recovery plans and conservation advices consistently include adequate and costed detail on how the listed species is to be monitored, will clarify opportunities for threatened species recovery and make them more actionable.
13. Substantially increasing the amount and long-term security of funding to threatened species monitoring would improve outcomes for threatened species by providing a sound evidence base for decision making and for prioritising urgent recovery actions.
14. National leadership could achieve wider recognition amongst land-managers, policy-makers, researchers and funding bodies that monitoring is an essential ingredient for threatened species recovery, that funding for monitoring should be long-term and secure, and that monitoring is central to understanding management effectiveness.

15. Making robust monitoring programs mandatory in park management and the conservation of threatened species would enhance outcomes for those, and other, species.
16. Data reporting could be made a requirement of regulatory approvals under the EPBC Act that include monitoring as a condition of approval.
17. There are untapped opportunities to develop programs that better foster the involvement of Indigenous Australians and the general public in biodiversity monitoring.
18. Supporting and coordinating multi-jurisdictional monitoring programs focused on learning about trends and drivers for priority taxa with distributions that cross jurisdictional boundaries would significantly enhance conservation outcomes for widely-distributed threatened species and bolster cooperative management efforts.
19. A national institution for storing, analysing and interpreting biodiversity monitoring data, making information on management effectiveness and conservation priorities available to the public, policy-makers and managers, would greatly enhance understanding of, and ability to act on, threatened species conservation, and would complement and extend State of the Environment reports.
10. Committing to effective monitoring, public reporting and interpretation of trends in individual threatened species would improve our ability to conserve threatened species.

Submission J: The adequacy of existing assessment procedures for identifying the conservation status of threatened fauna

Response to Term of Reference (j) - the adequacy of existing assessment processes for identifying threatened fauna conservation status

Submission J: Authors

The Threatened Species Recovery Hub (TSR Hub) includes a number of research projects aiming to inform or contribute to threatened species listing processes. Representatives from these projects are among the authors of these submissions.

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Submission J: Premise

The list of Australia's threatened species should be justified, up-to-date and appropriately include all Australian species that are threatened with extinction. The list drives funding of conservation and research efforts. Therefore, if the list is not comprehensive, so must our approach to conserving species be inadequate. An accurate, scientifically robust list provides a strong foundation for the prevention of extinction, and the recovery, of Australia's threatened species.

Submission J: Key Issues

- The *Environment Protection and Biodiversity Conservation Act 1999* appropriately stipulates that assessment of the conservation status of Australia's biodiversity is determined on the basis of independent scientific recommendations.
- The assessment process is rigorous and robust and allows for public comment; this ensures confidence in the integrity of the list.
- The Common Assessment Method (CAM) – harmonising assessments and listing processes across states and territories – is a welcome initiative and is helping render national listing more efficient

and reducing the confusing mish-mash of assessment protocols and lists across Australian jurisdictions.

- The Species Expert Assessment Plan (SEAP) process is also a welcome initiative to increase efficiency in the listing process and to increase the harmonisation of assessments and listing at national and international levels. The use of this process should be expanded.
- The assessment process is resource-hungry and strongly evidentiary, and hence largely precludes much of the Australian biota that is poorly known but imperilled (see also response to Term of Reference (i)). As a result, the threatened species list is taxonomically biased towards better known and iconic taxonomic groups and better known regions. The conservation outlook for poorly-known but imperilled species is consequently jeopardised.
- The current Commonwealth assessment process does not provide for an obligatory periodic review of the conservation status of listed species (i.e. for de-listing, down-listing or up-listing). This may result in ossification of the list, and hence reduced public confidence in its validity.
- The current Commonwealth assessment process does not provide for an emergency listing process. This may be particularly critical where species experience sudden, catastrophic declines, or where a new species discovered during an environmental impact assessment could be at risk from the proposed development.

Submission J: Recommendations

- J1. Retaining the core elements of the current listing process, which is rigorous and has integrity.
- J2. Retaining the Common Assessment Method, which is helping to overcome much of the inconsistency in listing across Australian states and territories, thus delivering considerable efficiencies in the assessment and listing process.
- J3. Retaining, expanding and resourcing the Species Expert Assessment Plan, will deliver benefits to threatened species: it is helping to overcome inconsistencies in listing at national and international levels, and delivering considerable efficiencies in the assessment and listing process.
- J4. Consider amendments to legislation so that the process of listing and delisting of species (and ecological communities) aligns even more closely with IUCN standards (e.g. by including a Data Deficient category), whilst retaining the category 'Conservation Dependent' (a category no longer used by the IUCN) to allow for the conservation management of fish species that are eligible for listing as threatened but are managed effectively under approved plans.
 - a. Consider amendments to the legislation to include a provision for emergency listing of species.
- J5. Institute and resource a formal process for periodic review for all threatened species listings under the EPBC Act (see also our Recommendation A3 in a complementary submission relating to Term of Reference (a)).
- J1. There is an opportunity to recognise and redress the severe taxonomic bias in listings of threatened species under the EPBC Act, where poorly known but imperilled species are largely neglected (i.e. unlikely to be listed), and hence likely to suffer conservation detriment under the current process. Options to redress this problem include:
 - a. reduction in the evidentiary burden in assessments, through broader application of the precautionary principle and inference in assessment of conservation status;
 - b. introduction of new conservation categories for species that are likely to be imperilled but for which the evidence base is sparse (e.g. a Data Deficient category as used by the IUCN and some Australian jurisdictions; or a Short-Range Endemic category, as used by the Western Australian government);
 - c. increased use of existing measures likely to provide some indirect conservation benefit to poorly known but imperilled species (such as increase in the number and comprehensiveness of listings of threatened ecological communities and increases in the number and comprehensiveness of listings of Key Threatening Processes); and/or

- d. strategic investment in seeking more evidence about poorly known species that may be imperilled (e.g. through targeted survey of poorly-known species-groups and areas, and increased support for taxonomic research in poorly-known groups).

Submission L: Any related matters

Response to Term of Reference (I) – any related matters

Submission L: Authors

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Submission L: Premises and Key Issues

Islands: Although Australian islands (other than Tasmania) comprise <0.5% of Australia's land area, 21 of the 54 animal taxa (i.e. 39%) considered extinct in Australia under the EPBC Act listings occurred only on islands (Woinarski *et al.* 2018). Additionally, recent NESP TSR Hub research has shown that many Australian islands are havens for threatened species that have disappeared from most of their former mainland ranges (Legge *et al.* 2018b). Threatened species on islands constitute a priority need but also a remarkable opportunity for successful conservation management.

Inquest: Extinction is a failure to meet the EPBC Act's objective, and a succession of extinctions – such as the three extinctions of Australian vertebrate species that have occurred since 2009 (Woinarski *et al.* 2017) – represents a systemic failure. In many fields of government endeavour and responsibility, such cases of ongoing systemic failure – especially those involving unexplained deaths – are addressed through Coronial or other inquests.

Submission L: Implications

- L1. Systematically enhancing biosecurity settings for biodiversity-rich Australian islands, to better reflect their conservation significance and the repeatedly demonstrated threats posed to those values by introduced species, will greatly improve outcomes for threatened species. Where possible, this could be done through harmonisation of Commonwealth and state/territory law and policy.
- L2. The special values and vulnerabilities of island biodiversity would benefit greatly by being explicitly recognised as a priority for action in Australia's biodiversity strategies and, where possible, in any revision to the EPBC Act – for example, by including Australia's premier biodiversity-rich islands as a Matter of National Environmental Significance.
- L3. A strategic multi-year funding program, established to survey and document the biodiversity values of, and threats to, Australia's islands, will enable more effective conservation of threatened species.
- L4. Committing to a process of formal independent inquest into any future extinction, to investigate the shortcomings in law, policy or management that resulted in the failure to prevent that extinction, and to recommend measures to redress those shortcomings such that future extinctions are less likely to occur, would contribute to continuous improvement of legislation, policy, planning and management of threatened species.

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