

Submission to:

Inquiry into Ecosystem Decline in Victoria

This submission seeks to provide input into the following specific items listed in the Terms of Reference:

- a) the extent of the decline of Victoria's biodiversity and the likely impact on people, particularly First Peoples, and ecosystems, if more is not done to address this, including consideration of climate change impacts;
- b) the adequacy of the legislative framework protecting Victoria's environment, including grasslands, forests and the marine and coastal environment, and native species;
- c) the adequacy and effectiveness of government programs and funding protecting and restoring Victoria's ecosystems;
- d) legislative, policy, program, governance and funding solutions to facilitate ecosystem and species protection, restoration and recovery in Victoria, in the context of climate change impacts
- f) any other related matters

Prepared by

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The Research Centre for Future Landscapes is a multi-disciplinary environmental research centre based in the School of Life Sciences, College of Science, Health and Engineering at La Trobe University, Australia. The Centre is primarily concerned with the nature of landscape change, its drivers, and management interventions necessary to sustain species, communities, ecosystems and society.

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Summary:

The Research Centre for Future Landscapes appreciates the opportunity to contribute to the inquiry. We hope that the inquiry will represent a turning point in the resourcing, management and prospects for Victoria's flora, fauna and ecosystems.

A range of actions are required to address the drivers of ecosystem decline. We contend that as a wealthy, stable and knowledge-rich nation, Australia has a responsibility and an obligation to lead in this field, and to commit to resourcing actions and initiatives to reverse the decline of biodiversity and ecosystems upon which we depend. These actions include:

1. Double Victorian Government funding for the environment and biodiversity conservation to a minimum of 1% of GSP (i.e. ~ \$4.5 billion pa).
2. Legislate for mandatory implementation of Action Statements for all threatened species, threatened communities and threatening processes, and adequately fund implementation of such statements.
3. Expand the Conservation Reserve System in Victoria to establish a reserve system of ecologically viable protected areas, including marine and freshwater protected areas, that is truly comprehensive, adequate and representative; and supported by secure and ongoing funding that is sufficient to enable best-practice conservation management of both public and private reserves.
4. Establish and implement tenure-blind, landscape-scale management of threatening processes – such that the planning and management of key threats (e.g. inappropriate fire, weeds, invasive animals, habitat loss, and eutrophication) are conceived and conducted at the landscape-scale across multiple tenures and land managers consistently from year to year.
5. Act upon our moral and legal obligations to reduce carbon emissions as per the UN Framework Convention on Climate Change.
6. Explicitly commit to playing our part in international commitments to the conservation of biodiversity and the environment, including the UN Convention on Biological Diversity (and Aichi target 12 that relates to prevention of extinctions), UNESCO World Heritage Convention, UN Sustainable Development Goals, Ramsar Convention, treaties relating to migratory species, Apia Convention, and Convention on International Trade in Endangered Species.
7. Strengthen the legal framework for environmental and biodiversity protection through an overhaul of environment laws that ensures they are rigorous and enforceable, and designate accountability for implementation, compliance and enforcement.
8. Implement an integrated and comprehensive Victoria-wide program of on-going monitoring and evaluation that measures indicators to track trajectories in ecosystem health, threatened species, key threats, and that is able to evaluate the effectiveness of management actions. We recommend a state monitoring office is established to reflect the importance of monitoring biodiversity outcomes.

Responses to ToR a) the extent of the decline of Victoria's biodiversity and the likely impact on ecosystems

1. Since their inception in 2003, successive Victorian State of the Environment Reports in 2008, 2013, and 2018 have consistently and unequivocally reported an ongoing decline in the health of Victoria's ecosystems across a wide range of indicators.
2. This disturbing downward trend in the health of Victoria's ecosystems is clear, despite inadequate systematic scientific monitoring; a weakness highlighted in each successive State of the Environment report. However, the situation is even more dire than the limited available statistics indicate, with many more species in decline but yet to be formally listed as threatened (or even recognised as being in decline) due to administrative delay, lack of robust monitoring data, absence of an advocate to press their case, or because they have not yet crossed thresholds for listing (despite being in decline). Moreover, with key threats intensifying (e.g. climate change, more frequent and intense bushfires, habitat loss, invasive species, disease and pathogens) and lack of appropriate remedial action, it is inevitable more species will be unable to maintain viable populations across their geographic range, and will be added to the threatened species list in the long-term.
3. Species loss at local and regional scales and the consequent reduction in species diversity has profound impacts on ecosystem function, including the provision of ecosystem goods and services, such as soil productivity, pollination, waste management, nutrient cycling and pest management (Cardinale *et al.* 2012; Tilman *et al.* 2012). Species loss and ultimately extinction also often have cascading and unpredictable impacts on other species, leading to species declines or co-extinctions, or increases in other species (often invasive or generalist species). The consequences of losing species from food-webs and trophic interactions for ecosystem function are often irreversible and difficult to predict, and remediation is usually more complex and expensive than prevention. The resilience of ecosystems to species loss (i.e. the number of local species extinctions before ecosystems collapse irreversibly) is difficult to predict, meaning that the precautionary principle should be applied when considering potential impacts.
4. The speed of ecosystem decline appears to be accelerating under climate change. For example, the extensive loss of habitat for numerous threatened species and communities during last summer's bushfires (Ward *et al.* 2020), came on the back of more frequent, severe and extensive fires since the early 2000s.
5. We are increasingly hitting tipping points where whole Victorian ecosystems are undergoing catastrophic changes from which they may never recover (e.g. Alpine Ash forests, native grasslands). Victoria's regulatory laws, resourcing and approach to biodiversity protection has been grossly insufficient to stem the tide of species loss and decline. **Without direct and immediate action to mitigate key threatening processes and protect and recover our most imperilled species, many more species will be lost from regions in Victoria or become globally extinct in the near, medium and long-term.** For example, Geyle *et al.* (2018) estimate that another seven mammal and 10 bird species are likely to become globally extinct in Australia by 2038 unless

management improves. This Inquiry must seize the opportunity to reform Victoria's management and protection of its unique species to change the trajectory of its flora, fauna and threatened ecosystems.

Responses to ToR topic b) the adequacy of the legislative framework protecting Victoria's environment

1. Victoria's primary pieces of environmental protection legislation (e.g. Flora and Fauna Guarantee Amendment Act 2019 and its predecessor, Parks Victoria Act 2018 and its predecessor, the Wildlife Act 1975) are failing to achieve their primary aims – to protect the environment or conserve biodiversity. Successive State of the Environment Reports for Victoria attest to this in their documentation of ongoing degradation of our land and water, and lengthening lists of threatened species and communities.
2. We recommend that the Victorian Government **strengthen the legal framework for threatened species protection (and biodiversity protection in general). Preventing further decline and extinctions will require laws that are more rigorous and enforceable, and designate accountability for implementation, compliance and enforcement.** We strongly endorse the findings of the review of Australian environmental law undertaken by the Australian Panel of Experts in Environmental Law (APEEL, 2017) and recommend that the Victorian Government commit to reviewing and revising the environmental legislation pertaining to the conservation of biodiversity in accordance with the recommendations of this review.
3. Recent conclusions drawn in high-profile court cases/enquires suggest agencies have been unable to meet their responsibilities to protect the environment under existing legislation e.g.
 - VicForests' failure to abide by the Regional Forest Agreement;
 - the Melbourne Strategic Assessment Program's failure over the past decade to establish the planned reserves to conserve endangered grasslands to the west and north of Melbourne (<https://theconversation.com/these-historic-grasslands-are-becoming-a-weed-choked-waste-it-could-be-one-of-the-worlds-great-parks-144208>);
 - the implementation of "offsets" to compensate for environmental degradation associated with developments has been shown to be fundamentally flawed in many cases and to have resulted in net long-term degradation of the environment (Maron et al. 2015).

Responses to ToR topic c) the adequacy and effectiveness of government programs and funding protecting and restoring Victoria's ecosystems

1. Various Acts offer theoretical protection to Victorian ecosystems. However, successive governments have failed to adequately implement and resource a range of key pieces of legislation, including, but not limited to, the:

- a. Flora and Fauna Guarantee Amendment Act (2019 and its predecessor)
- b. Parks Victoria Act 2018 (and its predecessor)
- c. Wildlife Act 1975

such that the status of the vast majority of threatened species and communities has not improved and many have declined further since the turn of this century.

2. There has been a consistent pattern of successive governments of all persuasions and levels commissioning the writing of **un-costed strategic planning documents** in the area of conservation or environmental management. These lack Specific, Measurable, Appropriate, Realistic and Time-bound (SMART) objectives. Many of these plans lack funding and are never implemented. The tragedy of having dozens of unfunded, ironically named “Action Statements” (which are a legislative requirement under the FFG Act) for threatened species or communities highlights that in many cases **we have documented what needs to be done** to conserve species or ecosystems; but governments and communities have not regarded these to be of sufficient priority to receive funding. Many listed threatened species don’t even have an Action Statement and for many that do the Action Statements languish as **unfunded and undelivered statements of good intentions**. Capacity, knowledge, efficiency and innovation are all vital ingredients for preventing extinctions, but ultimately, funding is the essential key to success. In most cases, increased funding for on-ground management, research, monitoring, averting habitat loss, habitat protection, or alternative development pathways is required to secure and sustain threatened species (Wintle et al. 2019).
3. The current **spasmodic approach to funding of threat abatement** (e.g. weed and pest animal control) that is characterised by irregular bursts of activity, is extremely inefficient, ineffective and wasteful of tax-payer funds. We spend millions of dollars for a couple of years on a well-intentioned control program, only to then relax our efforts for a year or two and watch the threat quickly return to former levels or worse. **Effective control of pest species requires guaranteed consistent and sufficient funding year after year**. It should not be dependent on the vagaries of a diligent land manager successfully bidding for competitive funds one year, only to miss out the next.
4. Australia is party to many international treaties, conventions and strategies that have as a stated intention the protection of the environment and prevention of species extinction (or conversely, the conservation of biodiversity). As one of the world’s 17 mega-diverse nations (that collectively support 70% of global biodiversity) (Mittermeier et al. 1997), yet one of only two wealthy mega-diverse nations with stable government and institutions, Australia has both an obligation and the capacity to lead the world in biodiversity conservation and preventing extinctions. To play its part, we recommend that the Victorian Government:
 - Uphold our moral and legal obligations to reduce carbon emissions as per the UN Framework Convention on Climate Change.
 - Explicitly and publicly commit Victoria to all international provisions for the conservation of biodiversity and the environment, and take active steps to comply and implement these provisions, including the UN Convention on Biological Diversity (and Aichi target 12 that relates to prevention of extinctions), UNESCO

World Heritage Convention, UN Sustainable Development Goal number 15 that sets targets to prevent extinctions, Ramsar Convention, treaties relating to migratory species, Apia Convention, and Convention on International Trade in Endangered Species.

- Review Victoria's commitment to, and involvement in, China's Belt and Road Initiative based on the damaging environmental impact of many infrastructure projects that further endanger and imperil global biodiversity (e.g., Mohmmad et al. 2019, Sloane et al. 2019).
- Furthermore, **we recommend that government-regulated but independent systems are put in place to ensure compliance with international conventions and obligations**, and that exceptions and excisions are not permitted that can be used as precedents to obfuscate the intent and outcomes of our international and domestic obligations to conserve threatened flora and fauna.

Responses to ToR topic d) legislative, policy, program, governance and funding solutions to facilitate ecosystem and species protection, restoration and recovery in Victoria, in the context of climate change impacts

1. We acknowledge and welcome recent modest increases in funding commitments from the State Government towards conservation. However, the current spasmodic band-aid approach to funding conservation is failing and without a substantial, immediate and sustained increase in budget allocation, Victoria will continue to see decline and loss of species and further ecosystem collapse. We are calling for **a doubling in Government funding for the environment and biodiversity conservation to a minimum of 1% of GDP by 2025, i.e. around \$4.5 billion per annum.**
2. As a community we need to commit to adequately resourcing the implementation of the key pieces of legislation mentioned above, commensurate with the economic and intrinsic value of healthy ecosystems to the people of Victoria. Our appreciation of the value of nature has grown enormously while enduring lockdown conditions to combat the spread of COVID.
3. Current funding levels are not commensurate with the value of healthy ecosystems or the challenges they face, for example:
 - the government funding of **Parks Victoria's operating costs** in 2018/2019 was just \$210m¹ to protect and manage 4.1 million hectares (18%) of Victoria's most iconic and biodiverse landscapes. This is only slightly more than the average cost of **one railway level crossing replacement** (~\$200m).
 - Initial funding for the implementation of the flagship *Biodiversity 2037* plan is just \$11.6m pa, spread across 89 projects for three years². This is equivalent to the cost of about 1 km of the Princess Highway duplication between Traralgon and Sale (\$513m for 45km of duplication).
4. Victoria's system of government and private reserves is critical to preventing extinctions and sustaining ecosystems. While including habitat in the reserve system

¹ Parks Victoria Annual Report 2018/2019

² Biodiversity 2037 Implementation Framework Progress Report

alleviates the threat of habitat loss, simply declaring protected areas is not enough to ensure protection. The true value of the reserve system is realised through managing key threats (e.g. fire regimes, invasive species, hydrological regimes) on land set aside for biodiversity conservation. While Victoria meets Aichi Target 11 in terms of the extent of the reserve system (i.e. at least 17% of terrestrial and inland water areas), it does not necessarily follow that these areas are 'effectively and equitably managed', nor is the reserve system 'ecologically representative and well-connected'. Victoria's reserve system is not truly 'comprehensive, adequate and representative' and until it is, and is effectively managed, it will not fulfil its potential in terms of species and ecosystem protection. We advocate that the Inquiry recommend expanding the reserve system to establish a reserve system of ecologically viable protected areas, including marine and freshwater protected areas, that is truly comprehensive, adequate and representative, **supported by secure and ongoing funding that is sufficient to enable best-practice conservation management of public land**. Clearly, expansion and improved management of the reserve system will require substantially increased investment.

5. Many threatened species currently persist outside of the reserve system in areas that are unlikely to ever be included in parks and reserves due to their predominant land-use (e.g. agriculture, residential areas). Within these areas, preventing further loss of species will be dependent on **establishing and implementing tenure-blind landscape-scale management of threatening processes – such that the planning and management of key threats (e.g. inappropriate fire, weeds, invasive animals, habitat loss, and eutrophication) is conceived and conducted at the landscape-scale across multiple tenures and land managers**. Such management will require innovative mechanisms that integrate nature conservation into multiple-use landscapes, and will require schemes that promote and support sustainable practice (e.g., stewardship payments, lower insurance premiums, lower interest rates, rate rebates, tax incentives, market access and accreditation). Many of these will require private sector buy-in, but governments can facilitate such practices through favourable policy settings.
6. Large-scale connectivity and wildlife corridor projects (e.g. Habitat 141) provide significant benefits for species conservation and maintenance or restoration of ecological processes (Bennett *et al.* 2009), especially in the context of climate change where species ranges are likely to shift. Many of these large-scale initiatives are championed and funded by community and non-government organisations, with some support from state and local governments. The State should be leading and promoting more of these projects. This includes planning ahead for where conservation corridors are most strategically required to maintain or re-establish connectivity for species and ecosystems in a changing climate; and negotiating agreement for the management of land to achieve this purpose.
7. Long-term monitoring is essential to tracking trends and trajectories for threatened species, key threatening processes, ecosystem health and the effectiveness of conservation management. Such data underpin sophisticated modelling approaches currently used by DELWP to assess the impact of recent catastrophes (e.g. Black

Summer bushfires) or planned management actions (e.g. FAME). However, the predictions of these models are only as good as the data upon which they rely. They are currently overly reliant on **out-dated data sets collected last century**, that are **declining in relevance** under emerging climate change scenarios. Yet public investment in long-term ecological monitoring is extremely limited. Most long-term monitoring programs are maintained by non-government or community organisations (e.g. Birdlife Australia Bird Atlas) or committed individuals often with support from research institutions (Lindenmayer *et al.* 2012). Threatened species monitoring in Victoria is currently inadequate, with many threatened species not monitored at all, and many more not monitored effectively (Legge *et al.* 2018). In most cases, monitoring is hampered by lack of funding and institutional support rather than knowledge of how to monitor or what to monitor, as frameworks and methods for effective monitoring are well established (e.g., Lindenmayer and Likens 2010; Robinson *et al.* 2018).

Increased investment and secure, long-term funding for monitoring biodiversity and threatened species is required. This will increasingly be leveraged through citizen science projects that are able to augment and support systematic, rigorously designed monitoring programs. We **recommend a state monitoring office is established to reflect the importance of monitoring biodiversity outcomes** (as is afforded other areas such as financial reporting, agricultural resources or climate), and we advocate for a long-term, comprehensive and integrated program for biodiversity monitoring and evaluation. This would support an **integrated and comprehensive state-wide monitoring and evaluation program that measures indicators to track trajectories in threatened species and key threats, and is able to evaluate the effectiveness of management actions.**

Responses to ToR topic f) any other matters

The role of Universities

Australia has a proud history of excellence in ecological and environmental research, with over 28 of our Universities rating at 'above world standard' in the Excellence in Research Australia rankings. Universities are the repository of much knowledge and research capacity, and they are largely responsible for training the next generation of environmental scientists. As such, co-investment with state governments, non-government organisations and universities in areas of mutual concern and high biodiversity return is an approach with much merit. For example, threatened species monitoring and evaluation of management interventions is one area that often lacks sufficient funding, constrains the full implementation of adaptive management, and often leads to sub-optimal outcomes. Very often multiple agencies are active in the same landscape, and pooling resources (i.e., co-investing) to fund threatened species monitoring or recovery plan implementation projects may enable stretched resources to go further.

References:

- APEEL (2017). *Blueprint for the Next Generation of Australian Environmental Law*. Carlton, Victoria: Australian Panel of Experts on Environmental Law.
- Bennett, A.F., Haslem, A., Cheal, D.C., Clarke, M.F., Jones, R.N., Koehn, J.D., Lake, P.S., Lumsden, L.F., Lunt, I.D., Mackey, B.G., Mac Nally, R., Menkhorst, P.W., New, T.R., Newell, G.R., O'Hara, T., Quinn, G.P., Radford, J.Q., Robinson, D., Watson, J.E.M. and Yen, A.L. (2009). Ecological processes: A key element in strategies for nature conservation. *Ecological Management and Restoration*, **10**: 192-199.
- Garnett, S.T., Butchart, S.H.M., Baker, G.B., Bayraktarov, E., Buchanan, K., Burbidge, A.A., Chauvenet, A.L.M., Christidis, L., Ehmke, G., Grace, M., Hoccom, D.G., Legge, S.M., Leiper, I., Lindenmayer, D.B., Loyn, R.H., Maron, M., McDonald, P., Menkhorst, P., Possingham, H.P., Radford, J., Reside, A., Watson, D.M., Watson, J.E.M., Wintle, B., Woinarski, J.C.Z. and Geyle, H.M. (2019). Metrics of progress in the understanding and management of threats to Australian birds. *Conservation Biology* **33**: 456-468.
- Geyle, H.M., Woinarski, J.C.Z., Baker, G.B., Dickman, C.R., Dutton, G., Fisher, D.O., Ford, H., Holdsworth, M., Jones, M.E., Kutt, A., Legge, S., Leiper, I., Loyn, R., Murphy, B.P., Menkhorst, P., Reside, A.E., Ritchie, E.G., Roberts, F.E., Tingley, R. and Garnett, S.T. (2018). Quantifying extinction risk and forecasting the number of impending Australian bird and mammal extinctions. *Pacific Conservation Biology*.
- Lindenmayer, D.B. and Likens, G.E. (2010). *Effective Ecological Monitoring*. Collingwood, Victoria: CSIRO Publishing.
- Lindenmayer, D.B., Gibbons, P., Bourke, M., Burgman, M., Dickman, C.R., Ferrier, S., Fitzsimons, J., Freudenberger, D., Garnett, S.T., Groves, C., Hobbs, R.J., Kingsford, R.T., Krebs, C., Legge, S., Lowe, A.J., McLean, R., Montambault, J., Possingham, H., Radford, J.Q., Robinson, D., Smallbone, L., Thomas, D., Varcoe, T., Vardon, M., Wardle, G., Woinarski, J. and Zerger, A. (2012) Improving biodiversity monitoring. *Austral Ecology*, **37**: 285–294.
- Legge S., Lindenmayer D. B., Robinson N. M., Scheele B. C., Southwell D. M. and Wintle B. A. (2018). *Monitoring Threatened Species and Ecological Communities*. Melbourne, Victoria: CSIRO Publishing.
- Maron, Martine, Gordon, Ascelin, Mackey, Brendan G., Possingham, Hugh P. and Watson, James E. M. (2015). Conservation: stop misuse of biodiversity offsets. *Nature*, 523 (7561), 401-403.
doi: 10.1038/523401a
- Mittermeier, R.A., Gil, P.R. and Mittermeier, C.G. (1997). *Megadiversity: Earth's biologically wealthiest nations*. Washington, D.C: Conservation International.
- Mohammed, A., Campbell, M. J., Sloan, S., Ali, S., Jatna, S., and Laurance, W. F. (2019). High-risk infrastructure projects pose imminent threats to forests in Indonesian borneo. *Scientific Reports*, **9**,
doi:http://dx.doi.org/10.1038/s41598-018-36594-8
- Sloan, S., Campbell, M.J., Alamgir, M., Lechner, A.M., Engert, J. and Laurance, W.F. (2019). Trans-national conservation and infrastructure development in the Heart of Borneo. *PLoS ONE* **14**: e0221947.
- Ward et al. (2020) Impact of 2019–2020 mega-fires on Australian fauna habitat. *Nature Ecology and Evolution* doi.org/10.1038/s41559-020-1251-1
- Wintle, Brendan A., Cadenhead, Natasha C. R., Morgain, Rachel A., Legge, Sarah M., Bekessy, Sarah A., Cantele, Matthew, Possingham, Hugh P., Watson, James E. M., Maron, Martine, Keith, David A., Garnett, Stephen T., Woinarski, John C. Z. and Lindenmayer, David B. (2019). Spending to save: What will it cost to halt Australia's extinction crisis?. *Conservation Letters*, 12 (6) e12682 doi: 10.1111/conl.12682
- Woinarski, J.C.Z., Garnett, S.T., Legge, S.M. and Lindenmayer, D.B. (2017). The contribution of policy, law, management, research, and advocacy failings to the recent extinctions of three Australian vertebrate species. *Conservation Biology*, **31**: 13-23.