



ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

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10 September 2018

Submission on Australia's Faunal Extinction Crisis

Introduction

The Royal Zoological Society of New South Wales (RZS NSW) is Australia's oldest and largest zoological society, comprising approximately 1,000 members, including zoologists and ecologists and the general community passionate about the conservation of Australia's unique animals.

The Society and our members have approached the Senate Inquiry into Faunal Extinction Crisis backed by a long history of interest in and involvement with the conservation of the fauna of Australia, through research, development of legislation and management plans, and through academic inquiry and dissemination of information and knowledge. The current RZS NSW Council includes past and serving members of the NSW and Commonwealth Scientific Committees, as well as practising ecological consultants who are involved in undertaking biodiversity assessments.

In 2004, the Society published the proceedings of a symposium titled, "Threatened species legislation: is it just an act?" (Hutchings *et al.* 2004). Fourteen years later, the question in the title is still very relevant. As highlighted in the Report on the Review of the First Five Years of Australia's Biodiversity Conservation Strategy (Department of Energy and Environment 2016a), and documented in the latest Australia State of the Environment Report (Department of Energy and Environment 2016b), the *Environment and Biodiversity Conservation Act 1999* (EPBC Act) is not effective in conserving Australian biodiversity. This is seen in the most basic measures of declines in the populations of our native species, leading to a substantial increase in the number of species listed as threatened.

The RZS NSW believes that the current senate inquiry is a vital first step forward in improving Commonwealth legislation and associated government processes involved in the protection and enhancement of Australia's native biodiversity; one that shouldn't be missed. We are strongly of the opinion that there is a need to improve and strengthen the EPBC Act, its associated policies and their administration to refocus action on conserving the rapidly dwindling biodiversity of Australia. The Australian Government needs, as a matter of extreme urgency, to adequately resource biodiversity monitoring, protection and efficient management of important fauna habitats, recovery programs for all threatened and migratory species, and abatement of threatening processes.

Commonwealth legislation and its implementation should also be improved and adequately resourced to prevent further significant declines in the status' of currently non-threatened native fauna to prevent them from becoming threatened in the future.

Each of the Inquiry's Terms of Reference for which the RZS NSW has the expertise to comment on are discussed in the following pages.

RZS NSW Response to Terms of Reference

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

The estimate of 500 threatened fauna species is already an under-estimate. A search of the Environment Dept's web-site reveals there are 511 fauna species listed (54 of which are extinct) and 1,355 flora species listed (37 species extinct).

In addition to the species that are listed as threatened, there is widespread concern among ecologists and wildlife biologists that many currently unlisted species are sliding towards extinction. Recent surveys in eastern, western and northern Australia reveal precipitous declines in many species of mammals and birds (e.g., Wayne *et al.* 2017), many of which had not been considered previously to be at risk. The causes of their declines are not certain, largely because of the lack of research and monitoring and paucity of resourcing for wildlife studies. However, potential causes identified in peer-reviewed papers include the imposition of inappropriate fire regimes, predation by predators such as feral cats, and 'extinction debts' that have accumulated over vast regional areas due to land clearing. The latter factor—land clearing—has been at unprecedentedly high levels until this year in Queensland and remains high and at accelerating levels in New South Wales and Western Australia. Apart from the many millions of mammals, birds and reptiles (and unknown but probably many further millions of frogs and invertebrates) that are killed directly by land clearing (see, for example, WWF-Australia report 2017: Australian animals lost to bulldozers in Queensland 2013-15), very large numbers of animals can be expected to dwindle slowly in the isolated habitat remnants that remain after broad-scale clearing. These are the victims of extinction debt and are perhaps helping to drive the massive declines in population size and diversity of wildlife in eastern and western Australia that we are now witnessing. The koala has recently been highlighted as a potential victim of land clearing and other threats in New South Wales, with evidence that many populations—and perhaps even the species—will be extinct in the state by 2050. This would be a tragic loss. However, the koala is merely the best known of a suite of species that face local or regional extinction within the foreseeable future. We are presiding over an extinction crisis with little global parallel. The RZS NSW views these ongoing losses of Australia's unique and endemic wildlife with the gravest concern.

b. The wider ecological impact of faunal extinction.

Faunal extinctions diminish the natural and cultural heritage that should be the right of all Australians, and from an ecological perspective they deplete the ecological services upon which natural systems and human enterprises depend. Consider just one group that has been ravaged by extinction and continues to face many further losses of species: the marsupials. Several species have dramatic and vitally important engineering effects. The conical holes left by foraging bilbies and bandicoots act as traps for seeds and organic debris, enhancing the patchiness and local richness of vascular plants. The holes also allow greater infiltration of water into the soil and facilitate the continuation of nutrient cycles. The digging activities of one critically endangered species, the brush-tailed bettong have even more startling results, as described in studies by Mark Garkaklis at Murdoch University. Although averaging only 1.3 kilograms, these diggers each excavate some 38–114 holes every night while searching for food and displace 4.8 tonnes of soil annually. The scratchings and digs have dramatic effects on the ability of water and nutrients to

penetrate the soil, increasing infiltration to about 10 centimetres but reducing it below that depth. If bettongs are absent from a site for only 3–4 years, soils become so hard and water repellent that plant growth and establishment are severely reduced. Brush-tailed bettongs used to occur over large areas of inland New South Wales and South Australia where soils are now hard-baked and unproductive, and where the ravages of drought are now particularly severe. Descriptions in the narratives of early European explorers such as Joseph Hawdon, Thomas Mitchell and Charles Sturt confirm that soils in these areas were once rich and friable. The loss of bettongs almost certainly contributed to the massive degeneration of soil quality that we see now and exacerbate the effects of drought. Other marsupials spread seeds, pollen and the spores of mycorrhizal fungi that are vital for the germination and establishment of native plants. Many species of birds also carry out vitally important functions such as pollen and seed dispersal that maintain, rejuvenate and regenerate soils and plant communities, and thus the natural ecosystems and human production systems upon which we depend.

The above examples illustrate the profoundly negative consequences of losing species upon which some research has been conducted. It should be remembered that many species that are on the slippery slope to extinction have not been subject to such work. Their losses represent unknown but potentially very large 'missed opportunity costs' for generations to come.

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

The recent removal of protected areas from many Commonwealth Marine Parks, especially in the Coral Sea, will reduce our ability to conserve threatened species. But as the main aim of marine parks is to conserve biodiversity, reducing the level of protection and the areas zoned as green zones will lead to local extinctions of marine species. Why has commercial fishing overtaken our international obligations to conserve our marine biodiversity? Yet our marine parks contribute significantly to the economy through tourism especially the Great Barrier Reef and the marine parks in NW Australia.

Conversely, the commonwealth is required to prevent false claims of extinction, such as in the kangaroo harvesting debate, and on this subject the commonwealth has correctly pointed out to foreign governments that harvesting kangaroos is not a threat, and the science behind that statement is indeed strong and has been tested often. The Commonwealth government is to be commended for this support, and the chequered history of that support appears in Lunney (2010).

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.

Current Commonwealth environment laws are totally inadequate. No further evidence for this is required than the ever-increasing list of threatened species; the increase in the prevalence of key threatening processes; and the recent extinction of several animals. There are a number of problems:

- a) The high bar that the EPBC Act sets – it is very hard to demonstrate a significant impact on a matter of national environmental significance.
- b) Devolving responsibility to the States – legislation in the States will not adequately protect fauna (see the RZS NSW submission on NSW legislation

http://docs.wixstatic.com/ugd/233904_c8f8b6a510af463c8774844129873f73.pdf

- c) The use of offsets in biodiversity conservation is pernicious. We don't understand the biology/ecology of threatened species sufficiently to effectively use offsets.
 - d) The focus on threatened species, when we don't know enough to effectively list all species that should be listed, means that we don't protect the broader communities.
 - e) We don't follow through with recovery plans and we don't fully understand the costs involved. NSW recently costed a Koala Strategy - \$45M is being put forward for carrying out the strategy actions (one State and one species for 3 years!!), while still allowing broad scale land clearing which will destroy koala habitat and any hope of the species' recovery in future. We can't go forward on a species by species basis, especially when we continue to allow and foster practices such as broad scale land clearing that affect suites of species.
 - f) The process for listing Key threatening processes is restrictive. For example, the loss of hollow-bearing trees has long been recognised as a key threat to many species, but the criteria for listing has been prohibitive. First, there must be listed species for which the loss was a factor, and if no species are listed, the threat is not listed. The listing of the loss of hollow-bearing trees should have been listed long ago.
- e. The adequacy and effectiveness of protections for critical habitat for threatened fauna under the Environment Protection and Biodiversity Conservation Act 1999.**

We strongly oppose the reduction in the size of marine parks around Australia, which were established to conserve biodiversity in the bioregions around the country. We are also witnessing a loss in our ability to actually monitor the remaining parks and that current zoning plans are being enforced. All agencies responsible for managing marine and terrestrial parks have been subjected to major staff loss which has seriously impacted on their ability to fulfil their roles.

In the marine environment, changes in species distribution associated with climate change really highlight the value of marine protected areas and yet this protection is being reduced.

Critical habitat, as it is currently used, also has little value – it comes at a stage when a species/community is on a critical path towards extinction. In effect, critical habitat operates like an open-plan zoo. Even if it had value in its current form, its recognition at the ministerial level has been woeful. Five critical habitats are listed on the register under the EPBC Act, the last added to the register on 28 February 2005. Five listings in almost 20 years suggest strongly that provision to list critical habitat must be made easier and earlier (when there is still a chance to conserve threatened species), and with adequate provision to ensure that it will actually protect the species or other entities that are intended to be protected.

- 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.**

Landcare has been an important contributor to reconnecting our many cleared and fragmented landscapes, especially along highly vulnerable creek-lines. Such restoration activities are an expensive and massive job, yet they operate on a shoestring and largely rely on volunteers. Government needs to take a more serious

role in maintaining and prioritising funding in this area to assist with the recovery of our biodiversity in already cleared landscapes.

Lunney *et al.* (2017a) considered the value of national parks and nature reserves in NSW for fauna research and biodiversity conservation and gauged the extent and limits of our knowledge of the fauna in that state. Given the success in the growth of the number, area and distribution of parks and reserves in NSW, the idea that they can carry the heavy load of our aspiration to conserve the biodiversity of NSW now seems feasible, even desirable, especially given the increasing intensity of land use from never-ending population growth and its impacts, such as land clearing, roading, logging, water use, alien invasive species and climate change. However, this study also revealed that we have a very poor understanding of some faunal groups, in particular invertebrates, reptiles and amphibians. Fauna accumulation curves of both records and of species matched closely the growth in the area of parks and reserves since the formation of the NSW National Parks and Wildlife Service in 1967. Thus, the greater the area of parks and reserves, the greater the number of fauna records and of species. Lunney *et al.* took the historical view to encourage research and maintenance of the trajectory of the acquisition of new protected areas. This study showed the ever-increasing value of protected areas to fauna conservation, and that it is vital to uphold the protected areas concept as a principal way to conserve our fauna. It should also be a guide to help recognise the importance of sustaining the effort to study our native fauna.

It is extremely likely that the results and conclusions of Lunney *et al.* are equally applicable to the National Reserve System and associated parcels of land acquired for biodiversity conservation. Therefore, the RZS NSW recommends further acquisition of land for the National Reserve System, as well as further legislative inducement to establish biodiversity stewardship of private land of high conservation value, to protect and enhance the biodiversity values of these stewardship sites through the establishment and implementation of covenants held in perpetuity. An essential component of the management of the National Reserve System, stewardship site agreements and the establishment and management of wildlife corridors is ongoing biodiversity monitoring of these areas and for this information to be centrally archived and analysed regularly by the Australian Government. This would assist in assessing the effectiveness of management of protected areas for biodiversity conservation, as well as provide better information on the distribution and abundance of Australia's native species. The EPBC Act does not currently legislate for the acquisition of stewardship sites and for compulsory monitoring of biodiversity within protected conservation areas established under Commonwealth legislation. Therefore, the RZS NSW recommends that this legislative requirement be made and that adequate government resources are provided to ensure its effective and long-term implementation.

In a separate historical study, Lunney (2017c) identified the long-running international debate over whether protected areas were for conserving biodiversity or for recreation. On balance, biodiversity has been a secondary concern in the selection and management of protected areas, mainly national parks and nature reserves in Australia. The Act could invest in studies that helped the selection process for new protected areas by making fauna a key feature of these investigations.

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 Land and Sea Ranger system that provides resources to train and build capacity for local people in Indigenous Protected Areas appears to be having considerable success in many areas across the Top End and should be supported and expanded to help ensure that threatened species can be maintained.

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

We suggest that, by concentrating almost entirely on threatened species, we are ignoring the bulk of our biodiversity. In all habitats in Australia we still have many hundreds of species still to be described. This hampers our ability to distinguish between native undescribed species from introduced species which may become pest species.

The adequacy for funding the recovery of threatened species is clearly inadequate given the growing list of species listed at both state and federal levels. While these lists continue to grow rapidly, very few species have recovered enough to allow their delisting. Indeed, the depth of inadequacy of Australia's funding for species conservation is that it spends less, in relative terms, than almost every other country on the planet (<http://www.pnas.org/content/110/29/12144>), a disgraceful situation considering that Australia's wildlife species are globally unique and occur nowhere else.

i. The adequacy of existing monitoring practices in relation to the threatened fauna assessment and adaptive management responses.

The current monitoring is totally inadequate. There is no set program for monitoring, no structured format or methods for monitoring and no way to centralise the data. John Woinarski and his colleagues (Woinarski *et al* 2018) have written recently a chapter that looks at monitoring programs for threatened mammals and showed that pretty much the only species that we are effectively monitoring is the Tasmanian Devil. It is not only threatened species that we need to monitor, but whatever we monitor we need to do it well.

In addition to this, the nation's only long-term monitoring facility (LTERN - Long Term Ecological Research Network) was defunded and decommissioned in June 2018, leaving it one of the few developed nations not to support such monitoring. In a detailed overview of Australia's biodiversity (Dickman in press, in *Global Biodiversity Volume 4: Selected Countries in the Americas and Australia*; Apple Academic Press), this decommissioning was considered to be an "act of breath-taking folly."

It is worth noting, finally, that statutory State of the Environment Reports, which are made every few years, often have to rely on listings of threatened species made under state legislation to provide comment on trends in species' status and management. As noted in j, below, we do not allocate sufficient resources to the process of identifying threatened species in the first place, with the result that listings of such species often arise in an ad hoc manner following submissions from concerned members of the public. Given the inadequacy of the threatened species identification process, the use of threatened species lists to assess population trends in these threatened species is not just unreliable, but risible. And yet, this is all we have.

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

Inadequate: our national focus on threatened species (and we do this badly) means that we don't recognise at-risk species that are trending down in numbers or distribution until it is too late. On the EPBC Act we have Vulnerable and Endangered categories – we should be highlighting the vulnerable category and putting species in here if we don't know enough about them, simply to be sure that they are secure (precautionary principle). At present, the EPBC Act does not have a category for species that are considered 'data deficient', as does the global standard for species listings, the International Union for Conservation of Nature (IUCN). It would be helpful to have a data deficient category in the schedules of the EPBC Act as this could partly prioritise funding for research to allow better assessment of the status of such species and potential threats.

Most threatened species committees throughout Australia, including the federal committee, are vastly under-resourced. This slows down the assessment process for nominated species and hinders more strategic assessments based on prioritisations by the committee. This results in a significant lag in time to listing of a species, indicating that the current list is not a full picture of the status of Australia's biodiversity.

Current RZS NSW Council

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Dr Dan Lunney	Mr JC Herremans
Professor Chris Dickman	Dr Hayley Bates
Dr Stephen Ambrose	Associate Professor Ricky Spencer
	Mr Andrew Elphinstone
	Dr Catherine Herbert

References

Department of Environment and Energy (2016a). Report on the Review of the First Five Years of Australia's Biodiversity Conservation Strategy (<http://environment.gov.au/system/files/resources/fee27a4f-8a96-430d-ad18-9ee8569c8047/files/bio-cons-strategy-review-report.pdf>) (accessed 10 September 2018).

Department of Environment and Energy (2016b). Australia State of Environment 2016 – Biodiversity Report (<https://soe.environment.gov.au/sites/g/files/net806/f/soe2016-biodiversity-launch-version2-24feb17.pdf?v=1488792935>) (accessed 10 September 2018).

Dickman, C.R. (in press). Biodiversity of Australia: An Overview. In: T. Pullaiah (ed). Global Biodiversity Vol 4: Selected Countries in the Americas and Australia (Apple Academic Press, Waretown, New Jersey). Available from: <http://www.appleacademicpress.com/global-biodiversity-volume-4-selected-countries-in-the-americas-and-australia/9781771887502>

Hutchings, P., Lunney, D., and Dickman, C. eds (2004). *Threatened species legislation: is it just an act?* Royal Zoological Society of New South Wales. [online]. Available from:

<http://publications.rzsns.w.gov.au/doi/book/10.7882/0958608598>.

Lunney, D. (2010). A history of the debate (1948-2009) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg. *Australian Zoologist* 35: 383-430.

Lunney, D. (2017a). Dangerous? Necessary: we must conserve all our native fauna. *Australian Zoologist* 38: 281-288. DOI: <https://doi.org/10.7882/AZ.2017.005>

Lunney, D. (2017b). A dangerous idea in action: the hegemony of endangered species legislation and how it hinders biodiversity conservation. *Australian Zoologist* 38: 289-307. DOI: <https://doi.org/10.7882/AZ.2017.015>

Lunney, D. (2017c). A history of a contested ideal: national parks for fauna conservation. *Australian Zoologist* 39: 371-396. <https://doi.org/10.7882/AZ.2017.045>

Lunney, D., Hope, B. and Shannon, I. (2017). Protect our protected areas!: the value of protected areas for fauna research and conservation, a case study of New South Wales. *Australian Zoologist* 39: 296-344.

Wayne, A.F., Wilson, B.A. and Woinarski, J.C.Z. (2017). Falling apart? Insights and lessons from three recent studies documenting rapid and severe decline in terrestrial mammal assemblages of northern, south-eastern and south-western Australia. *Wildlife Research* 44: 114-126.

Woinarski, J.Z., Burbidge, A.A. and P.L. Harrison. (2018). The extent and adequacy of monitoring for Australian threatened mammal species. Pp 21-43 in Legge, S., Lindenmayer, D.B., Robinson, N.M., Scheele, B.C., Southwell, D.M. Wintle, B.A. (eds). *Monitoring Threatened Species and Ecological Communities*. CSIRO Publishing, Clayton Victoria.

WWF Australia (2017). Australian Animals Lost to Bulldozers in Queensland 2013-15 (WWF Australia, Sydney)