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Dear Senator Rice,

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

In June you wrote to the Chief Minister of the Northern Territory inviting a submission in relation to the above inquiry.

The Department of Environment and Natural Resources has primary responsibility for the conservation and management of threatened species in the Northern Territory, and I am pleased to provide the attached submission for the consideration of the Environment and Communications Reference Committee.

If you require further Information, please contact Dr Simon Ward, Director Species Conservation

Yours sincerely

Dr Graeme Gillespie  
Executive Director

7 August 2018

## **Senate Inquiry into Australia's faunal extinction crisis**

### **Submission from the Northern Territory Department of Environment and Natural Resources**

The following provides responses to each of the issues listed in the Inquiry's Terms of Reference.

#### **a) the ongoing decline in the population and conservation status of nearly 500 threatened fauna species;**

The Northern Territory (NT) Government currently has 101 fauna species listed as threatened in the NT plus 18 species that are now extinct in the NT. Some of these species are listed because of intrinsic rarity or restricted distribution. Some are listed because of declines in abundance or distribution in the past and the continuation of threatening processes. Others are listed because there are continuing threatening processes, not always fully understood, that continue to cause decline.

In the last 10 years, the most prominent declines have been among small to medium-sized mammals of northern Australia. A biodiversity survey program by NTG, in conjunction with Kakadu National Park and Aboriginal land managers, provided the quantitative evidence of mammal declines that had been anecdotally recognised across the top of Queensland, NT and Western Australia. Subsequently, several mammal species have been added to the national and NT threatened species lists.

A range of threatening processes are contributing to these mammal species, including predation by feral cats, habitat degradation caused by inappropriate fire regimes, introduced feral herbivores and pigs, invasive weeds and climate change. Several of these factors appear to interact in complex ways to drive declines. The spread of Cane Toads is the primary threat to the Northern Quoll and may also have been a major contributor to the decline of the Northern Phascogale and Ghost Bat.

It is not just the northern mammals that are increasingly threatened in the NT. The arid lands of central Australia have the worst record of mammal extinctions since European settlement. It is generally perceived that such declines happened 100 years ago and are no longer an issue. This is not the case. Pervasive landscape-scale threatening processes, such as introduced mammalian predators and herbivores, inappropriate fire regimes, invasive introduced plants, and climate change, still operate in central Australia and several mammal species are in decline. These include the Central Rock-rat, which is identified in the *Threatened Species Strategy* as the most threatened mammal species in Australia, the Greater Bilby, and the Centralian population of the Common Brushtail Possum.

Human-induced threatening processes are causing declines to species from a variety of taxonomic groups, not just mammals. The spread of Cane Toads has caused declines in a suite of monitor lizards and snakes, several of which are not currently listed but are likely to be in the short-to-medium future. Development pressures in the Darwin region have the

potential to cause habitat destruction and degradation for the Howard River Toadlet. Landscape-scale impacts from inappropriate fire regimes, invasive weeds, feral herbivores (and in some cases combinations of these factors) are causing declines in threatened birds, reptiles, fish and invertebrates.

In a global context, numbers of several shorebird species over-wintering in Australia and numbers of other migratory or mobile species, such as of marine turtles returning to NT beaches to breed, are declining, largely because of significant threatening processes happening outside of our borders. The only influence Australia can exert on such declines in the NT is through international discussions and pressure to mitigate these international threatening processes.

The NTG has an active program researching the causes of decline in high priority NT and nationally threatened species (fauna and flora) and the control or mitigation of their impacts. This includes collaborative research with the federally-funded NESP program, research on control of cats to benefit the critically endangered Central Rock-rat funded through the national Threatened Species Strategy, as well as several other NTG-funded and or collaborative programs mentioned elsewhere in this submission.

Integrated Conservation Strategies are being developed for NT National Parks and these identify the threatened species and the threatening processes relevant to each park. Annual work plans aim to address these threatening processes and longer-term survey and monitoring programs report on the ongoing 'health' of the threatened species, or at least of their habitats.

The NTG is working with Aboriginal groups and other major land managers to manage fire regimes in ways that provide the same level of risk mitigation but also have less impact on threatened species and biodiversity in general. However the NTG recognises that a greater understanding is needed to optimise management to achieve fire regimes that achieve both of these objectives in different environmental and social settings

The NTG was a significant contributor to the federally-funded program to control feral camel numbers in Central Australia; some 90,000 camels were culled or otherwise removed from the NT. Collaborative programs between NTG and the Central Land Council also strive to control feral herbivore numbers in Central Australia and we work with Aboriginal groups to control buffalo and pig numbers in northern Australia. However, these are continuing problems and there is no foreseeable future in which active management to reduce the impacts of these threats will no longer be required.

#### **b) the wider ecological impact of faunal extinction;**

Documented threatened species declines and extinctions are symptoms of broader environmental threatening processes which operate on entire ecosystems - not just the species we have identified as threatened. Other species, species assemblages and communities (animals and plants) are also broadly affected in terms of gross changes in population sizes, distributions and long term trends. Consequently the extinction crisis is indicative of landscape-scale ecological changes affecting terrestrial, freshwater and marine ecosystems. Threatened species are the proverbial tip of the biodiversity crisis iceberg. Actions that focus solely on mitigating one specific threat to a selection of threatened species

in small parts of their ranges may contribute little to addressing the broader ecological impacts.

Examples in the NT include the impacts of feral predators (cats and foxes), altered fire regimes and feral herbivores. These threatening processes have been strongly implicated in the declines and extinctions of a suite of threatened species. However it is widely acknowledged that these threatening processes are also having severe impacts on a much wider range of species that are not (yet) listed as threatened, but have also suffered significant declines. For example, virtually all native terrestrial mammals (other than large macropods) and many native bird species have suffered significant declines in recent decades throughout the NT due to these processes. Collectively these threatening processes have and continue to make wholesale changes to terrestrial biodiversity across the entire landscape.

Loss and decline of threatened species, along with the wider declines of species that they are indicative of, have potential ecological domino effects on other species and communities. These include:

*Reduced prey availability to predators.* In the NT there is increasing evidence that the widespread declines of small and medium sized mammals has contributed to declines of predators, including large owls and large pythons.

*Reduced predation.* When cane toads swept through the NT, populations of several native predators were decimated, including the northern quoll, floodplain monitor and several other large predatory reptile species. Significant population increases of some prey species occurred as a result of this, including several snake species, which in turn would have resulted in increased predation of their prey.

*Changes in community composition and competition.* The marked decline of small and medium sized mammals, particularly native rodent species, in the NT has resulted in vacant niches and loss of competition with introduced species. As a consequence we are documenting for the first time the colonization of remote areas in Kakadu National Park and Arnhem Land by introduced black rats (*Rattus rattus*). It is likely that that this invasive species will have further knock-on adverse impacts on other native species, through predation, competition and spread of disease. It is also likely that, once established, amelioration of the threatening processes responsible for the native mammal declines will not reverse black rat colonisation nor their impacts.

*Pollination and seed/fruit dispersal.* Many plants (including some threatened plants) rely on one or a small group of animals for pollination and or seed dispersal. Changes to the local abundance of such pollinators or dispersers can have fundamental consequences for the plant species, and consequently for the communities in which they exist. Lesser Stick-nest Rats were probably important seed predators but also dispersers of Quandongs in central Australia. Now that this stick-nest rat species is extinct, quandongs populations in central Australia are declining.

*Loss of environmental engineers.* The extinction or severe decline of several small-medium-sized mammals from Central Australia since European arrival has resulted in the loss from the ecosystems of a group of animals that were prodigious diggers and burrowers. They

must have turned over huge amounts of soil each year and created sheltering sites for a great variety of desert species. The true impact of this change on the environment will never be understood because we have little information on the impacts of these engineers before they went extinct.

The goal of much threatened species management and recovery work is the prevention of extinction. However, management and recovery of ecosystems requires that all these diminished or lost ecological functions are restored. Consequently, the job is only finished when species are returned to the numbers in which they previously existed, across the range they once inhabited. In many cases, such as in the southern NT where so many mammal species have gone extinct, this cannot be fully achieved. In some very localised areas, predator-proof exclosures provide the closest approximation currently available. However, this strategy has its limitations because such exclosures, by their nature, can only be constructed in certain environments and encompass small areas, which means they usually cannot support all important ecological processes, such as apex predator populations and dispersal processes.

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

The Australian Government is an active member of several International bodies that have environmental agendas. These include the International Union for the Conservation of Nature, Organisation for Economic Co-operation and Development (OECD), and the United Nations Environment Assembly. These directly or indirectly require Australia to report on and meet a variety of environmental obligations, many of which relate to threatened species. Australia is reviewed by the OECD every 10 years and for the current review has chosen 'threatened species' as one of two focus topics.

In addition to the being a party to the major international environmental programs above, Australia participates in development and implementation of many international agreements dealing with the environmental and biodiversity conservation and sustainable use. These include global and regional conventions and treaties and bilateral agreements listed on the [Australian Government's Environment website](#).

The NT Environment Minister and all other state and territory Environment Ministers, plus the Commonwealth Environment Minister, endorsed *Australia's Biodiversity Conservation Strategy 2010-2030*, and the subsequent review document *Australia's Strategy for Nature 2018-2030*. These aim to guide how governments, the community, industry and scientists manage and protect Australia's plants, animals and ecosystems. Subsequent plans to support this strategy include the *Threatened Species Strategy* and *Australia's Native Vegetation Framework*. The *Threatened Species Strategy* has resulted in increased profiles for some of the more threatened mammal and bird species; however, the lists of species in the strategy were compiled with limited consultation and there is considerable argument on whether they have identified the species of highest priority. The limited nature of the '10 most ...' lists also shades the very large number of other species threatened with extinction. How threatened do they need to get before they receive attention?

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

The EIA processes of the NT and Australian Governments are conducted independently until a decision is made to undertake a bilateral or accredited assessment, whereby the Australian Government delegates its EPBC Act assessment responsibilities to the NT Government. In considering whether assessment is required, the NT EPA refers to "Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999" which outline a "self-assessment" process to assist in assessing significant impact in threatened fauna. The guidelines contain multiple criteria that relate to processes that decrease the viability of populations (e.g., disrupt the breeding cycle of a population). The criteria do not identify key threatening processes listed under the EPBC Act. Some new developments may directly cause key threatening processes (e.g. land clearing) or indirectly (e.g., Invasion of northern Australia by Gamba Grass and other introduced grasses, predation by feral cats, or introduction of Cane Toads). Therefore, there may be merit in including key threatening processes into the MNES Guidelines.

The efficacy of measures implemented to mitigate impacts and risks to threatened fauna for specific proposals is not always clear. The processes for compliance and review of conditions of approval, required as a result of an environmental impact assessment (under the EPBC Act) are not clear.

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

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) requires that habitat critical to the survival of the listed threatened species is identified in the Recovery Plan. In addition, the Australian Government Minister for the Environment and Heritage may identify and list critical habitat to the survival of a listed threatened species or ecological community. To date, critical habitat has been declared for only five species, none of which occur in the NT. In the NT, the Territory Parks and Wildlife Conservation Act has the provision to declare an area as essential habitat (Section 37). Under the Act, essential habitat is an area of land in which there is a species of wildlife that is likely to become extinct if not immediately protected. To date, no land in the NT has been declared as essential habitat.

The use of declaring or protecting species-specific areas has limited application in the NT, where threats are more often at a landscape-scale. Under Division 7.4 of the EPBC Act Regulations, critical habitat can only be declared in consultation with the landholder, which functionally limits its scope to areas already managed for conservation.

**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;**

Approximately 25% of the NT land area is contained within the National Reserve System. This is likely to increase somewhat in the near future with the addition of more Indigenous Protected Areas. The proportion of NT waters in the NRS is smaller (c. 10%) but 45% of the



NT coastline is within protected areas. Many of NT's terrestrial biomes are represented in the NRS, but some remain unrepresented. There also remains limited connectivity, particularly north-south oriented corridors that is likely to be critical to managing future extinction risk from climate change.

Primary threats to threatened species, and terrestrial biodiversity more generally, in the NT operate across land tenures, including the protected areas. These include feral herbivores, pigs, feral predators, cane toads and invasive weeds and inappropriate fire regimes. Most of these threats are well established throughout the national reserve system of the NT, with the exception of some offshore islands. Management of these threatening processes requires sustained programs, both in on-ground management and in monitoring effectiveness, across tenures, and presents major logistic and financial challenges into the future.

Altered fire regimes are major drivers of extinction risk, both directly through removal/alteration of critical habitat and food resources, and indirectly through enhancing predation pressure, but their management presents special challenges. Fire management in some form occurs in most protected areas in the NT; however, in most cases this is undertaken primarily for asset protection or as part of carbon sequestration programs. In both cases the resultant fire regimes are inappropriate for biodiversity conservation and minimising extinction risk. Advocates of Carbon Fire programs argue that they reduce the risk of large scale, high intensity, fires, which should be beneficial to biodiversity in the longer term. However, the primary objective is net carbon sequestration, and the frequency and extent of burning required to achieve this is generally too high for conserving threatened species or the long term maintenance of biodiversity more generally.

For the protected area network to contribute significantly and adequately to threatened species and biodiversity conservation, stewardship and management arrangements need to better incorporate and/or elevate ecological priorities into their management planning and implementation. This also requires a greater investment and building of capacity (professional and technical capability and resources) for effective implementation.

**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;**

In northern and central Australia, the network of Aboriginal Ranger groups (many associated with Indigenous Protected Areas but many not) provide essential eyes and hands on the ground, on the water and to the air.

The Northern Territory Government recognises the exceptional role of Aboriginal Rangers in protecting land and sea country across vast areas of the NT and its *Protecting Country, Creating Jobs* initiative has two grants programs to help support Aboriginal Ranger groups to protect the environment and create jobs. These are a Land Management and Conservation Fund to improve conservation practices on Aboriginal land, with funding of \$2 million per annum from 2017/2018; and a Capital Grants Fund for Indigenous Ranger groups to help purchase essential items, with funding of \$4.1 million over 2 years.

\$2,843,069 has been allocated to successful applicants in the 2017/18 funding round, including:

- 12 projects under the Land Management and Conservation Fund to improve and develop conservation practices on Aboriginal land. Two of these directly address survey and monitoring of threatened species and the others tackle threatening processes. A second tranche of funding for land management and conservation projects will be announced in early 2018, and
- 36 grants for essential capital items, equipment and infrastructure.

The recent 'Bilby Blitz', coordinated by the Central Land Council, with funding from the Commonwealth Government and advice from various agencies, including the NTG, is a great example of the use of traditional knowledge and management for threatened species conservation. It capitalised on the spread of Aboriginal Ranger groups across arid Australia, and harnessed their traditional skills and their capacity to adopt modern technologies, to survey the current distribution of the Greater Bilby.

Along the remote coastlines of northern Australia, Aboriginal Ranger groups play invaluable roles in the conservation of several threatened species, particularly marine turtles. They have the local knowledge and the infrastructure to both do monitoring and to support research.

An often overlooked but major contribution to threatened species conservation by Aboriginal Rangers is a more social one. Rangers have paid positions to work on country, so young people in communities look up to them, recognise this is a valued role and aspire to be rangers. Rangers are important conduits for information within, between and across communities; they take elders out on country and learn traditional knowledge, as well as connect with researchers, land councils and governments about contemporary land management techniques. They give talks at schools and are advocates in their communities about threatened species and land management.

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

There are current national recovery plans for fifteen NT threatened fauna species, there are draft plans awaiting finalisation for three others, and at least a dozen species have old plans that are being reviewed or have been replaced by detailed conservation advice documents. Recovery plans provide approximate costings for each recommended action. The total costs recommended over the life of the plan is typically more than a million dollars; some are multi millions. Adding the costs across all the national recovery plans provides a total far in excess of what is spent on recovery of threatened species.

A product of the *Threatened Species Strategy* was the Australian Government's *Threatened Species Prospectus* which details a series of proposed projects on significant threatened species and seeks investment partners. This provides a clear statement to the public that Government cannot provide all the funds required to conserve and recover our most threatened species.

The majority of Australia's threatened fauna species do not have recovery plans and are not on the priority lists in the *Threatened Species Strategy*.

A major commitment from the Commonwealth Government to threatened species recovery has been funding the 'Threatened Species Recovery' and 'Northern Australian' Hubs of the



*National Environmental Science Programme*. In particular, this has provided funding to research the threatening processes and their impacts on species, as well as detailing some of the unknown aspects of particular species' ecologies; knowledge that is fundamental to planning how to recover them.

**i) the adequacy of existing monitoring practices in relation to the threatened fauna assessment and adaptive management responses;**

Recent reviews by Legge et al. (2018 and chapters therein) and Robinson et al. (in press) summarise the lack of extent and inadequacy of monitoring of threatened species in Australia and provide an accurate summary of the situation for threatened species in the NT.

Broad scale fauna monitoring is undertaken on a multi-year basis by the NT Government in eight NT National Parks and Kakadu NP, and by Wardeken IPA. Data on some threatened species is collected during these monitoring programs but is generally inadequate for assessing population trends or adaptive management responses. Targeted and adequate threatened species monitoring is currently undertaken for very few species.

The Central Rock-rat program is an excellent, but possibly the only, example in the NT of an adequate threatened species monitoring and evaluation program in a proper targeted adaptive management framework.

Legge, S., Woinarski, J.C.Z., Burbidge, A., Palmer, R., Ringma, J., Mitchell, N., Radford, J., Bode, M., Wintle, B., Baseler, M., Bentley, J., Carter, O., Copley, P., Dexter, N., Dickman, C., Gillespie, G., Hill, B., Johnson, C., Latch, P., Letnic, M., Manning, A., Menkhorst, P., Morris, K., Moseby, K., Page, M., Pannell, D. and Tuft, K. (2018). Havens for threatened Australian mammals: the contributions of fenced areas and offshore islands to protecting mammal species that are susceptible to introduced predators. *Wildlife Research*.

Robinson, N.M., Scheele, B.C., Legge, S., Southwell, D.M., Carter, O., Lintermans, M., Radford, J., Skroblin, A., Dickman, C., Koleček, J., Wayne, A., Kanowski, J., Gillespie, G.R. and Lindenmayer, D.B. (2018). How to ensure threatened species monitoring leads to threatened species conservation. *Ecological Management and Restoration*. Doi: 10.1111/emr.12335 (in press)

**j) the adequacy of existing assessment processes for identifying threatened fauna conservation status;**

The NTG and all other Australian jurisdiction governments are actively involved in the process of implementing the nationally-agreed Common Assessment Method (CAM) for threatened species. As a result, the rigour of TS assessments has greatly improved and the adoption of similar methods, categories and criteria will make the system far less confusing. It is an excellent blue-print from which to move forward.

However, the increase in rigour and the focus on common methods and legislation to support them comes at a major bureaucratic cost. The process of adopting and implementing agreed methods has taken considerable time and effort, and continues. The rigorous process of re-assessing species using the revised methods and in a rigorous way occupies many staff days, months and years. This is effort and dollars that are not being devoted to conservation research, monitoring and management of our threatened species.

Changes are needed to both the EPBC Act and the TPWC Act to fully implement the CAM, and before full alignment of national and Territory lists can be achieved. It will also take several years to reach full alignment, because of the detailed process of reassessment needed for many of the species and the fact that several species occur across multiple jurisdictions.

**k) the adequacy of existing compliance mechanisms for enforcing Commonwealth environmental law; and**

Where a development proposal requires assessment and approval under both NT and Commonwealth EIA law, there are good prospects for aligning approval conditions, and associated compliance. However, there are inconsistencies in compliance approaches and outcomes across different development sectors (with the NT currently operating under a 'sectoral approvals' framework). Inconsistencies in conditioning and compliance will be addressed to some extent, by NT environmental regulatory reforms.

**l) any related matters**

The NT is one sixth of the land area of Australia and one sixth of the marine area but has only one hundredth of the Australian population, half of which live in Darwin. Low population density does not provide immunity from fauna declines (eighteen species are extinct in the NT) and limits the capacity for surveillance of threats to biodiversity; government NRM agencies are small, regional population centres are small and have difficulty sustaining environmental NGOs or friends groups, Charles Darwin University has limited capacity to provide research support. As a consequence, there is often inadequate baseline information on past abundance and distribution of species from which to measure declines and or the impacts of various threatening processes.

Much of the on-ground NRM is now done by Aboriginal Ranger groups, often supported by the Aboriginal land councils and advised by NTG agencies. The capacities of Aboriginal ranger teams differ, ranging from excellent to dysfunctional. Their activities are divided across many functions. Protection of cultural heritage is of high importance, as well as community asset protection through burning, weed control, feral animal control, etc. These can be beneficial to local biodiversity, but can also be counter-productive, for example if it results in over-frequent burning regimes (see response to f) above). Threatened species conservation gets people out on country, but is only high priority if there is direct funding to support it.

Many national NRM funding programs are geared towards models of NRM that work in south-eastern Australia but are difficult to apply in the NT;

- Directed at NGOs or NRM community groups – these are few or non-existent outside of Darwin, or perhaps Alice Springs, and NT threatened fauna issues are often in remote parts of the NT;
- Targeted at on-ground actions to directly mitigate known threats – often basic monitoring of distribution and abundance, and assessment of threats is what is most needed for NT threatened species.

