

## Senate Inquiry into Australia's faunal extinction crisis

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

The original submission from the NT Government contained the following statement:

*"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."*

It was not the intention of our Submission to the Senate Enquiry to broadly criticise carbon fire management programs or the Savanna Burning Industry. The NT Government strongly supports savanna burning projects and recognises and values the important environmental, social and economic benefits derived from these initiatives. This support is reflected through the Aboriginal Ranger Grants Program, the recently released Aboriginal Carbon Industry Strategy, and the ongoing support provided by the NT Government to assist Indigenous land managers and rangers with fire management and biodiversity conservation across the NT.

The original Submission described in general terms the key threats facing threatened species in the NT and drivers of biodiversity loss, one of which is inappropriate fire regimes. The statement quoted above was presented in this very specific context, and was not meant to imply that all savanna burning is bad for all biodiversity.

It is widely recognised that large-scale, high intensity, late dry season fires are ecologically destructive and pose a severe threat to savanna biodiversity of northern Australia. It is also clear that savanna burning projects have resulted in significant positive land management outcomes through reducing the frequency and extent of late, high intensity fire, and increasing heterogeneity and patchiness of fires. Thus, fire regimes achieved across areas forming part of savanna burning projects are generally better than they would be without such projects. However, the point that we wished to make in our original submission was that, while generally a significant improvement, the resultant fire frequencies are not necessary optimal for some components of biodiversity and particularly many threatened species. In some locations, fire management goals may need to be further refined to help ensure the long-term survival of priority species and ideally, such fire regimes could also meet carbon pollution abatement goals. Further work is required to validate the extent to which both desired outcomes can be achieved.

Research undertaken on relationships between mammal and bird diversity and savanna fire suggests that persistence of many species is dependent on access to relatively large patches of habitat that are unburnt for at least five years or much longer. These patches contain important resources for fauna including foods such as grass seeds and fruits, many of which take at least 3 – 5 years to recover from fire. Tree hollows, dense ground cover vegetation, litter and coarse woody debris including logs provide shelter, food, predator refuges and breeding sites for many species, and these habitat attributes may take even longer to accumulate post fire. These resources are critical to the survival and reproduction of many threatened species in northern Australia, such as the Gouldian finch, partridge pigeon, white-throated grass-wren, brush-tailed rabbit-rat, black-footed tree-rat and fawn antechinus. These habitat attributes are greatly reduced and do not recover with frequent fires, irrespective of seasonality.

In some parts of the Top End lower fire frequencies have been achieved through savanna burning projects, which is encouraging. However several factors have contributed to this, such as geography, management capacity and level of community fire awareness and support. Furthermore, the extent to which these changes in fire regimes lead to improvements in threatened and declining species are as yet unknown. Achieving an increase in the extent of sufficiently long unburnt areas may be specially challenging in the extensive lowland woodlands of northern Australia, where most fauna species declines have occurred and where there are greater challenges to fire management.

Creating more heterogeneous mosaics of long unburnt patches juxtaposed with other patches with different fire histories is expected to benefit flora and fauna diversity. This increased patchiness, combined with cooler burning is often cited as a key biodiversity benefit, beyond the economic and social benefits, of implementing the savanna burning methodology. Whilst we acknowledge this potential, it is as yet unknown to what extent changes in fire regimes resulting from savanna burning practices have led to the creation of adequately suitable mosaics and associated recovery of threatened species and improvements in biodiversity more generally. At present monitoring and evaluation of biodiversity responses to changes in fire regimes resulting from savanna burning programs is limited in extent and scope, which in part reflects the significant costs involved in undertaking adequate monitoring in remote areas.

Whilst acknowledging the significant environmental benefits of savanna burning, challenges remain in optimizing long term outcomes for threatened species conservation and biodiversity more generally. These challenges are exacerbated by the logistics and complex interactive effects of other threatening processes operating across this environment, such as historical cessation of Aboriginal traditional management, subsequent land use practices, and introduced livestock and predators.

The NT Government acknowledges the significant environmental importance of, and progress made, with savanna burning. However, more broadly, this matter highlights important knowledge gaps about fire management and biodiversity outcomes across different land management and environmental settings. The NT Government strongly supports more research in this area, and encourages collaborative approaches with the Savanna Burning Industry, land managers and other partners to further optimise savanna burning in different environmental and management settings to help recover threatened species and maintain biodiversity in the long term.