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AMPHIBIAN CONSERVATION: THE NORTHERN CORROBOREE FROG

THE ACT RECOVERY PROGRAM AND AVAILABILITY OF SUITABLE HABITAT FOR ITS REINTRODUCTION

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Northern Corroboree Frogs (*Pseudophryne pengilleyi*) and Southern Corroboree Frogs (*Pseudophryne corroboree*) have restricted distributions in the higher elevation areas of the Australian Alps national parks (Pengilley 1966, 1973; Osborne 1989; ACT Government 2011), where Sphagnum moss bogs and other wet seepage areas provide critical summer breeding habitat (Pengilley 1966; Osborne 1989). In the ACT, suitable habitat for the Northern Corroboree Frog occurs along a disjunct narrow strip that follows the top of the Brindabella/Bimberi Range in Namadgi National Park on the ACT/NSW border.

Prior to the 1980s, both Corroboree Frog species were apparently abundant in suitable habitat within their respective distributions (Pengilley 1966; Osborne 1989; Osborne et al. 1999). However, both species underwent severe population declines during the 1980s, which are continuing (Osborne 1989; Osborne et al. 1999; Hunter et al. 2010). The introduced Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*) is the primary cause of these population declines (Berger et al. 1998; Hunter et al. 2010; Scheele et al. 2016).

In 2003, the ACT Government established a captive 'insurance' population of Northern Corroboree Frogs at Tidbinbilla Nature Reserve from eggs collected in Namadgi National Park. This captive breeding population varies between about 500 and 1,000 individuals annually. A second captive population has been established at the Healesville Sanctuary in Victoria. Since 2011, the ACT Government has experimentally released over 2,000 captive-bred Northern Corroboree Frogs back to Sphagnum moss bogs in Namadgi National Park. All individuals have their unique belly patterns photographed to allow for subsequent identification. The aim is to determine whether supplementation by captive-bred juvenile frogs that have been 'headstarted' through the egg, tadpole and metamorphosis stages can counteract increased mortality from Amphibian Chytrid Fungus. Post-release survivorship of these juvenile (one year post-metamorphosis) frogs is low, though sufficient to maintain small breeding aggregations since 2015. Future reintroductions will involve releasing older frogs (two or three years post-metamorphosis) that are closer to breeding age (four years old), which demographic modelling suggests could result in maintaining breeding aggregations that are two to three times the current size.

To protect Corroboree Frog breeding habitat and other areas of Namadgi National Park, feral horses moving across the border into the park from the adjacent Kosciuszko National Park and Bimberi Nature Reserve in NSW are removed by the ACT Parks and Conservation Service under the ACT *Feral Horse Management Plan* (ACT Government 2007), to protect Sphagnum moss bogs and other conservation values in the Park. Increased numbers of feral horses in NSW will undoubtedly result in higher numbers moving across the border into Namadgi National Park, increasing the risk of damage to the near-pristine Sphagnum moss bogs that are critical Corroboree Frog habitat.

References

ACT Government (2007) *Feral Horse Management Plan 2007*. ACT Government, Canberra.

ACT Government (2011) *Northern Corroboree Frog (*Pseudophryne pengilleyi*). Action Plan No. 6*. Second edition. ACT Government, Canberra.

Berger, L., Speare, R., Daszak, P., Green, D. E., Cunningham, A. A., Goggin, C. L., Slocombe, R., Ragan, M. A., Hyatt, A. D., McDonald, K. R., Hines, H. B., Lips, K. R., Marantelli, G. and Parkes, H. (1998) Chytridiomycosis Causes Amphibian Mortality Associated with Population Declines in the Rain Forests of Australia and Central America. *Proceedings of the National Academy of Science, USA* 95: 9031–9036.

Hunter, D. A., Speare, R., Marantelli, G., Mendez, D., Pietsch, R. and Osborne, W. (2010) Presence of the Amphibian Chytrid Fungus, *Batrachochytrium dendrobatidis*, in Threatened Corroboree Frog Populations in the Australia Alps. *Diseases of Aquatic Organisms* 92: 209–216.

Osborne, W. S. (1989) Distribution, Relative Abundance and Conservation Status of Corroboree Frogs (*Pseudophryne corroboree*) Moore (Anura: Myobatrachidae). *Australian Wildlife Research* 16: 537–547.

Osborne, W. S., Hunter, D. and Hollis, G. J. (1999) Population Declines and Range Contractions in Australian Alpine Frogs. In A. Campbell (ed.), *Declines and Disappearances of Australian Frogs,* pp. 145–157. Biodiversity Group, Environment Australia, Canberra.

Pengilley, R. K. (1966) *The Biology of the Genus* Pseudophryne *(Anura: Leptodactylidae)*. MSc thesis. Department of Zoology, The Australian National University, Canberra.

Pengilley, R. K. (1973) Breeding Biology of some Species of *Pseudophryne* (Anura: Leptodactylidae) of the Southern Highlands, NSW. *Australian Zoologist* 18: 15–30.

Scheele, B. C., Hunter, D. A., Banks, S. C., Pierson, J. C., Skerratt, L. F., Webb, R. and Driscoll, D. A. (2016) High Adult Mortality in Disease challenged Frog Populations Increases Vulnerability to Drought. *Journal of Animal Ecology* 85: 1453–1460.

Ginini Swamp, a Ramsar Wetland within the ACT, is an undisturbed (feral horse–free) wetland protected in Namadgi National Park of the ACT.

Note the richness of the Sphagnum and the elevated (perched) water table.

Source: Graeme L. Worboys.

Right: The *Mastacomys fuscus* (Broad-toothed Rat), one of Australia's 'old endemics'. It is listed in NSW as a Vulnerable Species.

Source: Ken Green.