

Attn:
The Secretary
Parliament of Victoria
Legislative Council, Environment and Planning Committee
Parliament House, Spring Street
EAST MELBOURNE VIC 3002

8th September 2020

Submission to: The Parliamentary Inquiry into Biodiversity Loss & Ecosystem Decline

I am a reproductive biologist and a representative for the Australian Frozen Zoo (AFZ), a genome banking initiative that has been operating for the past twenty-five years. The AFZ is responsible for the curation and storage of over 5,000 frozen samples from native and exotic wildlife. We also provide consultation on the reproductive biology and development of assisted breeding methods in native species to assist conservation groups.

The purpose of the AFZ, and my own research, is to capture and preserve the genetics of threatened species, thereby building “genetic backups” of our native wildlife. We do this with the intention of using these samples to produce new individuals that can be reintroduced into the wild if a species were to go extinct.

Continued population declines among Victorian wildlife, as evidenced by the 2018 Victorian State of the Environment Report^[1], indicate urgent need for intervention. In collaboration with the AFZ, I have spent the last four years investigating conservation and breeding methods for use in native freshwater fish species. Freshwater fish face a unique collection of threats that have resulted in a recent study concluding, out of twenty-two species assessed, 90% had a >50% chance of extinction within the next 20 years^[2].

The primary drivers of population decline in freshwater fish species are:

- Predation by non-native (alien or invasive) fish species such as European carp.
- Habitat destruction, particularly habitats required for breeding and rearing of offspring.
- Exploitation of fish populations for activities such as fishing.
- Exploitation of water for use in agriculture and mining resulting in changes in water flow and water quality.

I support the implementation of strategies to conserve species in their natural habitat including improved public engagement and education on issues related to maintaining and protecting our freshwater ecosystems. However, contingency plans are needed to secure our threatened fish species against potential extinction as these aforementioned strategies can take time to implement and take effect. As such, I recommend increased government support and investment in the following:

- Emergency translocation plans- this involves the identification, trapping and translocation of species at imminent risk due to threats such as ash run off from large bushfires, or drought-induced algal blooms.

- Improved reporting on reproductive fitness in recovery plans, including support for:
 - o breeding programs via Zoos and Aquariums,
 - o the development and implementation of Assisted Reproductive Technologies to improve breeding efficiency.
- Genome banking initiatives, specifically funding for the ongoing storage of tissue from threatened species.

While I have written specifically on the issues faced by freshwater fish species, the recommendations I have made are applicable to all threatened fauna. Victoria has a dedicated community of world-class reproductive scientists, and a growing number of threatened species that will require invasive action to secure their future within Victoria's native landscape. It is therefore appropriate that species recovery plans include support and funding for technologies including genome banks and reproductive techniques.

Thank you for considering this submission. If this issue is to be discussed further, I would like to give evidence in a public hearing.

Yours sincerely,

Nicola M Rivers

References-

1. Victorian Commissioner for Environmental Sustainability. 2018 State of the Environment Report .(<https://www.ces.vic.gov.au/reports/state-environment-2018>)
2. Lintermans, M. *et al.* Big trouble for little fish: identifying Australian freshwater fishes in imminent risk of extinction. *Pacific Conservation Biology*, doi:10.1071/PC19053 (2020).