



## **Biobanking. An insurance for our wildlife and agricultural species.**

**The problem:** With more severe droughts, floods and bushfires becoming more common, we need to safeguard Australia's wild life and agricultural animals. Australia's unique fauna and flora attract many international tourists each year and our agricultural species contribute to our agricultural exports.



An estimated 3 billion animals were lost in 2020 as a result of extreme weather events, and with one of the world highest extinction rates, Australia is in a vulnerable position. In terms of wildlife, genetic diversity is critical to survival of species. The story of the Tasmanian devils' plight with facial cancers proves this point. The devils are so genetically related that their immune systems do not recognise the cancers acquired from other devils as foreign, and hence they suffer from transmissible cancers. Every time we have regional extinction of an animal species we lose the genetics of those

particular animals and thus we are contributing to the demise and ultimate extinction of that species. No other country will conserve our native animals, only we can.

We also need to protect the genetics of our agricultural species. Our agricultural species have been genetically adapted to diverse microclimates here in Australia and some of those strains of animals exist only in Australia. In recent times we have seen the loss of 4-5 generations of selective breeding. This particularly affected the medium sized, often family, farms and this must be avoided in the future to minimise the difficulties in restocking with animals with suitable genetics to minimise economic loss. It is up to us devise strategies to ameliorate the adverse outcomes of climate change on our agricultural species.

**What to do:** How might this be achieved so that the genetic diversity of wildlife and agricultural species is maintained? With advances in reproductive technologies this is entirely possible. Importantly Australia has been at the forefront of reproductive research and in development of reproductive technologies for decades now. Already in Australia there are limited but successful efforts in establishing a 'Frozen Zoo'. We thus have the capabilities but they need expanding and coordinating and this is where the Federal government can contribute. Simply put, we need more research, facilities and human capital.



**How to do it:** There are many options available and many potential participants. Reproductive Health Australia is concerned to see that a successful program is expanded. We proffer some ideas on how such a program could look and would be prepared to access the knowledge and expertise of our members to assist in the establishment of a program.

**Federal Government** involvement is essential via its departments responsible for agriculture and the environment, CSIRO, and by grant funding of private organisation or Universities. Support for such a program could be by tender or grants or a fixed budget internally to government departments. The program is scalable and can be implemented and expanded over time. Species can

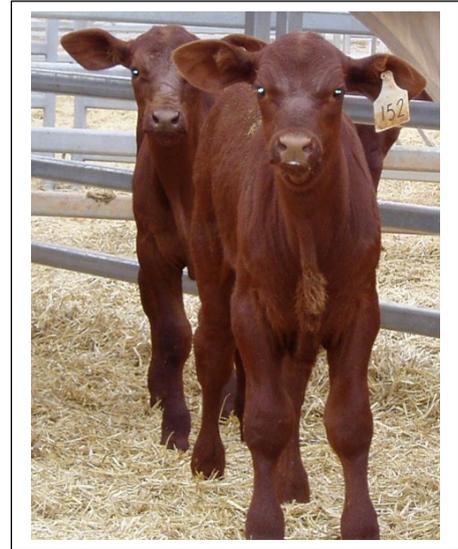
be prioritised based on the degree of threat and the numbers altered to suit a long term investment strategy. Each bit counts.

**Private Industry:** There are a number of private providers for reproductive technologies in humans and in agricultural species, such as pigs, cattle and less so in sheep. Farmers use a number of reproductive technologies already and there are specialist providers and veterinarians in this area. Producers will pay for banking of their genetic stock. The stakeholder organisations like the Meat and Livestock Australia are likely to be interested in biobanking at a national level.

**Conservation Groups** with their diverse networks and their public out reach will be able to publicly fundraise for biobanking wildlife species. With the right marketing and advertising it will be possible to get public buy-in to such a program.

**Universities and Research Institutes** have much to contribute, particularly their researchers in zoology, agriculture and genetics. Many already work in this space but we need to upskill and increase the workforce.

**State Governments** have departments associated with agriculture and the environment and conservation. They will contribute and provide freezer and storage facilities spread across Australia. The advantage of this is that not all the eggs are in the one location.



**Zoos** and other stakeholders like the Society for Reproductive Biology, the Fertility Society of Australia and the Australian Veterinary Association with their knowledge and expertise will be important for planning and delivery of this program.

**In summary** Reproductive Health Australia believes that biobanking is an initiative that the Federal Government of Australia should initiate for the good of agriculture and our wildlife. It would show that, like our COVID response, we can plan and implement strategies to benefit us all.

Reproductive Health Australia is an advocacy group for reproductive research in humans, and in agriculture and wildlife animals. We are willing to support the development of biobanking in Australia.

Reproductive Health Australia highly recommends that the Federal Government invest in biobanking genetic material (Frozen Farm) from valuable farm livestock to insure food security for Australian and the global market, which in turn contributes to the economic success of the country. It should invest in biobanking genetic material from our native species (Frozen Zoo) to conserve and ensure indigenous species survival, which in turn contributes to the attraction of international tourists to Australia.

Sincerely

A handwritten signature in black ink, appearing to read 'Ray Rodgers'.

**Professor Ray Rodgers**  
Convenor Reproductive Health Australia

