australasian biospecimen network association

BIO-BABBLE

AUSTRALASIAN BIOSPECIMEN NETWORK ASSOCIATION
NEWSLETTER
FEBRUARY 2020

The Australian PlantBank

Although summer fires are common and can have an important regenerative role in some vegetation communities, the extent and severity of this season's events is unprecedented. Recent fires have impacted billions of plants, animals and fungi across Australia leading many experts to question whether or not the ecosystem can fully recover.

Resources such as the Australian PlantBank provide a critical reservoir for millions of plant species, and events such as these fires highlight how vital this work is now, and for the future.

The Australian PlantBank is an international center for plant research and learning, incorporating the largest native plant conservation seedbank in Australia. PlantBank is an award-winning home of plant conservation research, germplasm collection and storage in NSW, located at the Australian Botanic Garden Mount Annan. Their seed and tissue culture collections provide an insurance policy against the extinction of native plant species in the wild.

Not all species, however, are suitable for seed banking, including those that do not produce seeds or those that produce seed that cannot be dried. Tissue culture is an alternative to seed banking for these species but it is more time consuming and expensive, requiring specialist laboratory facilities.

Seeds are stored under various conditions in the PlantBank vault:
- at 2 to 4ºC for short term requirements
- at -18 to -20ºC for long term storage
- cryogenic storage for species with special requirements. Additionally, 10% of each orthodox seed collection is also stored in cryostorage.

After drying to below 10 per cent moisture content, seeds are vacuum sealed in aluminium foil packets and housed in walk-in cold rooms. Seed of some species cannot be stored and therefore must be used for immediate planting rather than storage.

The PlantBank floor space is about 3000 m². The Seed Vault has been built in stages, only those sections required are cooled. On opening the Seed Vault had 76 cubic meters of storage, expandable to 190 cubic meters as the seed collection grows.

The seedbank of the Australian PlantBank is part of the Millennium Seed Bank Partnership, an international conservation project coordinated by the Royal Botanic Gardens, Kew, UK.

PlantBank seed collections at June 2019

Total number of collections: 11,104
Australian species held in collection: 5,156
Number of new collections (2018-19): 437
% NSW species represented (seedbearing only, total 5929 species): 46%
% NSW threatened species represented (from total of 623 species): 61%

The Australian Botanic Garden Mount Annan

All information taken from PlantBank website, to learn more please visit:
https://www.rbgsyd.nsw.gov.au/Science/Australian-plantbank/About-PlantBank

New Zealand Indigenous Flora Seed Bank

The New Zealand Indigenous Flora Seed Bank (NZIFSB) aims to collect the seeds of New Zealand flora, to conserve the biodiversity within New Zealand's indigenous flora.

New Zealand is recognised as a biodiversity hotspot with around 2600 taxa of indigenous plants, 80% of these classified as endemic and 40% classified as at risk or threatened. Seed banking is a recognised conservation strategy to support in-situ conservation efforts.

The project is part of the Millennium Seed Bank Partnership led by the Royal Botanic Gardens, Kew in the United Kingdom. The New Zealand Indigenous Flora Seed Bank project is led by Massey University. The seeds are collected by volunteers who are trained in appropriate collecting techniques. Once processed, seeds are banked at low moisture and temperature (-20°C) in a physical seed bank at the Margot Forde Forage Germ Plasm Centre (AgResearch). A specimen representative of the plants the seed is collected from is also prepared and stored at the Dame Ella Campbell Herbarium at Massey University in Palmerston North.

Awards from the Strategic Innovation Fund (Massey University), the New Zealand Lottery Grants Board, the George Mason Charitable Trust and MWH Limited have provided funding for staff and equipment to progress the project.

The aim of the NZIFSB is to collect the seeds of New Zealand flora as part of an ex-situ conservation strategy to conserve the biodiversity within New Zealand's indigenous flora. Seeds, once banked, will remain viable in the bank
for decades if not longer.

As with any bank, withdrawals are possible but only for a limited range of purposes, such as for reintroduction of species where populations have been lost in the wild and, more rarely, for research projects that will help with ex situ or in situ conservation of the species. Seeds may also be used for multiplication to replenish seed in the Seed Bank.

More information about the NZIFSB can be found **HERE**.

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

australasian biospecimen network association

#ABNA2020Perth

The Australian Frozen Zoo

The Australian bushfires have not only been devastating for the loss of human life, vegetation, and infrastructure but also for native wildlife. While figures differ between experts, recent estimations indicate that the death toll for Australian wildlife may be up to 800 million, with a national impact of over a billion injured.

In the context of decreasing biodiversity over the last several decades, and with Australia having the highest rate of extinction for mammals worldwide, the importance of conservation and preservation has never been more apparent.

Fortunately, in similar fashion to the Australian Seed Bank, Monash University is home to the Australian Frozen Zoo (AFZ) an institution that applies scientific expertise and technology to assist the conservation and breeding of Australian animals. The AFZ assists traditional conservation programs by offering scientific innovations to ensure endangers species are not lost forever.

Formerly known as the Australian Gene Storage and Research Centre of Australia, the AFZ was established in 1995 in Monash, with sister sites at both Taronga and Western Plains Zoo. AFZ was the first national cryogenic reserve in the world and was a founding member of the Frozen Ark consortium established in 2003 – a network that encompasses similar banks from 22 countries including Nottingham's Frozen Ark who are focused on expanding international collections to preserve international biodiversity. The Zoo's biobank includes DNA, sperm, embryos, cells and tissue stored in liquid nitrogen at -196 degrees celsius and have been used successfully in a number of assisted reproductive programs thus far.

The AFZ incorporates a number of key activities:

- Maintenance of a frozen reserve of reproductive cells and tissues from native and exotic animals available for research and breeding programs
- Help and advice on the recommended methods for collecting and transporting samples for storage in the AFZ
- The processing, freezing and storage of samples
- Scientific and technical assistance in the use of these samples in assisted reproduction procedures
- Specialised consultation service by the professional and technical staff of the AFZ to help improve captive and wild breeding of the target species

To learn more about AFZ visit http://www.australianfrozenzoo.com.au/

ISBER 2020 Meeting - Preliminary Program

The ISBER 2020 Annual Meeting & Exhibit: Roadmap to Accelerating Scientific Discovery will be held April 14-18th at the Anaheim Marriott, USA. Global leaders and disruptors from the broad spectrum of scientific communities will converge in the largest international biobank conference, ISBER 2020, to address the impact of biobanks on science and how the related discoveries are establishing a roadmap to extend our knowledge network.

The meeting will feature plenary sessions, educational workshops, networking events, corporate workshops, contributed paper sessions, poster sessions, and working group discussions. Vendors from around the world will demonstrate the latest products, services, and technology in the field of repository and specimen collection and management. It is anticipated that over 700 delegates will attend.

A preliminary meeting program is available at: http://meetings.isber.org/2020/preliminary-program/

The Pre-Conference Workshop: Biobanking 101 will include a presentation by Helen Morrin (University of Otago, NZ) - "Success is the Result of Preparation: Emergency Planning for Biobanks".

The Contributed Paper session on Friday April 17th will include presentations from ABNA member Amanda Rush (University of Sydney, Australia) - "An Economic Analysis of Cancer Biobanks in New South Wales". This session will also feature a presentation by Carmel Quinn (UNSW, Australia) - "Moving with the Times: The Health Science Alliance Biobank Pathway to Sustainability".

Amanda Rush will also present at the Educational Workshop – "Choosing a Path at the Fork in the Road: Unpacking Models of Free and Informed Consent and Their Impact on Biobank Operations".

Koh Furuta, ISBERs Director-At-Large: Indo-Pacific Rim Region will present during two the Educational Workshop – The Pursuit of Standards and Related Tools: Discovering the Net Benefit to your Biorepository and Developing Data Paradigms in Biobanking: Public/Patient Engagement.

ABNA members have also submitted abstracts and will be exhibiting posters at the conference.

If you have any suggestions for a short article for Bio-Babble, please contact : abna.biobabble@gmail.com

Deadline for March 2020 edition: 20.03.20