

Environmental Futures Centre

Rainforest seed project: Conserving eastern Australian rainforest plants

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*The conservation of seed of wild plants worldwide is recognized as an important 'insurance policy' for plant survival. Seed conservation facilitates access to existing plant biodiversity for rainforest restoration and horticultural uses, especially for food crops and medicinal plants important to humanity, in the event of climatic changes and other catastrophic events. **Kim Hamilton, Project Coordinator.***

Australian Rainforests, Diverse but Vulnerable

Rainforests perform a vital role in maintaining the health of the planet by balancing greenhouse gases through oxygen release and carbon sequestration. They contain a vast amount of biodiversity and provide habitats for animals and livelihoods for many indigenous people. However, rainforests are under pressure from a multitude of threats. Rainforest species are often highly adapted to their habitats and are unable to adapt or move in response to these predicted changes which include an increase in the frequency and intensity of wildfires, unsustainable logging and urban and agricultural development. In Australia, some rainforest areas contain more than 50% of the plant biodiversity of our nation and make up only 0.3% of the land.

Three significant World Heritage listed areas that occur on the east coast of Australia have large rainforest areas. In NSW and Southern Queensland, the so-called 'Gondwana Rainforests'

occur as a 'discontinuous chain of islands in a sea of fire prone eucalypt and agricultural lands' (DEWR 2007). This area represents the world's largest sub-tropical rainforest, with large areas of warm temperature and nearly all of the Antarctic beech cool temperature rainforest. They contain more than 200 species of rare and threatened plants and animals.



Further south, the vast Blue Mountains World Heritage area contains a rich diversity of relict and other species of global significance, such as Wollemi pine, that survive in rainforests through a wide variety of habitats to dry sclerophyll. In the north, the wet

tropics of Queensland are the most diverse rainforests areas in Australia, with many primitive families and supporting many unique animal species.

The Project – In a Nutshell

This project will address the pressing need to conserve vulnerable species from Australian rainforest areas by understanding growth conditions and the collection of a seed storage bank to maintain future rainforest biodiversity.

Conserving Rainforest Seeds

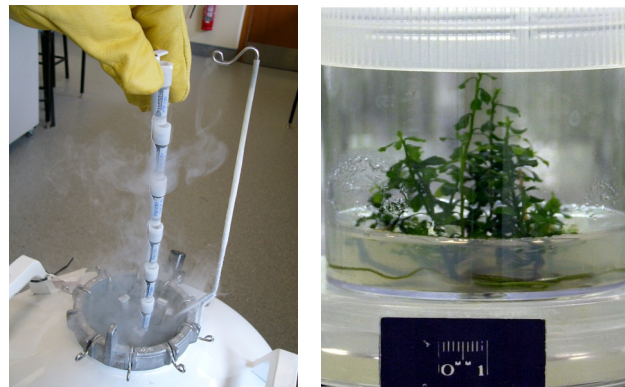
Seed banking is a cost effective way of conserving vulnerable species outside of their natural habitat. This provides a ‘back-up’ against loss and a resource for restoration and improved scientific understanding. These seed collections can help re-establish lost natural populations, rescue those under threat, and provide germplasm for utilization in bio-discovery or plant improvement programs.



Storage of Rainforest Seeds

Seeds of plants from drier habitats are adapted to being dried out and can therefore be stored at low temperatures for decades without losing viability. However, fleshy fruited species from wetter environments such as rainforests, may not be able to be stored this way and must be grown immediately or need to be stored cryogenically at minus 196 degrees Celsius. It is estimated that nearly 2000 of the rainforest species have seeds that are sensitive to drying out (desiccation sensitive).

The project will conduct further research to identify the best alternate method of conservation. This may typically involve developing tissue culture and ultra-low temperature storage techniques.



Project Partners

- Environmental Futures Centre, Griffith University
- Botanic Gardens Trust
- Millennium Seed Bank, Royal Botanic Gardens

