



Rare plant preserved for the future

A rare species of plant found only in remote areas of the Northern Territory has been preserved for future generations.

An implementation and recovery plan for *Boronia quadrilata* (*B. quadrilata*) was carried out after researchers discovered the only known populations of the plant had been severely damaged in April 2006 by category 5 cyclone Monica.

The project was a joint collaboration between the Department of Natural Resources, Environment and The Arts (NRETA) and Charles Darwin University (CDU). Northern Land Council, local Traditional Owners and the Top End Native Plant Society were also involved.

B. quadrilata was first discovered in the early 1990s by botanist Kym Brennan and was known only from a single population.

TEXT

Raquel Dubois

ABOVE

Dr Sean Bellairs examines *Boronia quadrilata* propagated from a cutting.

PHOTOGRAPH

Raquel Dubois

CDU has propagated 30 plants of the threatened species from cuttings collected with the assistance of the Demed Rangers of north-east Arnhem Land.

Senior Lecturer in Botany and Restoration Ecology at CDU, Dr Sean Bellairs, supervised the propagation research. The cuttings are currently being hardened to a stage where they can be self supporting.

A search for undiscovered populations of *B. quadrilata* was undertaken by Dr David Liddle of NRETA. CDU Bachelor of Science (Honours) student, Ms Sally Jacka and Demed Rangers accompanied him on the search.

Dr Liddle and the search team discovered previously unknown populations of *B. quadrilata* on top of remote sandstone escarpments, greatly increasing the known number of plants.

There was no road access to the areas where the plant grows in sandy soils atop sandstone pillars, so a helicopter was used for transport into the rugged area. Then the search involved camping and climbing over the rocky habitat.

Ms Jacka collected seeds, cuttings and soil samples for propagation research back at CDU, after having received permission from the Traditional Owners of the land.

The first part of the laboratory research was to determine the biological make-up of the seeds.

“It’s important to know about the particulars of its seed biology for conserving and protecting the species,” Dr Bellairs said.

“One key issue to look at is whether the seed needs a stimulus to germinate,” he said. For instance, many Australian plant species require fire as a stimulus for regeneration.”

Only a small quantity of the seeds collected was actually viable, so the number of seeds that could be used for the research was very small.

“Some plants produce decoy seeds to discourage widespread consumption of their seeds as part of a survival strategy, though low seed viability can also occur when plant populations are reduced to a small number of plants, so it is essential we understand and carefully manage those few remaining plants,” Dr Bellairs said.

Tests were carried out to determine whether there were any mechanisms in the seeds preventing the seeds from germinating. Germination responses to potassium nitrate, de-ionized water, smoke water (to simulate fire), and gibberellic acid (a plant hormone), were measured.

For *B. quadrilata*, gibberellic acid produced the greatest effect, suggesting that the seed would produce a hormone response to specific (though undetermined) environmental conditions to begin the germination process.

Because of the difficulty in collecting seeds from these rare plants, CDU researchers also investigated how these plants could be grown using tissue culture or plant cuttings.

After several months the plants have reached eight centimetres high, and are in the early stages of developing their own root systems. But they need careful monitoring and watering several times a day to encourage new root growth.

A final report has been submitted to the funding agency, the National Heritage Trust. As a result of this research, it is now known how to propagate *B. quadrilata* and grow plants to supplement remaining populations should they be damaged by disturbances such as cyclone Monica in the future.

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