

Seed conservation of plants of conservation significance from the northern Darling Range

Forest Enhancement Fund Project Report 2025

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Background

Seed conservation is a critical conservation strategy that acts as insurance against extinction in the wild, making seed available for future species recovery. Over 130 plant species of conservation significance, i.e. those listed as being Threatened or Priority species, are recorded to occur within ALCOA's zone of mining influence (ZMI) based on data from DBCA's Threatened and Priority Flora database (TPFL) or from records of the Western Australian Herbarium (WAH). Of these, over 80 species occur in the northern portion of the zone where the proposed work will be undertaken. DBCA manages a conservation seed bank, the Western Australian Seed Centre, Kensington (WASC, K), where seed collections of conservation significant plant species are stored for safe keeping. Many of the conservation significant species occurring within ALCOA's ZMI either aren't represented in the WASC, K or are inadequately represented and require additional collections. The aim of this project was to collect at least five species of conservation significance from the northern portion of ALCOA's ZMI. These collections would be stored for safe keeping in the vault of the WASC, K and germination tests would be conducted on the collections to estimate their viability. Herbarium specimens to vouch for the correct identification of the target species would be lodged and identified at the WAH.

Results

Populations of sixteen species of conservation significance were visited and assessed for their suitability for seed collection (Table 1) and resulted in nine seed collections representing two Threatened species and six Priority species (Table 2).

Voucher specimens were collected and lodged at the Western Australian Herbarium for all species collected except for *Tribonanthes purpurea*. A specimen was not taken for this species as a specimen has been collected from this population previously to vouch for an earlier seed collection. All specimens submitted have had their identity verified by a botanist at the WAH.

For three of the species collected (*Grevillea dissectifolia*, *Hibbertia hortiorum* and *Petrophile filifolia* subsp. *laxa*) this was the first time seed has been collected for conservation. Four of the species have previously been collected (*Banksia insulanemorecinta*, *Bossiaea modesta*, *Byblis gigantea* and *Stylidium striatum*) however for this project, populations not previously sampled were collected which will add to the genetic diversity of the conservation collection. Collections of *Tribonanthes purpurea* have been made from the same population as collected for this project, however the number of seed from the population in storage was still relatively low (< 2000 seed) thus additional seed was needed to improve the quantity of seed in storage. The collection made for this project more than doubled the total seed for the species in the seed centre.

Although modest in quantity at only 260 seed, the collection of *Banksia insulanemorecinta* is still the largest collection of the species made for conservation, with the germination testing showing that the seed is also highly viable.

The collection of *Byblis gigantea* was notable, as it was considerably larger than a collection of the species currently in the WASC, K, and although the germination testing of the collection is not yet complete, indications are that the seed is highly viable with a germination of 73% so far. This collection was also made from a good number of parent plants, and importantly the seed of from each parent plant has been kept separate making the collection more versatile for potential future uses.

Germination testing has commenced on all collections with sufficient seed to estimate the viability of the collections. Three of these tests have been completed with germination results of over 90% for the three species (Table 2). There are still five germination tests in progress. The only species that will not be tested is *Hibbertia hortiorum* due to the low quantities of seed that were able to be collected.

Summary

This project has resulted in an improvement in the diversity of collections held in the WASC, K by adding species not previously held in the conservation collection, or by improving the genetic diversity of seed held through the collection of populations not previously collected. The collections have also reinforced the quantity of seed in the bank which will improve the utility of the collections for use in conservation.

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Table 1. Species inspected for seed collection occurring in the northern extent of ALCOA's Zone of Mining Influence

Species	Comment
<i>Anthotium</i> sp. Darling Range (F. Hort & B. Hort 2431)	<ul style="list-style-type: none"> • No plants located in one population. • Another population plants heavily grazed with very few flowers forming. • Not viable for seed collection.
<i>Banksia insulanemorecinta</i>	<ul style="list-style-type: none"> • Five populations visited. • Three populations had been burnt with no current living plants. • One population had been burnt but only four living plants seen, all in poor health. • One population collected
<i>Bossiaea modesta</i>	<ul style="list-style-type: none"> • One population collected. • Most plants juvenile, coming back after fire.
<i>Byblis gigantea</i>	<ul style="list-style-type: none"> • One population collected.
<i>Chorizema ulotropis</i>	<ul style="list-style-type: none"> • Locations from four herbarium records were searched but failed to locate any plants
<i>Darwinia hortiorum</i>	<ul style="list-style-type: none"> • One population visited. Seen at flowering but missed seed.
<i>Grevillea dissectifolia</i>	<ul style="list-style-type: none"> • Three populations visited. • Plants located at two populations. • Seed collected from two populations.
<i>Grevillea pimelioides</i>	<ul style="list-style-type: none"> • One population visited. • Seen at flowering but missed seed.
<i>Hibbertia hortiorum</i>	<ul style="list-style-type: none"> • One population visited. • One population collected
<i>Hibbertia polyancistra</i>	<ul style="list-style-type: none"> • One population visited but did not result in a seed collection.
<i>Morelotia australiensis</i>	<ul style="list-style-type: none"> • One population visited. • Population recovering from fire and not yet fruiting.
<i>Petrophile filifolia</i> subsp. <i>laxa</i>	<ul style="list-style-type: none"> • One population visited. • One population collected
<i>Stylidium striatum</i>	<ul style="list-style-type: none"> • One population visited. • One population collected
<i>Synaphea pandurata</i>	<ul style="list-style-type: none"> • Four populations visited. • Two populations had been burnt with no mature or living plants. • Plants seen flowering at two populations but did not result in seed collections.
<i>Tribonanthes purpurea</i>	<ul style="list-style-type: none"> • One population visited. • One population collected
<i>Verticordia fimbrialepis</i> subsp. <i>fimbrialepis</i>	<ul style="list-style-type: none"> • One population visited. • Plants not seen flowering or fruiting.

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Table 2. Details of seed collections collected from the northern Darling Range. Details of the seed collections are given including the species conservation status, collection location, Threatened and Priority Flora (TPFL) population number, the number of plants collected (Individuals (I) or Bulked (B)), the number of seed collected and seed germination.

Accession	Conservation status	Species	Location	TPFL Population	Plants collected	Number of seed collected	Germination (%)
07105	P3	<i>Petrophile filifolia</i> subsp. <i>laxa</i>	Boundary Rd		I/75	6057	in progress
07106	P4	<i>Banksia insulanemorecincta</i>	Watershed Rd		I/27	260	100
07107	VU	<i>Tribonanthes purpurea</i>	Mt Dale	7	I/64	2136	91
07123	P4	<i>Stylidium striatum</i>	Ashendon Rd		I/19	1216	in progress
07151	P3	<i>Grevillea dissectifolia</i>	Millars Log Rd	13	I/3	120	in progress
07152	P3	<i>Grevillea dissectifolia</i>	Pikes Rd		I/60	875	in progress
07153	P1	<i>Hibbertia hortiorum</i>	Pikes Rd		B/16	16	-
07154	P2	<i>Bossiaea modesta</i>	Dale Rd	1	I/16	139	93
07185	EN	<i>Byblis gigantea</i>	Clare SF	8	I/67	2203	in progress