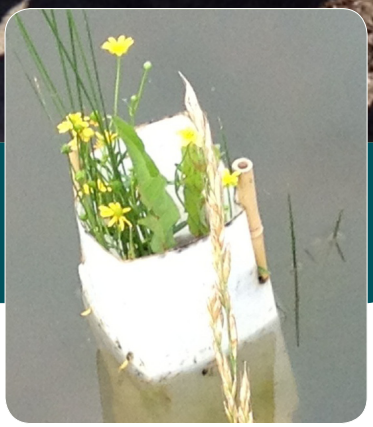
The Valley Ponds



Final Report

Introduction

This report for the ACT Urban Waterways Coordinator, Edwina Robinson, outlines the final stages of Greening Australia's rehabilitation work at The Valley Ponds. It should be read in conjunction with the first report, which details the project methodology and germination results.

The first stage involved relocating representative plant material to a small dam on site, and collecting seed cores (mud samples) for germinating at Greening Australia's nursery in Aranda.

The final stages involved monitoring plant material in situ, growing on the seed cores in the Aranda nursery, removing exotic species where possible, and reintroducing plants to The Valley Ponds following completion of the constructed wetlands.

Monitoring

Plant material

61 styrofoam boxes were filled with plant material from the main dam in August 2011 and relocated to the small dam in the south-western section of the Valley Ponds. The main genera recovered included ***Juncus, Eleocharis,*** and ***Myriophyllum***.

A small amount of ***Amphibromus nervosus*** (Swamp Wallaby Grass) seed was collected and germinated in the Aranda nursery (see Figure 1).

Figure 1 - Swamp wallaby grass

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These plants will be re-introduced to The Valley Ponds in autumn 2013.

A final count of species abundance and diversity was not done prior to the planting in September 2012. Some of the native species appeared to die off over winter (see Figure 2).

An attempt to remove the exotic species from the styrofoam boxes proved difficult, as the root systems of exotics and natives were intertwined. It was therefore decided not to continue removing weeds before re-introducing the plant material.

Figure 2 – Plant material in the small dam

Seed cores

Seed cores (mud samples) were grown on in the Aranda nursery after being collected from the main dam on site. The majority of cores were grown in 2L ice cream containers placed in styrofoam boxes, although some cores were placed directly into styrofoam boxes (refer to the first report for details of the methodology).

The seed cores were kept in the nursery for almost 12 months, therefore experiencing all 4 seasons. After germination and an initial growth spurt in the spring and summer of 2011/2012, plant growth slowed considerably over the cooler months.

As the seed cores were either completely submerged or sitting in water at all times, the below average overnight temperatures during winter 2012 made for some icy conditions (see Figure 3).

Figure 3 – Thick ice formed in styrofoam boxes housing seed cores

Plant re-introduction

Both plant material and seed cores were re-introduced to the smaller dam near the Scout hall at a planting involving the local Scout group on 23 September 2012 (see Figure 4). The dam was drained as part of the larger construction works.

The plant material was removed from the styrofoam boxes then divided into 'plantable' sections using a shovel. Most of the seed cores were a 'plantable' size already, having being grown in 2L ice cream containers.

As previously mentioned, weeds were not removed from either the plant material or seed cores due to the potential to damage the root systems of native plants. Therefore, the 'plantable' sections included a mix of natives and exotics. The smaller image of the plants growing in the tree guard on the front page of this report is a good example of - species include ***Ranunculus papulentus,*** what appears to be a ***Juncus*** or ***Eleocharis*** plant, and ***Rumex crispus.***

Following a planting demonstration, Scouts got stuck into planting using mattocks. Nearly all plants were guarded using cardboard guards and bamboo stakes, to protect the plants from water fowl. All plants were watered in immediately after planting.

Within days of the planting, the small dam was flooded. The eventual permanent water level was somewhat unexpected, resulting in some plants being inundated.

Figure 4 – Planting September 2012

Recommendations

Recommendations for future projects involving the removal and re-introduction of aquatic plant material and seed cores:

1. Late winter or early spring is the preferred time for plant removal.

2. Keep things simple - excellent germination was achieved with a minimum of substrate. Sand and vermiculite was not necessary.

3. Styrofoam boxes are a suitable container for housing plant material and growing on seed cores. The boxes provided space for plants to grow on, whereas the ice cream containers restricted plant growth.

4. Remove plant material and seed cores from several zones (low, mid and high water zones) to increase the amount of biodiversity.

5. It is not feasible to remove all exotic species from plant material or seed cores. Focus on noxious weeds only.

Results

Table 1 - Plant material species

The most abundant native species were ***Juncus usitatus, Eleocharis acuta***, and ***Myriophyllum crispatum***. Notable species were ***Amphibromus nervosus*** and ***Ranunculus papulentus***.

Scientific name	Common name	Origin	Life cycle	No. of stems (~)
Amphibromus nervosus	Common Swamp Wallaby Grass	N	P	<10
Crassula helmsii	Water Stonecrop	N	P	<20
Eleocharis acuta	Common Spikerush	N	P	1000+
Epilobium sp.	Willow Herb	N	P	25
Hydrocotyle peduncularis	Stinking Pennywort	N	P	50+
Juncus articulatus	Jointed Rush	E	P	120
Juncus bufonius	Toad Rush	N	A	100
Juncus usitatus	Common Rush	N	P	100+
Lythrum hyssopifolia	Hyssop Loosestrife	N	A	20+
Myosotis caespitosa	Forget-me-not	E	A	250+
Myriophyllum crispatum	Upright Water Milfoil	N	P	750+
Paspalum dilatatum	Paspalum	E	P	10
Polypogon monspeliensis	Beard Grass	E	P	30
Ranunculus papulentus	Large River Buttercup	N	P	350
Rumex crispus	Dock	E	P	30
Trifolium sp.	Clover	E	P	<10
Veronica anagallis-aquatica	Blue Water Speedwell	E	P	20

(N = native, E = exotic, P = perennial, A = annual)

Table 2 - Seed core species

The most abundant native species, ***Elatine gratioloides*** and ***Juncus bufonius***, are both annuals.

Scientific name	Common name	Origin	Life cycle	No. of stems (~)
Amphibromus nervosus	Common Swamp Wallaby Grass	N	P	10
Cirsium vulgare	Spear Thistle	E	A	<5
Cyperus eragrostis	Umbrella Sedge	E	P	75+
Echinochloa crus-galli	Barnyard Grass	E	A	<5
Elatine gratioloides	Waterwort	N	A	500+
Eleocharis acuta	Common Spikerush	N	P	250+
Holcus lanatus	Yorkshire Fog	E	P	10
Juncus articulatus	Jointed Rush	E	P	500+
Juncus bufonius	Toad Rush	N	A	500+
Lythrum hyssopifolia	Hyssop Loosestrife	N	A	200+
Myosotis caespitosa	Forget-me-not	E	A	25+
Myriophyllum crispatum	Upright Water Milfoil	N	P	375+
Ranunculus papulentus	Large River Buttercup	N	P	10
Rumex crispus	Dock	E	P	<5
Trifolium sp.	Clover	E	P	<5
Veronica anagallis-aquatica	Blue Water Speedwell	E	P	10