

Australian Garden: The Cradle of Creation®

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INTRODUCTION

This year's IPPS theme, "The Cradle of Creation," could not be more appropriate when describing the current state of the Royal Botanic Gardens Cranbourne (RBGC) nursery as we prepare for Stage 2 of the Australian Garden. It is not often that one is involved with the creation of a botanic garden, particularly one that sets out to showcase native plants from all over Australia that stretch across a wide range of growing requirements and climatic conditions. With regional water restrictions and a changing climate, the Australian Garden is a timely project with the ability to influence public perceptions on the beauty and diversity of Australian flora, and on the use of Australian plants to create sustainable home gardens

Stage 1 of the Australian Garden was opened to the public in 2006, and shortly afterwards the funding for the second and final stage was secured, predominantly from the Victorian government. The design for Stage 2 was reviewed and refined in response to the continuing drought and prospect of a drier future. In the redesign process, invariably the full detail of plant selection for the landscape design is the last to be finalised, providing plenty of challenges for the nursery that has the task of sourcing and propagating the bulk of the plant material. By 2009, as time ticked by, the nursery still did not have a complete plant list on which to plan and implement production. We bided our time by seed collecting in the conservation zone for the plants needed for the new Woodland Picnic Area and to replenish seed supplies for the Growing Friends. The nursery continued to produce plants for Stage 1 garden beds that had been ravished by rabbits, bush rats, *Phytophthora cinnamomi* in some areas, or for beds where the soil ameliorant had not been properly integrated into the sands. When the first of the "final" design plans came in, hours were spent counting tiny dots representing plant numbers, checking and double checking species in context to our weed evaluation model and a plant list was created for the nursery to make a start.

The plant list was 33 A4 pages long comprising 88 families, 268 genera, and 1,012 species totalling more than 50,000 plants so far. Approximately half of the plants are being grown in house by the RBGC nursery; with planting commencing in May 2010 (the opening of Stage 2 to the public is planned for late 2011). Plus, we have grown 7,000–10,000 RBGC indigenous plants required for the new wetlands water treatment area which will be planted in June of 2010. Initially, 30,000 plants produced in house for Stage 2 does not seem to be a great number in terms of nursery production. We of course grow more than what is required in order to have backups in case our furry friends decide to gorge themselves before the opening! When not growing plants for Stage 2, there is always the sifting and repotting of terrestrial tubers and epiphytes in our Australian orchid collection, growing and maintaining display plants, propagating new plants from wild-collected plants that are coming to the end of their life span, maintaining collections, weeding, pruning, potting on, IPM monitoring, meetings, burn offs (yes, we are fire trained and do prescribed

burns for asset protection and ecological sustainability of the conservation zone), nursery tours as part of the Public Programs service, and continuing to add diversity to Stage 1. So, now the 30,000 plants produced in house for Stage 2 is a number in context, especially since we're dealing with so many different species.

Seed was ordered for out of state plants, plant material collection days were organised for off-site cutting material, as well as sourcing what was not to be grown in house. Trips to Queensland nurseries were a welcomed opportunity — I even got to meet Kerry Rathie, one of the authors of *Mangroves to Mountains*, and see what he's been doing with his innovative *Brachyichiton* crosses. Some plants were translocated from areas of the RBGC bushland for the nursery to use as stock plants from which to propagate, like *Hypericum calycinum* and *Drosera binata*, while seed was collected on site from other species such as *Lepidosperma concavum*, *Burchardia umbellata*, *Arthropodium milleflorum* and *A. strictum*, and the beautiful *Thysanotus patersonii* and *T. tuberosus* subsp. *tuberosus*, just to name a few.

There are challenges, too, in growing these plants. For example, *Lepidosperma concavum* seed heads had to be bagged because only the current year's seed that is not retained on the plant has a chance of having a viable embryo and can be germinated, which may be only one or two seeds per head.

Some cutting material has waxy stems, like philothecas, that do not respond well to rooting hormones in gel form, so alcohol-based hormones are being used. We discovered this after having done 4,000 cuttings of *Philotheca* 'Flower Girl' using the gel first — we have successfully grown *Ricinocarpus pinifolius*, both from seed and by cuttings. We have also been involved with the national recovery of *Nematolepis wilsonii*, a species endemic to the Central Highlands of Victoria where there is a single population of about 500 plants — or there were. Fires through the area have put increased pressure on this small population which may not be able to spring back without ex situ conservation.

The nursery itself is surrounded by the conservation zone and therefore we need to consider the impacts that activities carried out in the nursery may have on the indigenous flora and fauna, including invertebrates. We absolutely promote integrated pest management (IPM) and hence have greatly reduced using pesticides. We encourage local insect populations of lacewing, ladybeetle, wasps and praying mantis, and other beneficials, such as the orange snout mite. We also supplement them by buying in lacewing larvae and nematodes for the glasshouse and the orchids. We have been undertaking our own research of sorts by taking caterpillars we find on plants, especially our orchids, and rearing them to establish with what type of moth we are dealing with. In the case of the orchids, our epiphytes were nearly destroyed by a caterpillar that we believe to be of the family Plutellinae, though absolute identification is difficult, even for the experts to whom we have sent samples. This moth lays its eggs in the tips of the orchids, or in the bark, and the emerging caterpillars graze on the leaves until strong enough to bore into the orchid stems and chew and damage the new shoots. In desperation, we even tried using insecticides such as Dipel and Confidor, both as sprays and as drenches, as the orchids are in their own separate shade house enclosure, but nothing worked. In the end, we set up a moth attracting light with a fan and have hung moth repellent sachets on the walls. This has greatly reduced the moth population and this year we have lots of fresh new stems. The moth trap is checked regularly and all insects collected are identified, if possible, and counted; this information is recorded and

has allowed us to analyse insect populations from season to season. This whole process has led us to set up guidelines, protocols, and excellent record keeping. The RBGC nursery is Eco-Hort certified as well as being Nursery & Garden Industry Australia (NGIA) accredited.

For those of you who have not been able to visit the RBGC and the Australian Garden, I have added a brief history and a short description of the precincts within the Australian Garden, including Stage 2, with the hopes of inspiring you to come and visit — and you are certainly welcome to visit us in the nursery!

THE ROYAL BOTANIC GARDENS CRANBOURNE

As early as 1945, committee members of the Maud Gibson trust and Managers of the Royal Botanic Gardens Melbourne identified the need to acquire land for the provision of a native botanic garden. The first 174 ha were purchased in 1970 with additional purchases over the next 26 years bringing the total to 363 ha thus conserving six vegetation communities from heath to grassy woodlands and home to an array of reptiles, mammals, frogs, and birds. The RBGC opened to the public in 1989.

THE AUSTRALIAN GARDEN

Designed by Taylor Cullity Lethlean Pty Ltd with renowned plant designer Paul Thompson, the Australian Garden is a 20-ha landscaped garden that has turned a former sand mined area into a world class and award winning public garden. The garden showcases the beauty and diversity of Australian landscapes and plants. It is the exhibition garden within the 370 ha that comprise the Royal Botanic Gardens Cranbourne.

The first 11 ha (Stage 1) opened to the public on 28 May 2006. The major features include:

- **Rockpool Waterway:** explores the role of water in shaping the Australian landscape.
- **Escarpment Wall Sculpture:** designed by Greg Clark and separating the Rockpool Waterway from the Red Sand garden, it is a 90-m-long steel structure reminiscent of the massive rock escarpments associated with Western Australian and the Northern Territory.
- **Red Sand Garden:** depicts the arid Australian landscape, the beauty and texture of the “red centre” with seasonal plantings of wildflowers along the magnetic north line.
- **Dry River Bed and Arid Garden:** explores the way water has shaped the Australian landscape and how plants have adapted to dry conditions.
- **Eucalypt Walk:** showcases stringybark, bloodwood, peppermint, box and ironbark species.
- **Ephemeral Lake Sculpture:** interprets the presence and absence of water.
- **Exhibition Gardens:** includes the Kids' Backyard, Home Garden Design Past and Present, the Water Saving Garden, the Future Garden, and the Diversity Garden, which encompasses the bio regions of Australia.

Stage 2 is currently under construction which will add an additional 9 ha to the Australian Garden with an anticipated late-2011 opening to the public. Major features will include:

- **The Weird and Wonderful Garden:** draws attention to some of the strange forms, fruit, flowers, or interesting pollination mechanisms of Australian plants.
- **The Melaleuca Spits:** floating bands of *Melaleuca linariifolia* form a significant landscape feature.
- **Continental Edge Garden:** concludes the journey of water from the arid centre to the coastal margins; it is a series of five gardens with urban themes and fingers of pleached *Ficus microcarpa* var. *hillii*.
- **Eucalypt Walk:** extends into Stage 2 with subtle changes becoming more lush as it comes to an area of Australian rainforest plants with a focus on species with Gondwanan origins.
- **North and South Display Gardens:** garden plants, cultivars, and varieties in strong-banded displays of form and colour; also, horticultural research plots as “windows” into the role of botanic gardens in researching and trialling Australian plants for cultivation.
- **The Ian Potter Lakeside Precinct:** outdoor space for community events such as festivals, live music, and theatre.
- **Howson Hill:** emerging from the waterway, the Mallee Eucalypts with understorey of flowering shrubs and ground covers lead to an observation platform.
- **Gibson Hill:** *Acacia binervia* dominates this area that leads to a second viewing platform and a fire pit for Aboriginal traditional ceremonies and storytelling.

Stage 2 will complete both the vision of the Australian Garden and the journey of water through the Australian landscape. The Australian Garden allows the public to have a glimpse of the extraordinary flora native to this beautiful country with underlying educational themes, such as horticultural techniques including espalier and pleaching, sustainability, biodiversity, and conservation. It most certainly has provided the RBGC nursery with horticultural challenges!