

THE FRIENDS OF THE WAITE ARBORETUM INC.



WAITE
ARBORETUM

NEWSLETTER NO. 53
Spring 2007

Secretary
Mrs Rosemary Sawley
8379 7102

Editor
Mrs Jean Bird
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FROM THE PRESIDENT

Since last reporting to you we have had a couple of successful fund-raisers, viz., a classic guitar recital by Aleksandr Tsiboulski and a talk by Sophie Thomson.

A visit to Ian Roberts' property scheduled for September had to be cancelled because of Ian's commitments, so we apologise to anyone inconvenienced by this. We are keen to reschedule the visit for late August next year.

At the time of Sophie Thomson's talk we had considerable support from Neutrog with free samples of some of their products. We have written thanking them for their support and have also written to some of our other sponsors, viz., Vermeer, who have done considerable mulching and other work in the Arboretum, Trees Are Us, who continue to supply us with good quality mulch for the Elm tree avenue and other areas and Maureen Ross for her supply of stock to the gardens. We take this opportunity also to thank our weekly volunteers for their continuing work in the gardens and Arboretum.

A major issue under discussion at this time is, of course, water supply. We are pushing hard for a rational approach to the bore and the use of the on-campus catchment of rainfall.

Recently the Chairs of the three Friends groups met to discuss a number of issues and we have agreed to keep each other better informed of our activities and, where possible, to undertake some cooperative activity. Dr Gardner was also present at this meeting as her role will be pivotal to all three groups.

I hope to say something of the plans for next year at our Christmas function in December, which I hope you will be able to attend.

Bryan Milligan
President

IN THE ARBORETUM

FROM THE DIRECTOR

Waite Arboretum Report July – September 2007

2007 Planting

125 specimens have been planted this year. They include 51 eucalypt seedlings all raised and donated by Ian Roberts of Blyth, from wild seed he collected in Western Australia. Most of these species were not previously represented in the Arboretum.

Planting has begun in the new Dry Rainforest Demonstration Garden south of The Mallee with 7 Illawarra Flame Trees, *Brachychiton acerifolius*, to form a screen to the southern edge. Another 30 trees and shrubs have been added, as well as a few drought tolerant understorey species. The whole area was deep ripped for good drainage and root growth, and a labyrinthine path was devised to entice visitors through the garden.

The concept was developed in collaboration with Daryl Kinnane of Native Rainforest Flora who secured and propagated the wild collected seed and donated all the specimens. Planting will continue over the next few years and, as the canopy develops, more understorey species will be added.

'Dry Rainforest' may sound like a contradiction in terms. However, it is a recognised vegetation type occurring where rainfall is low (630-1100 mm) or effectively low due to topographic conditions (Harden, 2006). It is characterized by having a lower diverse canopy of 10-30 species and a scattered emergent canopy. Dry Rainforest occurs in eastern Australia from East Gippsland, Victoria, to the Bunya Mountains in Queensland. The Waite Arboretum, with an average rainfall of 624 mm, receives the minimum of the range. However, common emergents such as Crow's Ash, *Flindersia australis*, Queensland Lacebark, *Brachychiton discolor*, Rusty Fig, *Ficus rubiginosa*, and Hoop Pine, *Araucaria cunninghamii*, have performed very well in the Arboretum. Daryl is of the opinion that many of the species we are trialling do have a good chance of success without supplementary watering once they are established.

Reference: Harden, G. J., (2006). *Rainforest trees and shrubs: a field guide to their identification*. (Gwen Harden Publishing, Nambucca Head, NSW)

Arboricultural work

Chris Lawry, the Arborist, has done two more days of work, funded by the Friends. Chris was assisted by Mark Ziersch who christened his new climbing equipment (harness, ropes, prussic, etc.) under Chris' tutelage. Deadwood and crossing branches were removed from the four Urrbrae House pear trees which look markedly improved. These fine *Pyrus calleryana* 'Lynington' are a special selection from the Waite Arboretum, made by Dr David Symon and, as usual, displayed a breathtaking show of blossom this spring. Work continued with ongoing removal of dead wood and underpruning the Elm Avenue. About 30 trees have now had initial work done.

New equipment for the Arboretum

Work in the Arboretum will be greatly facilitated by the recent acquisition of a Vermeer mini loader with a large mulch bucket. Mulching helps to conserve water, decompact the rhizosphere and suppress weeds. The mini-loader will enable rapid spreading of the weekly loads of donated mulch, freeing Mark's time to do essential brushcutting and other fire risk management tasks in the Arboretum.

Visitors to the Arboretum

On 25 September Joe Bennink, Manager – Entrepreneurial Programs and Community Relations, Prof. Richard Russell, Pro Vice-Chancellor (Research) and Martyn Evans, Director Community Engagement inspected the Arboretum and gardens and expressed their strong interest and support. They also met the Tuesday morning volunteers and acknowledged their contribution.

The Arboretum was recently visited by forester Dr Ken Eldridge, CSIRO Hon. Research Fellow and Mark Richardson, Botanical Consultant. Both are involved with the development of the Canberra International Arboretum and Gardens (CIAG). The project will establish 100 monoculture forest plots varying in size from 0.5 to 3 ha. Mark has been engaged as a consultant to the Chief Minister's Dept of the ACT Government to advise on a range of matters including species selection. As the rainfall there is 640 mm and 90% of the CIAG will not be watered after establishment, Mark was very interested to view the Waite Arboretum collection. Some of the species already selected for CIAG such as Dragon's Blood Tree, *Dracaena draco*, and Englemann's Oak, *Quercus engelmannii*, are proven successes at the Waite and following his visit, other species such as Blue Oak, *Quercus douglasii*, and Cork Oak, *Quercus suber*, may be included. The possibility of the Waite Arboretum receiving some surplus specimens of endangered or uncommon species was discussed.

In-kind Support

Adelaide Urban Tree Service has donated their services for two afternoons to chip branches from felled trees which were destroyed in the fire. 43 burnt trees have now been removed, many of them large, so there were extensive piles of branches to be chipped. This service is much appreciated as is the mulch which was left on site.

Butterfly conservation sites

Waite Arboretum, Waite Reserve and the Gardens of the Historic Precinct have been registered as Butterfly conservation sites. See www.butterflygardening.net.au. Monarch butterfly larvae were observed in the Sensory Garden on 24 September and many Painted Lady butterflies have been seen in the Arboretum this spring. More butterfly attracting plants are planned for the gardens and Arboretum.

Friends may be interested in a recently published book 'Attracting Butterflies to your Garden – What to Grow and Conserve in the Adelaide Region' by Hunt, Grund, Keane & Forrest.

Waite Arboretum inclusion on the Sustainable Landscapes Trail

The Sustainable Landscapes project demonstrates and promotes appropriate park and garden design, plant species selections and sustainable horticultural practices for South Australian environments including effective, efficient and appropriate water use. Following a visit to the Waite Arboretum by Project Officer Sheryn Pitman, the Arboretum will be included in the Sustainable Landscapes Trail which she is developing to highlight urban landscapes that will endure over the long term without the need for high input of scarce resources such as water. Areas highlighted will include the Dry Rainforest Demonstration Garden, the reinstatement of the Black Forest understorey in the NW Arboretum to promote biodiversity and the Californian Oak Collection. The Sustainable Landscapes project is a collaborative partnership between the Land Management Corporation, Innovation and Economic Opportunities Group (Mawson Lakes), Adelaide & Mt Lofty Ranges Natural Resource Management Board, SA Water Corporation and the Adelaide Botanic Garden.

Treenet Symposium

The Treenet 8th National Street Tree Symposium in the National Wine Centre was an outstanding success. Over 200 delegates attended from around Australia. About 35% of delegates were attending for the first time, so our support base is widening as our reputation grows. About 30% were from interstate. The speakers were of very high calibre. Presentations on Day 1 included 'Carbon and Water Fluxes of Trees' by Prof. Derek Eamus, a controversial paper on 'Trees and Carbon Trading' by Jeff Angel, 'CitySmart – Brisbane City Council's Response to Climate Change and Improving Sustainability' by Natural Environment & Sustainability Branch, Brisbane City Council, 'Tree Management for Carbon, Energy and Drought Efficiency' by Dr Greg Moore, 'Developing Sustainable Cities: Visions, Journey and Trees' by Dr Phil McManus, 'Setting a Policy Agenda for the Urban Forest' by Dr Bob Such, 'Waite Arboretum as a Resource for Addressing Climate Change' by myself. Day 2 papers addressed specific applied topics including: street tree trials, tree failure risk assessment, Avenues of Honour project in City of Brisbane and the NSW Trees (Dispute between Neighbours) Act 2006. The symposium made \$22,000 profit to support Treenet activities. A big thank you is extended to all the volunteers who helped make the symposium a success by welcoming delegates at the reception desk and preparing symposium badges and satchels: Heather Beckmann, Sarah Cockerell, Greg Graham, Norma Lee, Jeanette Lord, Peter Nicholls, David Oates, Barbara Possingham, Helen Pryor, Rosemary Sawley, Verna Symons and Lynda Yates.

State Tree Climbing Championship

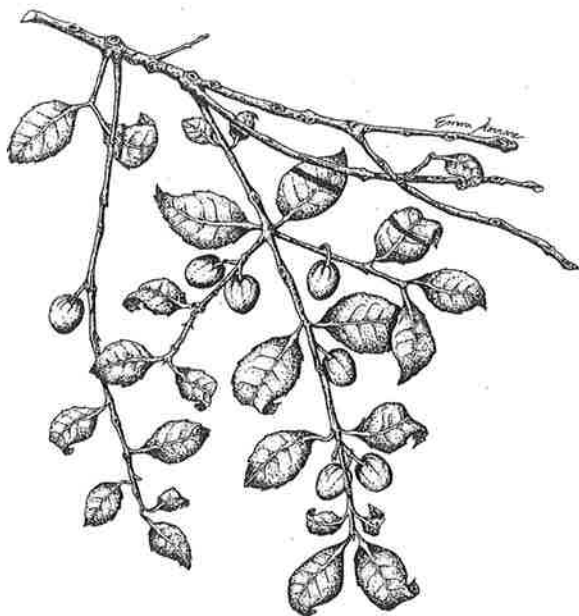
The SA Society of Arboriculture held its 8th Annual State Tree Climbing Championship in the Arboretum on 1 September in perfect weather. The event was open to the public and attracted about 200 spectators and participants.

Water permits

A Water Restriction Permit has been sought to (1) water new plantings with a hand held hose before 9 am weekdays (2) irrigation of Elm Avenue (3) watering of fire affected trees with a slow dripping hose to maximise their chance of recovery (4) watering of the gardens of the Historic Precinct using a hand held hose 9 a.m. – noon when the volunteers are present.

Jennifer Gardner
Director

The Interpretive sign for Red Saffronwood is below.



Elaeodendron croceum

Red Saffronwood, Forest Saffron

Elaeodendron croceum (synonym *Cassine papillosa*), in the Bittersweet Family Celastraceae, is an ornamental evergreen tree with glossy green leaves and a neat upright crown. It is native to Africa where it occurs on the margins of coastal and moist inland forests from Zimbabwe to the south-eastern Cape.

Abundant clusters of tiny greenish white flowers develop into large pendant fleshy fruits resembling creamy olives, each enclosing a hard stone or putamen containing a single seed. The decorative fruits are palatable to animals, but not to people.

The generic name *Elaeodendron* (Greek *elaia* olive and *dendron* tree) is derived from this likeness; while the specific name *croceum* (Greek *krokos* saffron) refers to the conspicuous layer of bright orange pigment in the underbark.

Saffronwood is a hard, finely grained timber which can be polished to a high lustre, so it was greatly valued by early settlers of the Cape for furniture and carving as well as for building.

The bark was once used for tanning and dyeing. Preparations of the root are poisonous, even fatal, and witchdoctors have used them for trial by ordeal. Among Zulus the tree is reputed to have powerful magic qualities with the ability to blunt evil influences.

Drawing by Emma Kinnane, text by Jennifer Gardner. Sign donated by The Friends of the Waite Arboretum Inc.

POT – POURRI

THE ORIENTAL PLANE—*PLATANUS ORIENTALIS* L.

Introduction

Oriental plane is a handsome, deciduous tree with palmate leaves, ball-shaped fruits and a trunk with pale grey, dappled bark. It is well suited to both warm and cool temperate climates, especially those with warm dry Mediterranean summers, with which we in the settled areas of South Australia are familiar. It can grow up to 50m in favourable valley sites beside streams. It is long-lived and trees of large girth have been recorded, though most have had hollow-trunks, one with a cavity large enough to seat 15 to 20 people¹.

The species has been selected to grace the gardens and building sites of civilized peoples for at least 2500 years. It must be one of the first, if not the first, kind of tree to appeal purely for reasons of its appearance and the shade it offers. It was prized for its landscaping qualities. It also attracted the pioneers who developed gardens and parks for their ambience. Over the centuries, the Oriental plane has been introduced to more and more places. The hybrid "London plane", used as an avenue tree that is tolerant to modern urban pollutants e.g. motor traffic, is well known to modern generations.

Genes from the Oriental plane provided the characteristic flaking bark of the London plane.

There is a link between Oriental plane and my previous two contributions about spirality in tree shoot growth. I mentioned two exaggerated 'corkscrew' varieties of willow and hazel but the Oriental plane displays a subtler and milder form of this eccentricity, for its 'branches are sinuous or contorted'⁴. In fact, sinuosity is characteristic of trees in exotic locations and it was probably this feature which attracted the ancient Persian and Hellene tree fanciers. The 19th century discovery of the hybrid London plane suggests that the evolutionary history of the parent species might be worth tracing.

The plane tree family

The plane tree family, Platanaceae, is separated into 5 groups based on conventional taxonomy. This recognises one set of species comprising a group in Eastern North America linked to another in northern Mexico. One of these species is the 'Western plane', *Platanus occidentalis* L. of the US that is the other parent of the hybrid London plane. Two more groups of species form the other major set, one group indigenous to Western USA and the other in South-eastern Europe and Asia Minor. The last mentioned group contains *P. orientalis* L. The remaining section was a single species (*P. kerrii*) from Laos, regarded taxonomically as a more primitive type². These 5 subdivisions have been confirmed recently³ by DNA analyses. As a result, at the 'root node' level of evolution, the primitive species, *P. kerrii*, is placed in the subgenus *Castanophyllum* and the rest with the original 4 sub-sets in the subgenus *Platanus*. The fossil record, climate 'reconstructions' from plate tectonics, DNA analysis and historical references have been combined in an attempt to trace the evolutionary history. The first split between the two major sets, presumed due to the existence of a geographic barrier was confirmed but was not able to be dated. As a matter of interest, the hybrid London plane is known to have arisen spontaneously in modern times. It has been speculated that the parent species were separated geographically probably as long ago as 35 mybp. The second split within those sets associated with separation on an intra- and inter-continental scale, was 'at least 15 million years ago'. Separation into the current species has occurred since.

Distribution of the Oriental plane

I became intrigued with Oriental plane when I read of *Chinar* trees, in an adventure novel about a medical team working in the extreme NE of Pakistan, near Chitral, and adjacent Kashmir. It was clear that both large trees and others growing in valleys were highly regarded but there was no hint of their botanical name. I followed this up and discovered *Platanus orientalis* and its interesting history. It turns out that *chinar* is a local name of Persian origin and a variation on it, *chenar*, exists from Northern Turkey, through Iran and south-central Asia, to the western Himalaya mountains, especially Kashmir²³ and further eastwards to the foothills in India, in Himachal Pradesh²⁵. Westward expansion began to the west and south of Greece, and included the Aegean and Mediterranean islands. Here variations on the name *plantane* have been usual, including modern use of *plane*. The timber of Oriental plane has long

been called 'Lacewood', which has been used to link ancient texts with the botanical identity of this tree.

The endemic range

The likely extent of the native range of Oriental plane, has been confused by two factors viz., human destruction of habitat within the range and a human propensity for taking this attractive tree to decorate areas of settlement or conquest, spreading in all directions from its probable native range. The trail I discovered mirrored the distribution of another tree species in which I had an interest. This was a pine, *Pinus eldarica*, Eldarian pine, now relatively rare but also known from fossil material in north-eastern Greece. For Oriental plane, 'solitary' trees were found up to 2000 years old dating to the time of Roman occupation⁹⁻¹². The fossil and historical references⁴⁻⁸, appear to support the view that the endemic 'core' of both species is the region bounded by northern Greece. The plane was found from Macedonia in the west to the Caucasian mountains in the east and southwards into Armenia, Georgia and Azerbaijan in south-central Asia. It appears to have prehistoric antecedents, since *Platanus* spp. occur as Tertiary era fossils from Uzbekistan but current distribution *sensu stricto* appears to be exotic¹³⁻¹⁴.

Early distribution as an exotic

The dispersal from the core region is reflected in historical records first associated with the Persian empire, then, following Alexander's conquests, of consolidation in Greek colonisation and lastly, in classical times, colonisation by the Romans. The first expansion to the south appears to be associated with Hellenistic culture in the period 750 to 500 BC into the eastern Mediterranean spread to include Crete and Cyprus and lesser islands. The Persian Empire at its greatest spread westwards into Greece and conquests reached the endemic zone of Thrace in NE Greece. The Persians were probably the people who first developed the idea of parks which were 'an essential adjunct of a Persian governor's court. ... These parks impressed the Greeks...'¹⁵. *Chinar* was said to be prized in Persian gardens from this time (559-330 BCE) for its beauty and longevity. This period was followed almost directly (336-323) with the eclipse of Persia by the Greek (Macedonian) conquests of Alexander that stretched to western parts of modern Pakistan to the Indus river valley in the east and reached up NE into the Pamir mountains of SE Uzbekistan (the valleys of the Oxus and Amu Darya rivers) and NE Afghanistan, close to, if not over the pass into Kashmir. Towns still named Alexandria exist to this day across this vast area⁵. Expansion of the range into Bulgaria is considered to be as an exotic but ancient, from a Macedonian base population⁸. Although the presence of Oriental plane in Crete is ancient, probably related to Hellenistic civilization before 500 BCE, feeding studies of riparian and micro fauna found they all preferred litter from species other than *P. orientalis*¹⁷⁻¹⁸.

Western extension of the range of Oriental plane across the western Mediterranean was through Roman settlements (212-200 BCE) and later in 30 BCE. The appearance of the plane tree in temperate north-western Europe into Belgic Gaul, was described by Pliny¹⁶.

Later distribution as an exotic

The next phase of expansion both to east and west appears to date from Mediaeval times, from the 12th – 17th century²¹. Expansion of the species into the Kuban steppes, drier areas N of the Caucasus and into Baluchistan appears to be as an exotic, because well-developed seedlings or rooted cuttings are needed if it is to succeed²¹. In addition, the existence of the plane in at least two major types of ecosystem has been recognized¹¹. Records of expansion exist from the 16th and 17th centuries, across the high passes between Russian Uzbekistan into the Chitral region of NE Pakistan and to Kashmir, as they do for NW India but specimen trees older than this time exist, suggesting movement of desirable tree species of economic, horticultural and medicinal importance was along trade routes from the 13th century, or earlier²²⁻²⁴. Later expansion, especially in the West, has followed colonisation in the 18th and 19th centuries.

The specimen tree in the Waite Arboretum succumbed to the fire in December 2006. The Oriental plane sheds bark in small flakes in warmer climates, like Adelaide, which increases its vulnerability to fire but bark shedding is unusual in cool temperate climates found in mountainous regions or at low altitude in north-west Europe. British accounts refer to bark 'becoming thick and rugged' and offering some protection against cold and fire.

It seems that the natural home of the species in warm temperate climates is close to streams and rivers. When relatively undisturbed this ecosystem is called riparian forest, characterised by dampness and vegetation which is commonly shrubby, in which grasses are uncommon and ground-surface fires are rare. Nonetheless, Oriental plane definitely benefits from warm dry summers and it grows most vigorously in humic conditions where subsoils are warm and damp but well aerated. On other sites throughout its present distribution, it is highly regarded for its ability to grow and succeed in seasonally-dry soils in summer once it is well-established¹⁹.

To those who know it, this handsome tree, suited to the climate in the settled areas of South Australia, still has much to appeal to current generations. Originally planted to restore shade and ambience into places where over-clearing had resulted in loss of topsoil and left hot, stony and gravelly surroundings to urban buildings upwards of three thousand years ago, the same conditions still happen today. Whilst London plane is being planted alongside major road arteries in our city and towns, there is a place for Oriental plane trees to be planted, once again, to rehabilitate and decorate urban and rural townships.

Robert Boardman

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Note: 'FA' refers to Forestry Abstracts, a publication of the Commonwealth Agricultural Bureau, Oxford, UK.

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- ¹³Khudaiberdyev, R., 1989. History of the development of the genus *Platanus* in Central Asia. *Uzb. Biologicheskii Zh.* 3:38-42.
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NEW MEMBERS

We warmly welcome the following new members:

Mrs Margaret and Mr Andrew Black, Malvern; Mrs Katie Hislop, Walkerville;
Mrs Joanne King, Netherby; Dr Susan O'Brien, Colonel Light Gardens.

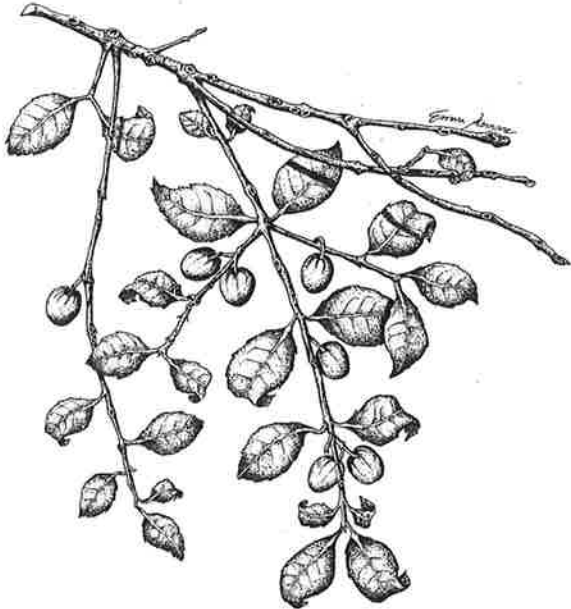
FORTHCOMING EVENTS

Monday 3 December: 6 – 8 p.m. Urrbrae House. Joint Friends' Christmas Party. Yvonne Routledge and Peggy Rowe will address the gathering. **At 5.30 p.m.** there will be a guided walk through the new rainforest garden.

The Interpretive sign for Red Saffronwood is below.

Elaeodendron croceum

Red Saffronwood, Forest Saffron



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POT – POURRI

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