

THE FRIENDS OF THE WAITE ARBORETUM INC.



NEWSLETTER

SPRING 2000

No 25

Mrs Rosemary Sawley
Secretary
8379 7102

Dr Barbara Possingham
Editor
8363 0346

GENERAL MEETING

13 August, 2000

Since 1994 the Friends of the Arboretum have enjoyed so many excellent addresses and this evening was no exception. It was a privilege and also reassuring to hear two scientists from Adelaide University, **Dr David Paton** of the Department of Environmental Biology and **Dr Dagmar Hanold**, Department of Applied and Molecular Biology, speaking of their work on **Mundulla Yellows**.

This subject has become a cause for great anxiety among those who care about indigenous flora and realise its importance in sustainability of the biosphere, but we could take some comfort from hearing these scientists in whose capable hands rests some of the current research. David gave us the history of the disease from first reports at Buckingham in the south east in 1979 and the gradual realisation that this distribution was widening to Bordertown. It was different from what was first thought to be dieback due to salinity. In the early 1990s David began a survey of affected trees mapping frequency of yellowing and insect invasion. It was considered that the name of the town Mundulla was a more effective epithet than Buckingham from whence it had spread.

The inexorable progress of Mundulla Yellows continued until now it is not only found all over South Australia but in most other areas of the country and not only in the eucalypt population but in many other species of indigenous vegetation. Without an answer being found there could be almost complete elimination of the flora of temperate Australia. There are hypotheses about the speedy distribution of this disease but no answers: it could be insect or human intervention and connected with roadsides. Our comfort lies in the fact that the challenge is being taken up, facts are being gathered and proper scientific grounds laid.

Dagmar spoke about her research (summarised below). Hers was a tale of patient sorting of facts from opinions and the arrival at hypotheses from which to work. Hypotheses are many and are continuing to be narrowed. It was encouraging to hear that progress, especially in the past year, has been continuous, although there are no answers yet to curb this awesome disease. It was inspiring to hear of the patient scientific work which is proceeding and therein lies our hope that it will be understood and prevented from its destructive course.

Barbara Crompton

For more detail about Dr Paton's work see *The Friends of the Waite Arboretum Newsletter* No. 22 (Summer 2000).

Dr Hanold has kindly written, for us, a brief summary of her researches.

THE CURRENT STATE OF MUNDULLA YELLOWS RESEARCH **Dr Dagmar Hanold**

Mundulla Yellows (MY) is a newly recognised lethal disease of *Eucalyptus* species in South Australia. There is evidence that the disease also occurs in Western Australia, Victoria, Tasmania and New South Wales, and in genera other than *Eucalyptus*. Pilot surveys indicate that the disease is currently present in an area exceeding 25 000 km² with a high incidence in scattered sites, particularly in the South-East and Adelaide areas.

A preliminary survey is being conducted in the southern Australian states (funded by the RIRDC / LWRRDC / FWPRDC Joint Venture Agroforestry Program and Environment Australia).

MY has been reported in trees of all ages from roadsides, paddocks, revegetation sites and in native vegetation. Once symptoms appear, there is reportedly no recovery and the tree dies within a few years. Symptoms have recently been described in a field guide (available from the Arboretum Office for \$3).

The cause of MY is unknown, but based on available evidence from graft transmission experiments it is likely to be biotic and contagious. Work is in progress (funded by Environment Australia) to identify a causal pathogen, and to establish molecular diagnostic techniques for the detection of MY. Symptom development can be influenced by environmental and host factors and is therefore an unreliable tool for disease diagnosis. An extraction and purification method for *Eucalyptus* tissue for analysis by gel electrophoresis has been devised. It is being used to compare nucleic acids (which would comprise both general components from host cells and possible genomic fractions) from healthy and MY trees. Some unusual nucleic acids have been identified in MY trees, and their potential association with a viral or viroid pathogen is being investigated. Phytoplasmas have also been found in eucalypts and a possible role in the MY syndrome is currently being assessed.

Research on the epidemiology and mode of spread of MY to complement the molecular work is also conducted in order to design control strategies, and funds to continue these studies over a number of years are currently sought. The wide and scattered distribution suggests that aerial transmission (possibly by insects) may play a role. If the disease cycle can be identified, strategies can be designed to disrupt it and thus control the spread of MY.

MY poses a threat to a wide range of eucalypts and other species of the native flora comprising natural Australian ecosystems. Therefore this work is relevant to the preservation of wildlife habitats and threatened species (both plant and animal), and the protection of biodiversity. A number of industries are also at risk from MY.

Excursion to Ian Roberts gallery and gardens, Blyth September 10, 2000

Barbara Possingham

Nineteen Arboretum members and friends assembled in the Medika Gallery at Blyth. We spent about half an hour looking at the interesting and beautiful collection of paintings, prints and craft and all of us carefully avoided stepping on the two tame cockatiels wandering around the floor.

While in the gallery, Ian gave us a short talk in which he described his early life, as a farmer's son, growing up and attending the local schools, apparently without great enthusiasm. His grandfather was instrumental in encouraging him to learn about trees, and he has retained this passion throughout his life. His particular interest lies in painting plants, particularly eucalypts.

After finishing his schooling Ian spent a number of years as a farmer and then decided to take a risk. He would try, for several years, to earn his living as a painter and photographer of plants and birds. If this didn't work out, he could return to the farm. There were no problems. He has succeeded in his dreams for the past 17 years, and will no doubt continue as long as he is able. At present Ian is painting all the eucalypts he can find. 260 have been done and when he reaches the age of 75 (he is nowhere near this as yet), he hopes to have finished this task.

At about 11.45, we looked carefully at the skies above, crossed our fingers, so that it would not rain, and processed, in single file, following Ian's car. Before leaving the gallery we noticed a fine specimen of quandong near the gallery gate and also a *E. pimpiniana*, that was flourishing, even though it grows on the Nullarbor, in a climate very dissimilar to that of Blyth.

We drove several kilometres to Banksia Ridge on somewhat damp, dirt roads. The property, which Ian and a friend own, was originally cropped, but had been left vacant for seven years before it was purchased, after a large bushfire, in 1989. Much of the property of 66 acres is a natural blue gum woodland *E. leucoxyton*, with one pure stand of peppermint box *E. odorata*. There are some steep gullies with fairly undisturbed native vegetation including several orchid species. About six acres have been planted with a large variety of eucalypts, hakeas, grevilleas, acacias, melaleucas, correas, banksias, casuarinas and many others. He has planted about 1500 plants covering 600 species. The success of the plantings is, to a large extent, due to the acid soil. The rainfall is 560 mm, cf Blyth with 406 mm, and although one would have thought too high for dryland species, many are successful.

The banksias were the most spectacular and were often used as subjects for Ian's art. Hares, kangaroos and euros cause most destruction, the hares being particularly fond of the *Chorizema cordatum* Ian has planted. The kangaroos do not eat the foliage but seem intent on pushing plants over, possibly scratching themselves. The grasses are controlled by mowing and this has led to a reduction in pasture grasses and an increase in native grasses. Self-seeded blue gums are often 'mowed' for a few years and when spared, they grow very quickly, probably due to their relatively large root systems.

We had two walks in this garden, each guided by Ian. In between we all enjoyed lunch, and, the crossing of fingers had worked, a drizzle started only after we had nearly finished putting things away. The final luncheon course was a pleasant surprise - a magnificent piece of quandong tart with proper, thick cream, cooked and provided by Ian.

After the second walk we again processed in our vehicles to another property where Ian was planting a geometrically organised planting of different tree families. In a few years' time, this will provide a remarkable vista, as parts of the property overlook the plains to the west. We had a little excitement near the end - three cars got bogged on a muddy track! A few of us had the thrill of being able to push a car while others were able to hone their undoubtedly superb wet-road driving skills.

BIRDS OF WAITE ARBORETUM AND WAITE CONSERVATION RESERVE

Max Possingham

PART 1

The birds of the Waite Arboretum (WA) and the Waite Conservation Reserve (WCR) are typical of those in the open areas of suburban Adelaide and the grazed foothills. Several observers have documented their records: J. Saunders (1983), J. Saunders (1995) and B.C. and B. Crisp (1994). In addition J. Gardner has unpublished records from the WA by herself from May 1986 to October 1986, by R. Pearce from May 1987 to March 1988 and I. R. Falconer dated 1963 and from the WCR by P. Taylor from November 1993 to February 1994.

S. Field (2000) proposes that visitors to the WA and WCR record their bird observations to support the monitoring of long term changes in the avifauna of the Mt Lofty Ranges. Record Sheets and a map of the WA are available from J. Gardner and a brochure, available at Urrbrae House, will assist visitors to the WCR. Visitors should not believe that the recording of currently common species is pointless, as such species may be tomorrow's conservation disasters, eg the Passenger Pigeon in the USA. In this respect, it is important to note that J. Saunders recorded 55 species between 1972 and 1981 in the WA with the total declining to 37 between 1990 and 1995.

This article, in two parts, discusses the bird species in a manner that assists the casual bird-watcher; Part 1 discusses the species commonly recorded and Part 2, the species less likely to be observed. The use of one of the recent field guides, Simpson and Day, Slater or Pizzey is recommended. The more recent field guides have more informative illustrations.

For the serious student there are identification aids in the form of cassette tapes of bird calls and compact disks with descriptive information, illustrations and calls.

I have divided the bird species into communities that have a common habitat use:

- | | |
|------------------------------|-----------------|
| 1. Water and wetland species | 2. Raptors |
| 3. Aerial feeders | 4. Ground |
| 5. Nectar feeders | 6. Warblers |
| 7. Leaf and bark gleaners | 8. Generalists. |

Water and wetland species

The watercourse and one small dam plus its overflow drain in the WA attract a few water birds and wetland species. Most commonly seen are the Pacific Black Duck and the Australian Wood Duck, the former more likely to be on or near water, filtering the shallows for seeds of grasses, sedges and other aquatic plants, occasionally feeding on worms, grubs and other animal matter. The latter, always near water, but ranging more widely over pasture land, feeds on fresh grass and legumes. Both are regular breeders in the WA. Many of the apparent Pacific Black Duck are really hybrids with the European Mallard.

Raptors

Raptors are not commonly observed in the WA or the WCR; they are discussed in Part 2.

Leaf and/or bark gleaners

Many Australian species feed on insects and leaf-eating grubs as well as insects, spiders, etc. inhabiting both the smooth and rough bark of the eucalypts. Some of these birds are medium sized birds such as the honeyeaters and the whistlers and other are smaller and commonly termed warblers, eg the fairy-wrens, thornbills, scrubwrens and chats. However, this community seems to shun regions well separated from native vegetation, so none are common in the WA. One exception to this rule is the Striated Pardalote, so I am surprised that it is not common in the WA. J. Saunders (1982) remarked that this species was periodically recorded from August to December, but declined in the 1980s.

The species commonly recorded in the WCR are the: Striated Pardalote, Weebill, Superb Fairy-wren and White-browed Scrubwren. The former two usually inhabit the upper canopy of eucalypts while the latter two inhabit low dense shrubs with the Superb Fairy-wren often venturing out onto bare or grassy ground, provided the grass is sparse or low. The White-browed Scrubwren is more secretive, rarely venturing into open shrubbery or onto the ground, so it is difficult to record unless the scolding call is recognised. The Weebill has the interesting and diagnostic habit of gleaning insects or caterpillars while hovering near the leaf canopy and is almost never observed feeding on the ground.

Generalists

Some species of birds can only be classed as 'generalists' in that they exploit a variety of habitats and are catholic in their choice of food. Some of these species have this characteristic in their native habitat being wide ranging and so exploiting a wide range of foods, eg the Little Raven which is commonly observed in the WA and WCR. Note that there are five corvids in Australia almost identical in appearance with the Little Raven which is the common species around south-eastern Australia.

Other species have acquired the 'generalist' character by association with man, eg the Pacific Black Duck, Noisy Miner, House Sparrow and Australian Magpie. Most of these species are very wary away from man, eg the Noisy Miner (taxonomically, a honeyeater) and the Australian Magpie will alarm when man is sighted at a distance of hundreds of metres, but become very tame when continually associating with man, particularly when food scraps are available.

Other species in this community commonly seen in the WA and in adjacent parts of the Waite Campus are the: Crested Pigeon, Spotted Turtle-Dove, House Sparrow and Magpie Lark. The Grey Currawong, only common in the WCR, has not acquired this 'generalist' character there but, if the picnic sites were used, it soon would.

References

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Aerial feeders

The only common dedicated aerial feeder in the WA is the Welcome Swallow, which also breeds there and probably in the WCR. The Grey Fantail is another aerial feeder that has the unusual, but effective, feeding mode of flitting erratically around the vegetation (often high in the canopy of tall trees) presumably to disturb the flying insects upon which it preys. This species is not common in the WA but is readily recorded in the WCR.

Other species likely to be observed feeding on flying insects using the hawking mode of capture, are the honeyeaters, mainly the New Holland Honeyeater, although the European Starling has been observed using this feeding mode.

Ground Feeders

Because of the large food source provided on both grassy and apparently bare ground, a large number of species utilise this habitat. Some eleven species of this community are easily observed. Most common in the WA are the: Australian Magpie, Galah, Long-billed Corella, Crested Pigeon, Spotted Turtle-Dove, Feral Pigeon, Adelaide Rosella, Eastern Rosella, Red-rumped Parrot, Masked Lapwing, House Sparrow, Common Blackbird, European Starling and Magpie Lark. The Long-billed Corella, Magpie Lark (often called Peewee or Murray Magpie) and Masked Lapwing are less common in the WCR. The two wetland species mentioned above could also be classed as ground feeders.

The cockatoos and parrots mainly feed on grass roots and rhizomes in the wet seasons and fruit, grain and grass seeds in the dry. In recent years, the Long-billed Corella has visited since 1987 in gradually increasing numbers, exploiting the tubers of the nut grass in the WA. Other foods utilised by the cockatoos and parrots are onion grass, corms and bulbs of sedges, rushes and pasture weeds. The Crested Pigeon, House Sparrow, Spotted Turtle-Dove and Feral Pigeon (the latter three being introduced species) are basically seed-eaters, all being also attracted by scraps of food.

The Common Blackbird, introduced from Europe and common in the WA and the WCR, is a ground feeder that is well acclimatised to Australian bushland, probably displacing the, now rare, White's Thrush. The Magpie Lark, a common trusting species in towns and cities has been a taxonomic difficulty until recently when DNA analysis placed it amongst the wagtails. It will become very tame in the presence of humans. It is always near water, feeding in muddy areas or pasture on small insects or scraps of human food.

One ground feeder, common in the WCR and occasionally recorded in the WA is the Yellow-rumped Thornbill. It is a widely distributed species spending most feeding time on the ground, mainly in short grass near Adelaide, but on nearly bare ground in arid areas. It is easily identified by its 'chip-chip' contact call when flying.

Nectar feeders

Although there are a large number of nectar feeding honeyeaters in South Australia, only a few have been observed in the WA and none of those in large numbers. They are the New Holland Honeyeater and the Red Wattlebird (quite common in the WCR, but less so in the WA) and are usually seen feeding on the eucalypt blossom and insect material gleaned from leaves. In contrast, flocks of Rainbow and Musk Lorikeets (the Musk in smaller numbers) are commonly seen feeding on eucalypt blossom, in both the WA and the WCR, using the nectar for energy and the pollen for protein. The two lorikeets will also take fruit when available and, occasionally, insects.

FROM THE COMMITTEE

Meetings were held on August 2 and October 4

- Norma Lee reported that we now have an ABN number and are registered as a tax-exempt charity. Thanks are due to Norma for the enormous amount of work this has involved, viz. telephoning, letter writing, form filling etc. She deserves a medal.
- A letter was received from the Botanic Gardens indicating that they had established a website to provide high quality gardening information. Friends may be interested in viewing www.botanicgardens.com.au and will be listed there soon.
- Plans are in hand for the fund raising dinner.



IN THE ARBORETUM The Dragon's Blood Tree

Eric Sims

The fine specimen of *Dracaena draco* that provides the inspiration for the very appropriate logo of our Arboretum, was planted at the Waite in 1929. The species is a native of the Canary and Cape Verde Islands in the Atlantic, and apparently each island group has its own form, our tree having the erect branching habit, the relatively massive trunks, and the longer leaves of the Canary Island form.

The branching of *Dracaena* is sympodial, that is, there is no single, persistent growing point, but growth changes direction as a result of the frequent replacement of the growing apex by a lateral growing point below it. Thus the terminal inflorescence, after it has matured in the summer, is pushed aside as one or more axillary buds develop in the axils of the leaves immediately below it. This new shoot then replaces the parental axis. One can appreciate this order of branching when looking up under the spread of the canopy, to admire the diverging, slightly swollen, branch segments, like the forearms of Popeye the Sailor, that are marked by constrictions which are the scars left by the dried (formerly terminal) inflorescence stalks. One can also see the beginnings of the adventitious roots hanging down from some of the branches.

The genus *Dracaena* has been variously assigned to the families Agavaceae or Liliaceae. The popular name, Dragon's blood, is due to the fact that the red resin exuded from the trunk of another species *D. cinnabarini* from the Island of Socotra, off the Horn of Africa was formerly used for varnishes (especially for violins) and employed medicinally. The famous Dragon-tree of Teneriffe in the Canary Islands, was popularly believed to be 6,000 years old when the eminent scientist and traveller, Alexander von Humboldt, measured it in 1799. It was then hollow and 45 feet in circumference at chest height; it was blown down in 1868. The oldest Dragon-tree in Adelaide is likely to be the fine one near the flamingo pond in the Zoological Gardens on Frome Road, planted about 1870. It, and the equally fine one at the Victoria Park Race-course, should be on the Significant Tree Register of the National Trust.

Acknowledgment: I am indebted to Dr David Symon for help in preparing this article.

[Curator's note: There are 13 *Dracaena draco* and 4 *Dracaena ombet* in the Arboretum.]

Catalina Ironwood
***Lyonothamnus floribundus* (Family Rosaceae)**
David Symon

This evergreen tree is rare and little seen in South Australia, being restricted in origin to the offshore islands of Southern California.

The somewhat fernlike leaves are mostly 3 to 5 lobed, each narrow lobe having a serrated margin. As in the Bottle Tree, these divided leaves may be a semi-juvenile form, as mature leaves are reported to be simple. The leaves are shiny green above and paler below. One of their attractions is their strong, resinous aroma on hot days, although they are almost without scent when it is cold.

The tree has the habit of a Mallee, having a woody lignotuber from which arise several stems. As with the Mallee, this may well be an adaptation to occasional fires. The bark is one of its attractions and hangs in abundant, reddish strips from the trunk.

The inflorescence is in the form of a flat-topped head, about 15 cm wide, of small, white spiraea-like flowers followed by small capsules. The whole dries inflorescence remains on the tree for a long time and is one of the tree's few drawbacks.

Our trees [# 818 (C7), #807 (D7), #794A (C6)] were planted in 1964, 1964, and 1984. They are now 7.7, 7.2 and 5.6 m tall respectively. This agrees well with the 8 m reported from Catalina, which makes it a medium-sized tree, certainly not too large for a domestic garden, especially if it is allowed to produce 2 or 3 of its attractive trunks. The wood is reported to be heavy, dense and exceedingly hard, hence the common name.

The only tree I know outside the Waite Arboretum and the Adelaide Botanic Gardens was a tall one in the garden of the late Professor J.G. Wood, who was a Professor of Botany at Adelaide University, on Sunnyside Road, Beaumont.

I am convinced that this tree should be tried more widely. We have no idea of its lower rainfall limits nor, for that matter, how it would grow at My Lofly! Have we an enterprising nurseryman willing to produce a batch for more extensive trials?

THE WAITE ARBORETUM
A statement of its personal significance
Doug Bell

In the mid-1940s, my family moved from NSW to Adelaide and we settled at 102 Cross Road, Highgate. As an inquisitive youngster I discovered the Arboretum and soon became a regular visitor, wandering around, picking up the occasional mushroom and looking at the trees. Some of the exotic names intrigued me and I wondered about those foreign countries from which they had originated.

I distinctly remember the mesquite, as that name often cropped up in the wild west fiction then popular with boys. This tree sufficiently fired my imagination to cause me to begin systematic forays into the Arboretum to locate the names of interesting trees.

That period, I now realise, was to influence me throughout my life, and I began to look for definitive books on trees. I was soon able to recognise a great variety of trees while travelling or while in other people's gardens. This habit my family found faintly amusing - strange but boring.

I have made things from wood since early childhood. During the 1990s, when our Woodgroup began to utilise some of the fallen or pruned timber from the Arboretum, I was able to combine my original interest in the trees, with the new knowledge of the wonderful woods they produce. These woods are often overlooked in favour of the more common species sold commercially.

Incidentally, for years I have been noticing, in American magazines, intriguing articles and photographs showing the wonderful grain and figure in mesquite used for carving, turning and in furniture. I was very disappointed when Jennifer advised me that the Arboretum mesquite had been removed a year or so before. However, I now have two logs of mesquite obtained from Queensland, where the tree was introduced for stock feed and is now a pest tree.

My wood came from a 440 hectare property where they are clear-felling and burning the trees. At least I have now achieved an ambition, some 57 years after discovering the tree. I hope to utilise some of this wood in my next exhibition.

I really owe a debt of gratitude to the Arboretum.

Note from Editor: Doug Bell was past President of Woodgroup SA and a regular contributor to their exhibitions. There was a solo exhibition of his works between September 9 and September 24 this year in Urrbrae House. Some of the items exhibited were made from Arboretum timbers.

ARBORETUM NEWS

Jennifer Gardner

Over 70 trees have been planted this year including: 7 cycads, 17 palms, 14 oaks, as well as 4 tenazas and 5 Texas mountain laurels grown from seed I collected in Texas in 1998. In addition, Flemings Nurseries in Victoria donated 17 advanced specimens of new cultivars of maples, ash, catalpa, crape myrtle and elm which will be reference specimens for our TREENET trials. More palms and cycads will be planted at a working bee on 5 November.

The inaugural TREENET Street Tree Symposium was held at the Waite Campus 7 - 8 September and attended by 80 delegates representing Local and State Government, nurseries, landscape professionals, educators from the high school, TAFE and university sectors, arborists, arboricultural industry suppliers and utilities. Keynote speakers, including three from interstate, presented the latest information on best practice methods of street tree management, education and development. The wide range of topics were well received. The results of a TREENET survey sent to all 68 South Australian Councils were presented. A remarkable 33 Councils (48%) responded to a 12 page survey. Many delegates took the opportunity to enjoy a guided tour of the Arboretum at the conclusion of the symposium. David Lawry, Chair of TREENET, Gareth Hodges, Project Coordinator and I will launch TREENET on the national scene with a presentation and display at the International Society of Arboriculture - Australian Chapter Conference in Brisbane 12 -13 October.

Once again this year, Urrbrae Agricultural High School students, their teacher Ed Tylkowski and I harvested and displayed material from the Waite Arboretum at the Royal Adelaide Show. We won 28 First Prizes, 10 Second Prizes and 3 Third Prizes for our efforts. It is very pleasing to collaborate with the students and raise their awareness of the Arboretum.

Volunteers continue to make a substantial contribution by guiding, planting new trees, putting out labels, scanning images for the database and general maintenance.

NEW MEMBERS

A warm welcome to the following new members:

Alison Lamshed, Medindie Gardens
Ian Mosel, Highgate
Jim & Pat Murchinson, Rosslyn Park
Sharley Family, Netherby
Muriel Steghens, St Peters

THOUGHTS ON TREES

I shall give Robyn a rest, and resort to Genesis.

“But of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die.”

FORTHCOMING EVENTS AND DIARY DATES

7.30 pm Friday 17 November, Urrbrae House
'Arabesque - Arab contribution to Mediterranean cuisine'
Chef Rosa Matto joins with Botanist Dr David Symon
to present a unique dinner with botanical commentary.

[Flier and booking form enclosed with this Newsletter]

11 am Sunday 26 November
Official opening of the **Palm and Cycad Walk**
followed by a **BYO picnic** in the Arboretum.

6 pm Monday 11 December
Friends of the Waite Arboretum, Friends of Urrbrae House and Volunteers
Short walk through Arboretum
followed by champagne and Christmas cake in Urrbrae House.