

Observations on some plants in South Australia

Mike Wilcox

I have made four separate visits to South Australia – in Oct 1981, Nov 2000, Nov 2011 and Nov 2013. The first two visits were on forestry business to Mt Gambier in the south-east corner of the state, where the annual rainfall is around 700 mm, mostly in winter. This is in the Green Triangle shared with south-west Victoria, and is a major centre for *Pinus radiata* forestry. The land is c. 50 – 100 m altitude, flat to very gently rolling, and sandy, with some limestone outcrops. Most of the pine plantations are on former bushland, comprising *Eucalyptus baxteri*, *E. viminalis* subsp. *cygnetensis*, *E. obliqua*, *E. ovata*, *E. willisii* subsp. *falciformis*, and with an understorey of *Acacia melanoxylon* and *A. mearnsii*.

The Nov 2011 visit was to Adelaide, the Mt Lofty Ranges, Barossa Valley, and Kangaroo Island. The Nov 2013 visit was to Adelaide, the Murray River (Murray Bridge to Blanchetown), and Victor Harbour. The purpose of this article is to record observations on a selection of plants which particularly caught my attention.



Fig. 1. Dainty maidenhair fern (*Adiantum capillaris-veneris*), Big Bend, Murray River. Photo: 20 Nov 2013 (all photos by M. Wilcox).



Fig. 2. River red gum (*E. camaldulensis*) and lignum (*Duma florulenta*), Ngaut Ngaut site, Murray River. Photo: 21 Nov 2013.

River bank plants

Acacia stenophylla

(shoestring acacia, river cooba) Leguminosae
This tree grows in the same Murray River floodplain habitat as *Eucalyptus largiflorens*. It has a weeping habit, with long, slender, thick phyllodes, and a long pod with very prominent constrictions. It can tolerate salinity and periodic flooding. Other floodplain wattles in the area are umbrella wattle (*A. ligulata*), Oswald's wattle (*A. oswaldii*) and native willow (*A. salicina*).

Adiantum capillaris-veneris

(dainty maidenhair fern) Adiantaceae
During a cruise on the Murray River we were taken for a close-up look at the impressive sandstone cliffs at Big Bend. These cliffs are vertical and too crumbly to support plants, except at the very base just above the waterline. Here in calcareous crevices grows this maidenhair fern, which is a native of America (Fig. 1). The same fern can be found in Auckland growing on the calcareous mortar of brick walls in Manukau Road near the Greenlane Road junction, and also at the Domain near the entrance to the fernery.

Duma florulenta (syn. *Muehlenbeckia florulenta*)

(lignum, tangled lignum) Polygonaceae
This distinctive shrub is closely associated with *Eucalyptus camaldulensis* and *E. largiflorens*, and is very prominent on the flood plains along the lower Murray River, where mean annual rainfall is only 300 mm or so (Figs. 2 & 3). It forms dense thickets of tangled stems and branches, adjoining or beneath these trees. The plant is leafless most of the time and has a very deep root system, penetrating to at least 3 m. It is highly tolerant of drought, flooding and salinity, and valued as wildlife habitat (including snakes and wild pigs!). As well as lignum, the understorey in black box and river red gum flood plain forest has numerous salt-tolerant chenopod shrubs such as black-seeded samphire (*Tecticornia pergranulata* subsp. *pergranulata*), old-man saltbush (*Atriplex nummularia*), River Murray saltbush (*Atriplex rhagodioides*), cannonball burr (*Dissocarpus paradoxus*) and also salt heliotrope (*Heliotropium curassivicum*), false caper (*Euphorbia terracina*), and, in wetter areas, spiny flat sedge (*Cyperus gymnocaulos*).

Eucalyptus camaldulensis

(river red gum) Myrtaceae
No tree more typifies Australia than the eucalypt, and river red gum is particularly noteworthy as it has a wide distribution along watercourses in every state except Tasmania. It grows as a gallery woodland or open forest or border along the edge of the Murray River, inhabiting sandy soils that are periodically

inundated (Fig. 2). The species can grow to 30 m or so in height, with an impressive girth, and attractively mottled bark. It has a nasty habit of dropping branches without warning. On Kangaroo Island it is confined to watercourses, particularly in the lower Cygnet River near Kingscote.

Eucalyptus largiflorens

(black box, river box) Myrtaceae

This is another river bank eucalypt, but is generally restricted to heavy black soils on the flood plain. It was particularly common at Portee Station on the Murray River, between Mannum and Blanchetown (Fig. 3). It has greyish-green foliage, is of somewhat pendent habit, and has a dark, rough bark. It can grow to around 15 m in height.

Mesembryanthemum crystallinum

(crystalline ice plant) Aizoaceae

This is an introduced prostrate weed from Africa and southern Europe. It grows abundantly on salt pans alongside the Murray River, forming a distinctive herbland. It accumulates salt, and releases it after death, making the substrate toxic for other plants. There was a lot of it at the machinery museum, Mannum, growing on the roadsides.

Phragmites australis

(common reed) Poaceae

This tall grass is ubiquitous on the banks of rivers and lagoons, and was seen abundantly on the River Torrens in Adelaide, and the Murray River (Fig. 4). It grows in water in very dense stands. Cumbungi (*Typha domingensis*) is also fairly common, as is river club-rush (*Schoenoplectus tabernaemontani*, syn. *S. valida*).

Salix babylonica

(weeping willow) Salicaceae

The abundance of this tree along the banks of the Murray River is extraordinary. It was apparently introduced from Europe by the early settlers and explorers to mark the channel, and has now spread vegetatively more or less throughout the river system. Only female plants occur, but they do not set seed. Typically between Murray Bridge and Blanchetown (the first lock), it grows in single file as a tumbledown tree at the water's edge (Fig. 5). It is officially regarded as a noxious weed, but looks as if it would be impossible to eradicate. It is attractive, though, and birds such as the darter and night heron roost and nest in it.

Coastal and estuarine plants

Acacia sophorae

(coast wattle) Leguminosae

This is a low-spreading bushy species at home on sand dunes, as at Encounter Bay and on Kangaroo I.



Fig. 3. Black box (*E. largiflorens*) and lignum, Big Bend campsite, Murray River. Photo: 20 Nov 2013.



Fig. 4. Common reed (*Phragmites communis*), Reedy Creek, Mannum. Photo: 22 Nov 2013.



Fig. 5. Weeping willow (*Salix babylonica*) and river red gum (*Eucalyptus camaldulensis*), Walker Flat to Swan Reach, Murray River. Photo: 19 Nov 2013.

Atriplex cinerea

(grey saltbush) Chenopodiaceae

It is a small shrub, ubiquitous on coastal dunes. It is abundant on Kangaroo Island and at Encounter Bay (Victor Harbour). It is a grey plant with dry fruit.



Fig. 6. Sea spurge (*Euphorbia paralias*), Island Beach, Kangaroo Island. Photo: 10 Nov 2011.



Fig. 7. Swamp paperbark (*Melaleuca halmaturum*), Chapman River, Kangaroo I. Photo: 10 Nov 2011.

Carpobrotus rossii

(native pigface) Aizoaceae

This is a characteristic succulent of dunes and rocky shores. The leaves are fleshy and angular. It is common on Kangaroo Island, and also at Victor Harbour. Another succulent, round-leaved pigface (*Disphyma crassifolium* subsp. *clavellatum*) is abundant on the coastal cliffs at Admiral's Arch, Kangaroo Island. It is quite similar-looking to our *D. australe*.

Chenopodium candolleianum (syn. *Rhagodia candolleianum*) (seaberry saltbush) Chenopodiaceae

It grows as a spreading bush, with small greenish and red fruit. It is common on Granite Island, Victor Harbour, and also on Kangaroo Island.

Coprosma repens

(New Zealand taupata, mirror bush) Rubiaceae

Taupata is perhaps the commonest and most widespread New Zealand plant naturalised in south-east Australia. On Granite Island at Victor Harbour it grows abundantly as low, spreading bushes draped over granite rock on the exposed outer coast.

Correa alba

(white correa) Rutaceae

The only place I saw this plant was at Victor Harbour, growing on the dunes, and also on Granite Island. It is a low, spreading bush, with rounded somewhat rusty leaves. Unusually for a *Correa*, the flowers are not tubular, but with whitish spreading petals.

Euphorbia paralias

(sea spurge) Euphorbiaceae

This is an introduced plant from Europe and widely present as weed of coastal dunes in southern Australia (Fig. 6). I saw plenty of it on Kangaroo Island (e.g. Pennington Bay) and at Victor Harbour.

Leucophyta brownii

(cushion bush) Asteraceae

This was a very conspicuous shrub on Kangaroo Island, on the granite cliffs (e.g. Admirals Arch, Flinders Chase National Park) and also on dunes (e.g. Pennington Bay). It was also seen on Granite Island and on dunes at Victor Harbour.

Leucopogon parviflorus

(coast beard-heath) Ericaceae

Well-stabilised coastal sand is the favoured habitat of this shrub. It is common on Kangaroo Island and is native to Australia and the Chatham Islands.

Melaleuca halmaturum

(swamp paperbark) Myrtaceae

This tree frequents the margins of brackish creeks and estuaries. Places I saw it were the lower Hindmarsh River at Victor Harbour, and the Chapman River on Kangaroo Island (Fig. 7). It gives these salty lagoons a characteristic appearance, the trees being in dense pure stands.

Myoporum insulare

(boobialla) Myoporaceae

This is a very characteristic plant of coastal margins, particularly on exposed coasts. It is very plentiful on Kangaroo Island and at Victor Harbour (including Granite Island). Its usual habit is a compact, spreading bush, with rather fleshy leaves.

Scaevola crassifolia

(cushion fanflower) Goodeniaceae

This attractive blue-flowered shrub was common on the sand dunes at Victor Harbour. The leaves are fleshy, rounded and finely-toothed.

Senecio odoratus

(scented groundsel) Asteraceae

This "woody" erect herb grows in clumps. It is common on Kangaroo Island, and also occurs on Granite Island, Encounter Bay.

Seagrasses

South Australia is something of a hotspot for seagrasses, there being 22 species present. I saw some of these along the Gulf St Vincent (at Glenelg), on Kangaroo Island (American River) and in Encounter Bay (Victor Harbour). They grow in subtidal beds down to a depth of 15 m or so and generally favour fine sandy substrates on moderately sheltered open coasts. They also wash up in heaps ("wrack") on beaches, mixed with various seaweeds. Colossal amounts have washed up at Victor Harbour. Tapeweed (*Posidonia australis*, and also *P. angustifolia* and *P. sinuosa*) and wireweed (*Amphibolis antarctica*, and also *A. griffithii*) are particularly prominent species here. Others are eelgrass (*Heterozostera tasmanica*) and paddleweed (*Halophila australis*). Our own eelgrass (*Zostera muelleri*) also occurs in South Australia, and as in New Zealand, it is more of an estuarine, intertidal seagrass.

Various woodland and mallee plants

Allocasuarina verticillata

(drooping sheoak) Casuarinaceae

Dry, well-drained coastal hills are the main habitats for this tree. There are abundant stands of it on Kangaroo Island, particularly at American River. It is an important food plant there for black cockatoos. It is also on Granite Island.



Fig. 8. Sugar gum (*Eucalyptus cladocalyx*), Flinders Chase, Kangaroo Island. Photo: 8 Nov 2011.

Callitris preissii (syn. *Callitris gracilis* subsp.

murrayensis (Murray pine) Cupressaceae

This well-formed conifer was seen at Reedy Creek Recreation Reserve near Mannum, growing in sandy soil derived from granite.

Callitris rhomboidea

(Oyster Bay pine) Cupressaceae

I came across this several times on Kangaroo Island.

Dodonaea viscosa subsp. *angustissima*

(narrow leaved hop-bush) Sapindaceae

I encountered this commonly on Kangaroo Island. It was also in the Murray Mallee at Ngaut Ngaut (Devon Downs). The fruit wings are generally pink.

Eucalyptus cladocalyx

(sugar gum) Myrtaceae

This is a "must-see" tree for any eucalypt enthusiast visiting South Australia. It is endemic to the state, but has only a limited distribution on the Eyre Peninsula, Flinders Ranges, and Kangaroo Island. It is also commonly planted on farms and in Adelaide's numerous parks. It is distinguished on sight by its discoloured leaves (shiny dark green above, dull green below). Some of the stands on Kangaroo Island are impressively tall and straight (Fig. 8).

Eucalyptus leucoxylon subsp. *leucoxylon*

(South Australian blue gum) Myrtaceae

One of the larger native trees of the area, this species is common on Kangaroo Island and in the Mt Lofty Ranges. Indeed, it is the common "gum tree" of this area. Other common tree eucalypts here are peppermint box (*E. odorata*) and pink gum (*E. fasciculosa*). This latter species in the Mt Lofty Ranges is particularly heavily infested with box mistletoe (*Amyema miquelii*).

Eucalyptus obliqua

(messmate stringybark) Myrtaceae

Messmate is perhaps the only recognised timber eucalypt in South Australia, but it is restricted to the higher rainfall areas in the Mt Lofty Ranges, on Kangaroo Island, and on the Limestone Coast (Millicent towards Mt Gambier). It is very widespread in Tasmania, Victoria and New South Wales. The stands on the Mt Lofty Ranges (e.g. Cleland Conservation Park, Mt Lofty Botanical Gardens) are of good quality, but the species becomes bushier on the Limestone Coast (e.g. at Millicent).

Mallee eucalypts

Myrtaceae

The term mallee describes not only the distinctive life-form of these eucalypts, but also the vegetation. A typical mallee is a multi-stemmed small tree with a large underground rootstock.

The two main mallee areas in the area of interest are the Murray Mallee and Kangaroo Island. In the

Murray Mallee (seen en route to Murray Bridge from Adelaide and on plateaus above the Murray River), the principal species are giant red mallee (*Eucalyptus oleosa* subsp. *oleosa*), red mallee (*E. socialis*), narrow-leaved red mallee (*E. leptophylla*), white mallees (*E. dumosa*, *E. gracilis*, *E. phenax* subsp. *phenax*), square-fruited mallee (*Eucalyptus calycygona* subsp. *trachybasis*), yellow mallee (*E. incrassata* subsp. *incrassata*) and mallee box (*E. porosa*). Much of the Murray Mallee country has long since been cleared for agriculture.

Kangaroo Island has numerous mallee species, namely soap mallee (*E. diversifolia*) (which is the most coastal of the mallees, favouring sand over limestone), Kangaroo Island mallee ash (*E. remota*), purple-flowered mallee (*E. albopurpurea*), Kangaroo Island mallee (*E. phenax* subsp. *compressa*), Kingscote mallee (*E. rugosa*), narrow-leaved red mallee (*E. leptophylla*), giant red mallee (*E. oleosa* subsp. *oleosa*), Kangaroo Island narrow-leaved mallee (*E. cneorifolia*, Fig. 9) and cup gum (*E. cosmophylla*).

Nicotiana glauca

(tree tobacco) Solanaceae

Introduced from Argentina and widely naturalised in the drier country of southern Australia, this small spindly tree is of striking appearance, growing to around 4 m tall, with blue-grey leaves and yellowish tubular flowers. There was a lot of it along the Murray River on the flood plain and Reedy Creek Recreation Reserve between Mannum and Mypolonga, growing in conspicuous patches (Fig. 10). It is evidently unpalatable (and poisonous) to stock and native herbivorous marsupials.

Pinus halepensis

(Aleppo pine) Pinaceae

Unlike *Pinus radiata*, Aleppo pine can handle the dry climate (rainfall < 400 mm) of the lower elevations in Adelaide and the Fleurieu Peninsula. It is native to the Mediterranean region and is a common urban tree in Adelaide, and has become abundantly naturalised on dry hills from Marion to Reynella. It also occurs on Granite Island, Victor Harbour.

***Schinus molle* (syn. *S. areira*)**

(pepper tree) Anacardiaceae

There is no doubt that this tree from the dry parts of Peru and Chile has remarkable tolerance to drought. It grows along the Murray River on rocky slopes, where it has become naturalised, and is also common as an amenity trees in gardens and parks of the Murray River towns. I questioned some Aborigine people at the Ngaut Ngaut conservation site about uses of the abundant fruit there, but they said it is very bitter and they don't use it as a condiment for mixing with true pepper, or by itself.



Fig. 9. Kangaroo Island narrow-leaved mallee (*Eucalyptus cneorifolia*), Kangaroo Island. Photo: 10 Nov 2011.



Fig. 10. Tree tobacco (*Nicotiana glauca*), Reedy Creek, Mannum. Photo: 22 Nov 2013.

Urban trees of Adelaide

Adelaide has numerous parks with planted trees, and it also is well endowed with street trees. Shade from trees is very welcomed in the city during the very hot summer. Here are just a few which certainly catch the eye.

Araucaria heterophylla

(Norfolk Island pine) Araucariaceae

This is seen in avenues in seaside suburbs (e.g. Glenelg) and towns (e.g. Victor Harbour). It is surprisingly drought-tolerant.

Celtis

(hackberry) Ulmaceae

These do very well as street trees. Various Asian species have been planted such as *C. australis*, *C. biondii*, *C. laevigata*, *C. occidentalis* and *C. tournfortii*.

Corymbia citriodora

(lemon-scented gum) Myrtaceae

This is a Queensland eucalypt, but grows remarkably well in the Mediterranean climate of Adelaide. It can be seen in numerous parks. The related spotted gum (*Corymbia maculata*) features at the Central Bus Station in Franklin Street. Of *Eucalyptus* itself, sugar gum (*E. cladocalyx*) has been much planted, and *E. camaldulensis* grows along the River Torrens.

Jacaranda mimosifolia

(jacaranda) Bignoniaceae

Jacaranda (from Bolivia and Argentina) is something of a signature tree in the city, and when in flower (November/December) becomes quite a talking point, being a common street tree.

Phoenix canariensis

(Canary Island date palm). Arecaceae.

This is perhaps the commonest palm in Adelaide. However, near the Torrens Parade Ground and the Women's Pioneer Memorial Park are some fine specimens of the true date palm (*Phoenix dactylifera*), and also *Washingtonia filifera*.

Pinus halepensis

(Aleppo pine) Pinaceae

This is worth a second mention as it is to be seen throughout the city, and grows very well here. It is clearly more drought-tolerant than *P. radiata*. At the War Memorial near Government House on North Parade is a Turkish red pine (*Pinus brutia*), planted to commemorate Gallipoli. Canary Island pine (*P. canariensis*) is also seen in the city parks.

Platanus × acerifolia

(London plane) Platanaceae

This is one of the commonest Adelaide street trees. *Platanus orientalis* is also present.

Pyrus calleryana

(Callery pear) Rosaceae

Several city streets are graced with this handsome Chinese species. Manchurian pear (*Pyrus ussuriensis*) is also commonly planted.

Ulmus procera

(English elm) Ulmaceae

This does well as a street tree in Adelaide. The township of Hahndorf in the Mt Lofty Ranges also has fine avenues of it. Lacebark elm (*Ulmus parvifolia*) is also commonly seen in Adelaide.

Plants of the Kaironk Valley, Schrader Range, Papua New Guinea: III, the kawsi (*Impatiens hawkeri*, Balsaminaceae)¹

Rhys Gardner

In its large-spurred magenta flowers and whorls of red-nerved leaves this "New Guinea impatiens" is widely thought to be one of the most garden-worthy members of the genus (Fig. 1). A medium-sized herb of montane forest, it belongs to a temperate Asian alliance, so any "tropical" label is deserved more on account of distribution (New Guinea to the Solomon Islands) than habitat. Here in Auckland it can grow outside as a pampered pot plant but will not survive summer drought, or cold, or wind at any season.

I would see *I. hawkeri* along rocky streamsides in the "cultivation zone" of the Kaironk Valley, at c. 1500–2000 m altitude. It was best in damp and shady places where some *Lithocarpus-Castanopsis*

forest cover had been left. Not only did habitat suit but it was clear that the plant itself held few attractions for that other ubiquitous destroyer of forest and plant life, the pig. In this lower altitudinal range the flowers were various shades of pink. At a little more than 2000 m, though, at the lower edge of the southern beech (*Nothofagus grandis*) forest, it grew mainly in trackside depressions, and here its flowers were always white.

The species is abundant through New Guinea and is particularly variable in the flower's form and colouring. This is discussed and beautifully illustrated by the modern authority on the genus, Christopher Grey-Wilson, who with respect to white or pale-coloured flowers says: "I suspect their selection is due primarily to pollinators ... White-flowered forms [from mainly red-coloured infraspecific groupings] also tend to have longer than average spurs" (Grey-Wilson 1980, p. 679).

¹ For I & II see the following Auckland Bot Soc Jnls: Vol 56 (2001) p. 32 [*Corsia merimantaensis*]; Vol 57 (2002) pp. 26–27 [*Cordyline ledermannii*].