Images from the Outback –
Notes on Plants of the Australian
Dry Zone

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A visit to the Sydney area of Australia in 1987 first sparked my interest in seeing more of the Island Continent and in particular, the extensive dry regions of the country. Subsequent visits in 1994 and 1996 afforded an opportunity to travel through parts of all six mainland states to observe some of the many interesting plants and plant communities. Included below are notes on the plants and habitats in two regions of Australia. The first area is from the March-April 1994 trip that included a visit to Uluru National Park (now Uluru-Kata Tjuta National Park), in the Northern Territory. The second is an area of south central Western Australia that was explored during the September-October 1995 trip.

The vast Australian outback is characterized by aridity. Three-quarters of Australia has a arid or semi-arid climate. The native vegetation is well-adapted to the limited and highly variable rainfall. As the climate of much of Australia became drier over millions of years, temperate and tropical forests were replaced by grasslands, shrublands and woodlands (Van Oosterzee, 1991). At first glance, these plant communities may appear monotonous but many of them support an abundance of life forms with many distinctive species. Australia has a high diversity of plants with an estimated 25,000 species (Davis, et al. 1986). In common with many arid regions around the world, in wet seasons these areas can be especially beautiful, with the subtle greens and grays of the vegetation punctuated by masses of flowering ephemerals. Dry grasses green up and many woody plants also flower. Canyons and other microhabitats where water is available support a rich assemblage of plants not found in the surrounding arid countryside. Among this diverse flora are many plants that are well-suited for landscape use in dry climates.

Desert regions encompass huge areas of Western Australia, Northern Territory, South Australia, and parts of Queensland and New South Wales. Among the three most widespread plant communities in this area are woodlands or shrublands dominated by *Acacia* species, occupying one third of the desert regions (Van Oosterzee, 1991). These communities are often called mulga woodlands. Mulga is a name applied to *Acacia aneura* and several other *Acacia* species. About 950 species of *Acacia* are found in Australia (Orchard and Wilson, 2001), though only a relatively small percentage of these occur in desert habitats. Acacia woodlands can be dense or open, and are sometimes mixed with grasses including spinifex. Spinifex grasslands, dominated by species of *Plectraele* and *Triodia* (p. 27) are widespread on sandy plains as well as rocky slopes and sand dunes. These grasses, many with stiff, rolled leaves that end in a sharp point, form clumps or tussocks. Fires are frequent in some spinifex communities and the woody plants that grow there are necessarily fire-adapted. Chenopod shrublands are low stature communities composed of numerous shrubs and herbaceous plants in the Chenopodiaceae. Less widespread than acacia woodland and spinifex grassland, this type of vegetation is found mostly in the southern parts of Australia’s arid zone (Van Oosterzee, 1991). Beyond the deserts lie semi-arid woodlands dominated by species of *Eucalyptus* and other diverse plant communities.

Getting to Australia is perhaps the biggest challenge. With an average flying time of fifteen hours from Los Angeles to Sydney, being able to sleep well on an aircraft is a definite advantage. The flight from Sydney to Alice Springs crosses the Simpson Desert. From the air, extensive rows of parallel sand dunes are readily visible. Some of these dunes extend for 200 km or more from south-southeast to north-northwest and were formed during the most recent glacial period by strong prevailing winds (Van Oosterzee, 1991). To the south lies Lake Eyre, a vast white salt pan that stands out against the reds and browns of the surrounding landscape. Alice Springs, located near the geographic center of Australia, is a pleasant desert community. For those interested in the native vegetation, a visit to the Olive Pink Flora Reserve is a must. Native plants growing along the trails through this park are signed and an excellent visitor center has information on the park and the vegetation.

Uluru National Park includes the monolith Uluru (Ayer’s Rock) and Kata Tjuta (The Olgas), and is jointly managed by the Anangu Tribe whose ancestors occupied this area prior to European settlement, and Parks Australia. Formed from material deposited along an ancient sea coast, Uluru rises up from the surrounding desert plains. There are no other outcrops or significant hills for many miles in any direction. Sculpted by wind and water, the massive red sandstone formation is an awe-inspiring sight. Colors and shadows change with the light intensity and sun angle through the course of the day, creating a variety of moods. Under the silvery light of the full moon it is dark and imposing.

Rainfall had been above average in this area of Australia during the past three years. The vegetation appeared quite green and a number of plants were in flower. The vegetation around Uluru includes open acacia woodland with areas of spinifex on sandy soils. Mulga (*Acacia aneura*) is abundant with scattered plants of dead finish (*Acacia tetragonophylla*) and Victoria wattle (*Acacia victoriae*, p. 27). Some areas are
dominated by forms of the widespread and variable Senna artemisioides. In one small area, S. artemisioides subsp. xartemisioides, subsp. filifolia, subsp. helmsii, subsp. oligophylla, and subsp. petiolaris grew together. In recent literature (Orchard and McCarthy, 1998) the designation form taxon is used rather than subspecies or variety for the forms of the Senna artemisioides complex, as Senna form taxon ‘artemisioides’, Senna form taxon ‘filifolia’, etc., pending further taxonomic study. These plants sometimes hybridize among themselves and though the leaves of the various forms can be quite distinct, the flowers, pods and seeds are essentially identical.

Perhaps the most distinctive plant in this region is desert oak (Allocasuarina decaisneana, p. 27) in the Casuarinaceae. Desert oak is locally common in sandy habitats in parts of central Australia. Deep-rooted and long-lived, this species exhibits a dimorphic growth habit. Young trees have a narrow, columnar form with long, needle-like leaves along the trunk. The young plants occur in stands of similar size, probably representing years of favorable establishment. Older plants branch and develop a spreading canopy, somewhat resembling species of pinyon (Pinus spp.), in the southwestern United States. The fruits of desert oak are cone-like, though it is a flowering plant rather than a conifer.

Near the base of Uluru are groves of bloodwood (Eucalyptus terminalis) indicating shallow groundwater. Bloodwood is named for its red wood and provides welcome shade from the desert sun. Other conspicuous species in this area include blue mallee (Eucalyptus gamophylla, p. 27), a shrubby eucalypt with blue green leaves that are joined in pairs and encircle the stem. Camel poison bush (Gyrostemon ramulosus, p. 28) in the Gyrostemonaceae, is a tree-like shrub with gray, corky bark and slender leaves. It is found in spinifex and sand dune habitats. The common name refers to the toxic foliage (Urban, 1990). Desert poplar (Codonocarpus cotinifolius), also in the Gyrostemonaceae, looks for all the world like a young cottonwood tree. This short-lived species germinates following bush fires (Urban, 1990). Chocolate cassia, native senna or cockroach plant (Senna pleurocarpa, p. 28) is a shrub with masses of yellow, chocolate-scented flowers in terminal racemes and pods that superficially resemble cockroach egg cases. Parakeela (Calandrinia spp.) in the Portulacaceae, are small, low-growing wildflowers. Some species have disproportionately large, showy pink flowers. In favorable situations these plants can form an extensive if sparse ground cover. Unfortunately, buffelgrass (Pennisetum ciliare) is abundant in some areas around Uluru. This species from Africa was introduced into Australia as a forage grass, but has spread into native plant communities. Also present is Russian thistle (Salsola kali), another exotic that can become a serious weed pest.

In nearby localities, other shrubs and small trees are common. Weeping pittosporum (Pittosporum phylliraeoides, p. 28) in the Pittosporaceae, is abundant in some low-lying areas and can form short-stature woodlands. This small tree has a wide distribution in Australia. It has been utilized for food and medicinal purposes by Aboriginal people (Cunningham, et. al., 1992, Urban, 1990). Hopbush (Dodonaea viscosa, p. 28) is widespread in dry habitats in Australia. This species has an amazing distribution with varieties found in North and South America and in parts of Africa and Asia, and the Pacific region. The common name is derived from the fruits that have been used as a substitute for hops in brewing. With its dark green, narrowly oblong phyllodes, witchetty bush (Acacia kempeana) somewhat resembles hopbush. Witchetty grubs, extracted from the roots of this acacia, are a prized food for the Aboriginal people and are eaten raw or cooked.
The seeds also serve as a food resource and livestock browse the foliage (Urban, 1990). Dogwood, wiry wattle or wirewood (\textit{Acacia coriacea}) is a shrub or small tree with long, narrow, leathery, gray green phyllodes that is typically found in sandy habitats. Urban (1990) reports that the developing seeds were highly sought after by Aboriginal people and eaten raw, and the ripe seeds were harvested and ground for food.

The Olgas are known to the Aboriginal people as Kata Tjuta, which translates to \textit{many heads}. This name is quite appropriate as this geologic formation contains dozens of larger and smaller rounded knobs and domes composed of sandstone conglomerate. Considerable spinifex grows here along with \textit{Acacia aneura}, \textit{A. tetratogynophylla}, \textit{Dodonaea viscosa} and \textit{Hakea suberea}, p. 29. In valleys among the hills and domes is an open woodland of coolibah (\textit{Eucalyptus microtheca}). This species is widespread in Australia, occurring principally along drainageways and is used by Aboriginal people for a variety of purposes. The wood of coolibah is heavy and durable (Cunningham, et al., 1992). \textit{Eucalyptus camaldulensis} and \textit{E. terminalis} are also present where sufficient water is available. Black gidgee (\textit{Acacia pruinocarpa}, p. 29) is a beautiful small tree with dark gray bark and large, narrowly oblong, dull, blue green phyllodes. It develops a symmetrical, spreading canopy that casts ample shade. The color of the foliage contrasts nicely with the red soil. Round-leaf wattle (\textit{Acacia strongylophylla}) grows in rocky sites in this area. The leaves of this shrubby acacia are rounded and end in a sharp, spine-like tip and spines are present along the stems as well.

A trip to King’s Canyon in the George Gill Ranges provided access to habitats for other plants. The rocky slopes here support spinifex, emu bush (\textit{Eremophila} sp.), species of \textit{Acacia} including the ubiquitous mulga, and occasional plants of long-leaved corkwood. Long-leaved corkwood (\textit{Hakea suberea}) in the Proteaceae, is a small tree with deeply furrowed, corky bark, an irregularly branched, open canopy and sparse foliage of long leaves. An unusual plant found on rock outcrops is caustic vine (\textit{Sarcostemma australce}, p. 29). This milkweed, with clumps of leafless, pale green stems, resembles \textit{Euphorbia antisphyllitica} from the Chihuahuan Desert of North America. White cypress pine (\textit{Callitrus glaucophylia}, p. 32) in the Cupressaceae, is widespread in Australia. In this arid region it is confined to sites where additional water is available from runoff. Scattered plants grow among large boulders and in rock clefts. White cypress pine resembles cypress or juniper from other continents. The bark has a high tannin content and has been used commercially in tanning (Urban, 1990).

The narrow gorge of King’s Canyon has an overstory of river red gum (\textit{Eucalyptus camaldulensis}) along the bottom. This species has among the widest distributions of any species of \textit{Eucalyptus} (Cunningham, et al., 1992, Urban, 1990) and is widely planted in warm, dry regions around the world. River red gum is the largest tree in central Australia and old plants can develop massive boles. Native fig (\textit{Ficus platypoda}, p. 29) is found in sheltered sites in the canyon. This large shrub has edible fruits that are pleasantly flavored. Seeing cycads in habitat is always a treat for those from regions where they do not naturally occur. It was especially interesting to see these primitive conifers growing in such an arid environment. MacDonnell Ranges cycad (\textit{Macrozamia macdonnelliensis}, p. 30) is endemic to the desert mountain ranges in this region of central Australia. It grows abundantly in the canyon bottom; here though occasional plants are found in rock clefts on the ridges growing in association with mulga and other desert species.

Near Kalgoorlie, in Western Australia, the dry sclerophyll woodland is dominated by goldfields blackbutt (\textit{Eucalyptus lesueurii}) with an open understory. Goldfields blackbutt is a beautiful tree with a high canopy of glossy, dark green leaves. The bark of the trunk and limbs is smooth and silvery gray, becoming black and rough near the base, hence the common name. The most conspicuous shrub at this site is pearl bluebush (\textit{Maireana sedifolia}) in the Chenopodiaceae. With small, succulent, pale blue leaves forming dense mounds, pearl bluebush is especially striking against the reddish brown soil. Bluebush is extremely drought tolerant. In other areas it is a dominant plant in chenopod shrublands. Also present are ruby saltbush or ruby sheepbush (\textit{Enchyphalae tomentosa}), water bush (\textit{Lycium australce}) and punty bush (\textit{Senna artemisioides} subs. \textit{zygophylla}). Conspicuous patches of microbiotic crust are present on the soil surface at this site. The structure of the vegetation and the contrasting colors of sky, soil and plants at this site are especially

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\includegraphics[width=0.5\textwidth]{Acacia_pruinocarpa.png}
\caption{\textit{Acacia pruinocarpa}}
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memorable. Traveling just a few kilometers northward, the trees rapidly become shorter and more widely spaced while the density of the shrubs is much greater and a herbaceous ground cover is present.

North of Menzies, extensive woodlands of mulga (*Acacia aneura*, p. 30) are present. This acacia has the widest distribution of any Australian acacia, occurring in all the mainland states. In some areas it forms pure stands in open to dense woodlands while in other areas it grows mixed with various other species. Mulga exhibits considerable variation in size and growth form, and in the shape and color of the phyllodes. It was used for a variety of purposes by Aboriginal peoples. Other *Acacia* species noted in this area include raspberry jam wattle (*Acacia acuminata*), an upright form of Murray wattle (*Acacia murrayana*) with whitish bark, and horse mulga (*Acacia ramulosa*). *Eucalyptus camaldulensis*, p. 32 is present along larger drainageways. Roadside weeds included red brome (*Bromus rubens*), *Pennisetum ciliare* and *Salsola kali*.

1995 was the wettest year in nearly 50 years in this region of Western Australia. Some areas had spectacular displays of annual and perennial wildflowers, and many woody plants were also flowering. Some of the most distinctive flowers were species of *Ptilotus*, in the Amaranthaceae. Showy foxtail, cotton bush or tall mulla mulla (*Ptilotus exaltatus*, p. 30) is a shrubby perennial with masses of pale purple flowers in fluffy terminal spikes that forms extensive floral displays in open areas. ソルベール (*Ptilotus obovatus*) has smaller and paler flower spikes. Another species, green mulla mulla (*Ptilotus polyschyzus*, p. 30) has yellow green flowers. Blue pincushion (*Brunonia australis*) is placed in its own family, Brunoniaceae, of which it is the sole member, or in the Goodeniaceae. It produces heads of light to medium blue flowers on stalks rising from a perennial rosette of gray green leaves. *Brunonia* grows in pure stands or mixed with whites, yellows and pinks of other flowers that add considerably to the rich appearance of the vegetation.

The area around the mining camp of Leinster, near the edge of the Great Victoria Desert has low vegetation growing on sandy soil. The ever-present mulga and scattered shrubs of umbrella bush (*Acacia ligulata*) grow here, and an occasional plant of miniritchie (*Acacia grasbyi*) was seen. Miniritchie has distinctive reddish bark that peels into numerous thin, curling strips. Closely resembling plants in the genus *Leucophyllum* from North America, white-leaved desert fuchsia (*Eremopila leucophylla*) has rounded pale gray leaves and pink flowers. Thin-leaved poverty bush (*Eremophila granitica*) and two additional species of *Eremophila* were present along with a Grevillea and a hard spinifex with its pungent-tipped leaves. Quandong or native peach (*Santalum acuminatum*) in the Santalaceae, develops into a large shrub or small tree with dense evergreen foliage of leathery, gray green leaves and red fruits with edible pulp around a hard seed pit. This plant is a partial root parasite on other plants (Cunningham, *et al.*, 1992, Urban, 1990).

Extensive plains and occasional low hills to the west of Leinster, between Agnew and Sandstone, support dense mulga woodland in some places. Other areas have open, rather stunted vegetation. One of these open habitats had widely spaced, medium-sized shrubs including a few plants of *Acacia aneura* and *Acacia ligulata*. Two other acacias were the most abundant shrubs. Leather-leaf acacia (*Acacia craspedocarpa*, p. 31) has rounded, gray green phyllodes and distinctive, reticulate pods. This species is found on arid plains and occasionally on rocky outcrops. Unlike the other acacias at this site which are unarmed, dead finish (*Acacia tetragonophylla*, p. 32) has stiff, needle-like phyllodes that end in a sharp point. Seeds of this species were a food resource and the plants were also employed medicinally (Urban 1990). Turpentine bush or burra (*Eremophila fraseri*, p. 31) with broad, dark green leaves and red flowers, is one of the larger species of *Eremophila* and occurs in scattered populations in his region. Sturt's cassia (*Senna artemisioides* subsp. *xsturtii*) was occasionally encountered. A diminutive pink-flowered *Calandrina* (p. 31) was the only herbaceous wildflower present in significant numbers at this locality.

Desert kurrajong (*Brachychiton gregorii*, p. 32) in the Sterculiaceae, is a magnificent if infrequently encountered tree in this region. The large, dark green leaves appeared unusually lush for such a dry climate. It lacks the enlarged bottle-like trunk of some of its relatives. The species was important to Aboriginal people and European settlers alike. Urban (1990) states that water could be obtained from the roots and that string and rope were made from the bark. The seeds were eaten and used to make coffee. Another beautiful and distinctive tree is marble gum (*Eucalyptus*...
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Marble gum is named for the mottled bark with shades of white, yellow and tan. The irregular trunks and limbs, and rounded, low-branched growth form are reminiscent of live oaks (*Quercus* spp.). In this area, it was observed growing as isolated individuals or in small groves.

The two areas highlighted above represent only a tiny part of the vast dry regions of Australia. Many other sites were visited during the trips in 1994 and 1995. These trips provided a fascinating introduction to the vegetation as well as the wildlife and landforms of the country, and opportunities to meet many fine people. Observing these plants in habitat provided an increased understanding of how they interact with other species and their environment, and a greater appreciation for them.

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