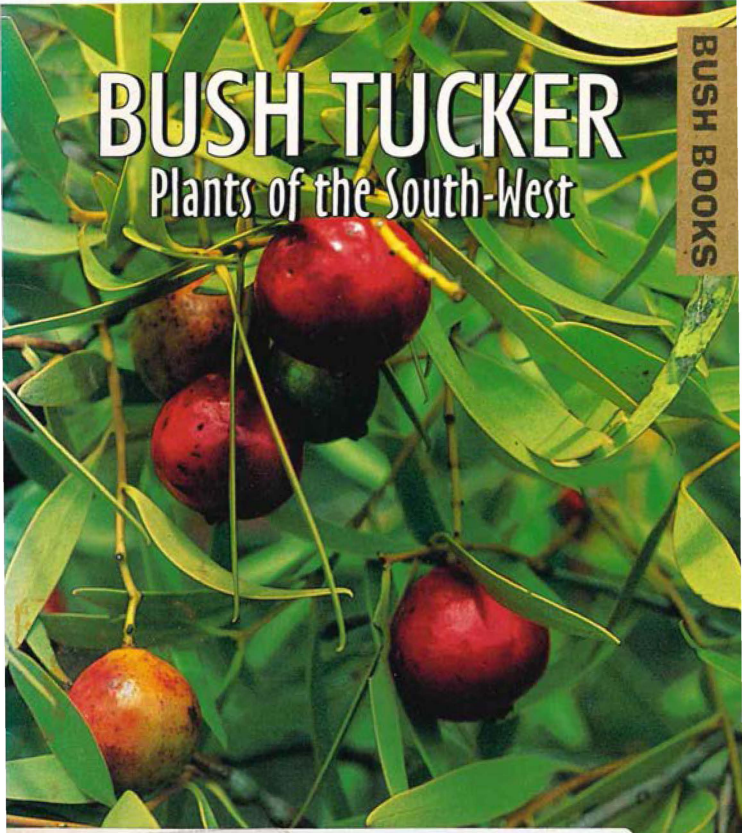
BUSH TUCKER

Plants of the South-West

BUSH BOOKS



Bush Books are a series of practical field guides to help you learn about and discover WA's unique plants, animals and special features, region by region.

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BUSH TUCKER
Plants of the South-West

by Brad Daw,
Trevor Walley and Greg Keighery

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

INTRODUCTION

The Nyoongar people of south-western Australia had a very ordered way of life. Their hunting and gathering patterns were guided by six weather-based seasons. Birak was the hot and dry time usually corresponding with the months of December and January, with easterly winds during the day and cooler south-westerly sea breezes in the afternoon. Bunuru covered the very hot late summer and early autumn months of February and March. Djeran was the name for the April to May period, with cooler weather and south-westerly winds. Mukuru was early winter, spanning June and July. It was marked by the beginning of soaking rains and during this time groups moved off to the hills. Djilba covered the late winter and early spring months of August and September and Kambarang was the season of decreasing rain, from October to November. The Nyoongars resource-based observations enabled them to make the best use of the available plant and animal resources at these times. For example, when the common sheoak (*Allocasuarina fraseriana*) flowered and turned yellowish-brown, Nyoongars knew that kangaroos (yonga) were fat and it was the right time to hunt them.

Aboriginal people sometimes had several names for the same plant species, often linked with the use of different parts of the plant. If an individual example of a particular tree species had strong, straight stems it might be called a 'spear tree', because its stems were ideal for making spears. However, another example of the same species growing nearby might have had an especially bushy growth habit, so its name would reflect its use for constructing huts.

Although Nyoongar men were the main suppliers of meat such as yonga (kangaroo), possum and bettongs (woylie), the women were responsible for maintaining the good nutrition of the community. They provided up to 90 per cent of the food, by

Illustration - Courtesy of the WA Education Department

collecting roots, tubers, corms, bulbs and fruits. Many of these foods are included in this book.

People tempted to sample bush tucker should be aware that some plants, including some of those in this book, are poisonous. Some require extensive treatment to make them edible. Tasting, therefore, should only be carried out under expert guidance, and only after the plant has been correctly identified. All native plants, including mosses and fungi, are protected by law and sampling some traditional foods would also result in the destruction of the plant. In such cases, enjoy reading and learning about the plants, but please refrain from trying to eat them.

BAIN

(Carpobrotus virescens)

Family Aizoaceae

Bain is a succulent, ground-hugging coastal plant, with attractive pink flowers. When the petals drop off, the fruiting base of the flower swells up, turning purplish-red when mature. The juicy centre contains seeds in a white pulp and the taste could be compared to that of a zucchini. These sweet, succulent fruits were eaten fresh or dried by Aboriginal people. Early European settlers were said to have used this species to produce a jam. Various species of pigface (*Carpobrotus* species) grow throughout southern Africa, Australia and South America, favouring coastal or saline areas.

DESCRIPTION: This prostrate shrub has trailing red to grey branches up to two metres long. The green or red leaves are held in opposite pairs and have three faces. These fleshy leaves are up to 65 millimetres long and the pinkish-mauve flowers are 40 to 60 millimetres in diameter, with a white centre. The plant flowers mainly from August to September.

OTHER NAMES: Coastal pigface.

DISTINCTIVE FEATURES: The species is distinguished by its young red branches, and bright pink flowers with a white centre, which are produced mainly from August to September.

HABITAT AND DISTRIBUTION: Bain grows on beaches or sand dunes from Israelite Bay to Geraldton, including offshore islands.

COLLECTION TIME: In the Perth area, most of the fruits mature around Christmas time. However, some fruits may be found on the plant at any time of the year.

OTHER USES: The juice produced by the leaves of bain has been used to treat burns, scalds and stings. Related species in South Africa contain an alkaloid drug that acts as a weak local anaesthetic.

Photo – Greg Keighery

Above: *The fruit*

Below: *The flower*

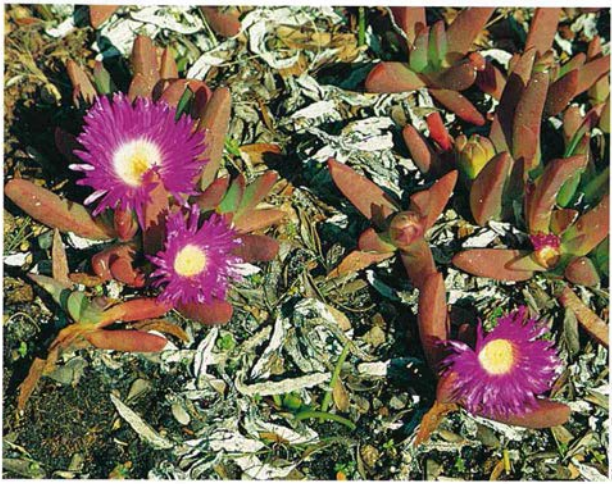


Photo – Tony Tapper

TJUNGURI

(Thysanotus patersonii)

Family Anthericaceae

This delightful plant has attractive violet flowers. The three broad, but delicately fringed, petals alternate with three narrower sepals. Tjunguri is distinguished from other fringe lilies by its habit of draping itself over other plants. Other species of fringe lily (*Thysanotus* species) are found throughout the south-west and the tubers of most of them are quite palatable. The tubers were unearthed by Aboriginal people and eaten raw or roasted. These look like tiny potatoes and are usually found in a cluster circling the base of the plant at varying depths, depending on the soil and species. The stems and flowers are also edible. The Western Australian Museum has an anecdotal record of the flowers and stems being roasted, made into a powder and eaten with the roots of York gum.

DESCRIPTION: This creeping plant is 10 to 20 centimetres tall. It has one or two slender stems that either twine around nearby vegetation or trail along the ground, and numerous branches each bear a single violet flower. The flowers are produced mainly from August to November. After flowering, however, the species will die back to the root, remaining dormant until the following season. Experienced botanists and other plant enthusiasts can recognise these plants when there is no green stem or flower visible.

OTHER NAMES: Fringe lily.

WHERE IT GROWS: Tjunguri is widespread in the southern half of WA and grows in all Australian States.

COLLECTION TIME: This plant dies back to a tuber after flowering, and will be difficult to locate during this time. However, it contains more energy and carbohydrates when not in full flower, so is best eaten either just before, or just after, flowering. When a stem is located, carefully brush back the soil and follow the white threads down to the pencil-like tubers.

Photo – Penny Hussey

BERRY SALTBUSH

(Rhagodia baccata)

Family Chenopodiaceae

The small, but edible red berries are an obvious feature of berry saltbush. They are very sweet when ripe, but those growing near the ocean are often coated in salt from airborne sea water spray. The leaves of at least two other species of saltbush (*Rhagodia*) can be boiled and eaten as a vegetable, somewhat like spinach, with a salty taste.

DESCRIPTION: This straggly, spreading shrub grows no more than two metres high, and is characterised by short and fairly succulent, greyish-green leaves. Each fruit is only about five millimetres across, but they are held in colourful clusters. There are often separate male and female plants, especially on the Swan Coastal Plain.

OTHER NAMES: Sea berry saltbush.

WHERE IT GROWS: Berry saltbush grows in coastal dunes and limestone from north of Perth to Cape Arid, near Esperance.

COLLECTION TIME: Around Perth, the fruits appear from February to May. The berries taste better just after good rains have fallen following the drought period over summer.

Photo – Terry Goodlich

KARA

(Burchardia umbellata)

Family Colchicaceae

When eaten raw, the tubers of kara taste like a succulent potato. Aboriginal people either ate them raw or roasted on coals. Kara's abundance helped to make the plant a significant part of the diet of indigenous Australians throughout summer and autumn. The nutritional value of this species is high; scientists have measured its protein content at more than 10 per cent to dry weight and it contains a reasonable amount of starch.

DESCRIPTION: Kara is a slender plant four and a half to 60 centimetres tall, usually with a single stem. Some rush-like leaves also protrude from the ground around the stem. It produces a long stem with a group of deep pink buds and showy clusters of white flowers on the tip, mainly from August to September.

OTHER NAMES: Milkmaid.

WHERE IT GROWS: Kara grows in the Darling Scarp and the jarrah and banksia woodlands of the Swan Coastal Plain, and is prolific in some areas around metropolitan Perth. In WA it ranges from Northampton to Cape Naturaliste, but occurs in all Australian States.

COLLECTION: In November and December, following flowering, a group of distinctive wing-shaped seed pods appear. Digging down some 10 to 20 centimetres will expose a star-like array of tapering, thin white tubers. The tubers may be up to 10 centimetres long, but only those sections at least four to five millimetres thick are good to eat.

Photo – Andrew Brown

Above: *The flowers*

Below: *The edible roots of kara*

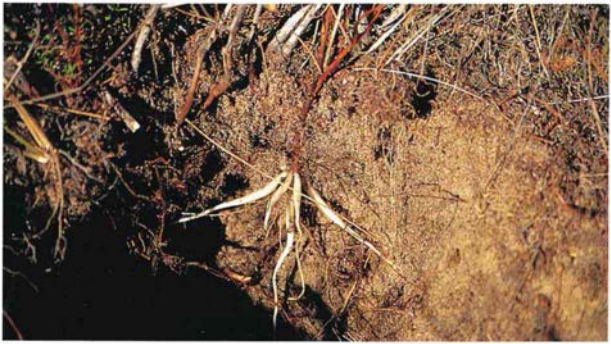


Photo – Brad Daw

KERBEIN

(Lepidosperma gladiatum)

Family Cyperaceae

Recognised by its long, sword-like leaves, kerbein is common in dune areas and coastal woodlands. Part of the base of the stem can be eaten raw or roasted. Plants growing in wet areas are more succulent. However, the most important use of kerbein for Aboriginal people was probably its use in making rope and string. The pimelias and the semaphore sedge (*Mesomelaena tetragona*) can also be used for making string but both need to be treated first.

DESCRIPTION: Kerbein is a herb that forms clumps up to one and a half metres high. It sends out underground stems from which new tufts arise. Its rigid stems are dark at the base, and the leaves are dark green and thickened at the centre. One or two flowers are borne on spikelets, seven to nine millimetres long, from November to January. They have yellow bracts. The fruit is a small oval nut about three millimetres long.

OTHER NAMES: Coastal sword sedge.

WHERE IT GROWS: This plant has a particular liking for coastal sand dunes and may grow in tuart forest. In Western Australia, it extends around the coast from Leeman to Cape Arid National Park. It also grows in South Australia, Victoria, New South Wales and Tasmania.

COLLECTION TIME: Kerbein can be eaten all year round, but is more palatable when the soil is moist. The edible section of the stem is a pale straw to white coloured pulp.

Above: *Kerbein*
Right: *The flower*
Below: *The edible base of the stem*

Photos – Brad Daw

BRACKEN FERN

(Pteridium esculentum)

Family Dennstaedtiaceae

The bracken fern is the most common and the largest native fern in the south-west, with fronds up to two metres from the ground. The fresh unfolding tips and the horizontal rhizomes between ferns can be consumed after preparation. They are usually soaked in water for up to 24 hours and then dried for a few days. The hairs on the tips should be picked off as they can be an irritant. Despite its popularity in some countries as a food species, this plant is toxic when consumed raw and in large quantities and has been linked to the incidence of stomach cancer. It was eaten by native people in Tasmania and by New Zealand Maoris, and some Aboriginal people used it to treat bull ant bites. They would crush the tip of the fern on the area that was stung.

DESCRIPTION: Bracken fern has rigid and greatly divided fronds up to two metres tall. The leaflets are small and narrow and the plant also has long rhizomes covered with fine, pale brown hairs. There are no flowers, as ferns reproduce by means of spores held beneath the fronds. These are so minute that you need a microscope to examine them.

OTHER NAMES: Common bracken, water fern.

WHERE IT GROWS: This moisture-loving plant grows along creeks and watercourses. It is found in all Australian States and in many countries around the world.

OTHER USES: Mature bracken fern fronds contain tannins, and the species has been used to prepare leather. The horizontal underground stems have been used in various countries around the world to treat a variety of ailments, including diarrhoea, wounds, internal inflammations, worms and even seasickness.

Photo – Greg Keighery

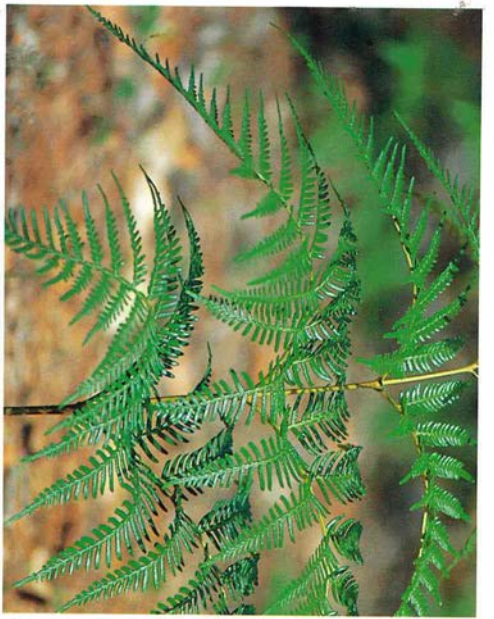


Photo – Jiri Lochman

WARRINE

(Dioscorea hastifolia)

Family Dioscoreaceae

To Aboriginal people of the south-west, the yam-like tuber of the warrine is the equivalent of the potato. The yams were dug up by women using a long wanna, or digging stick. The shoots and tips of the yams were then deposited back into the holes from which they had been dug, so they could continue to harvest the species. This practice was a form of cultivation. At one site in Walyunga National Park, large piles of rocks, which have been dug from the soil during harvesting, can be seen. This would make digging in the following year easier, especially when you consider that you may need to dig down one and a half metres to reach the yams. It is thought that this area has been continuously cultivated by Nyoongar people for the last 5000 years. Studies have shown that warrine is almost five per cent protein.

DESCRIPTION: This scrambling or twining shrub may grow up to two metres high. The leaves are highly variable in size and shape and reach up to eight centimetres long. Flowers appear from May to July. The female plants produce winged fruits about two centimetres long. The yams are cylindrical and about two to three centimetres in diameter.

OTHER NAMES: Spear-leaved dioscorea, native yam.

WHERE IT GROWS: Warrine grows in fertile soils from Shark Bay to the Darling Range, near Perth, and inland to York.

COLLECTION TIME: During Djeran, after the first winter rains have soaked the soil, and from October to November.

OTHER USES: A related species in Queensland (*Dioscorea transversa*) was used by the local Aboriginal people to treat skin cancer.

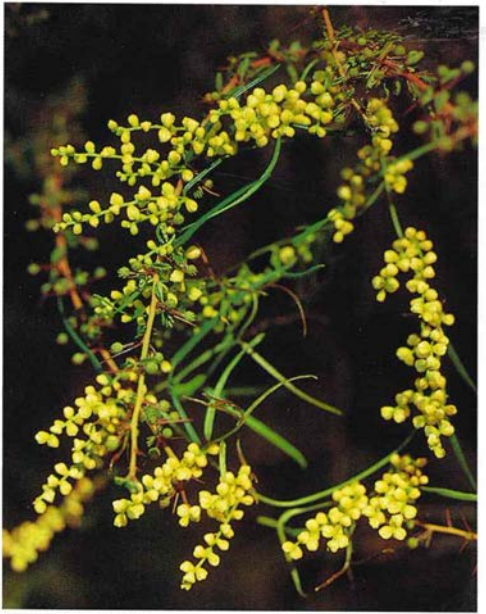


Photo – Penny Hussey

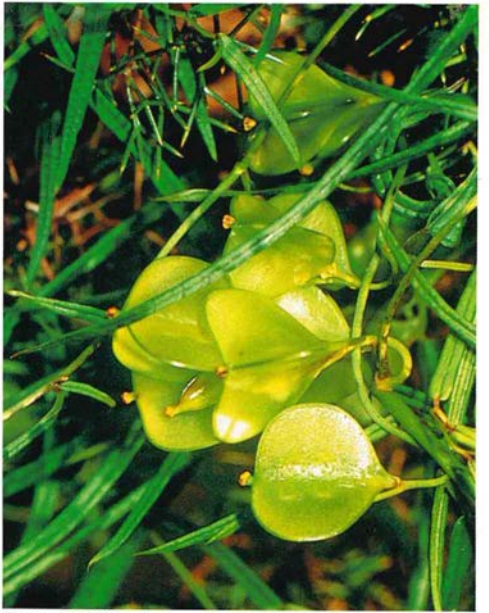


Photo – Eric McCrumb

TASSEL BUSH

(Leucopogon verticillatus)

Family Epacridaceae, the Australian heaths

The fruits of tassel bush are hard to see and, because of their size, they would provide no more than a snack. *Leucopogon* species are known as the bearded heaths (the scientific name literally means "white beard") because the lobes of the petals are usually clothed with white, woolly hairs. The fruits of the closely related coast beard heath (*L. parviflorus*) helped to sustain the early French naturalist Riche when he was lost in the Esperance area.

DESCRIPTION: Growing between one and four metres high, this shrub has an unusual appearance. The green, pointed leaves are arranged in whorls, and the small scented red flowers are borne on stems. Tassel bush bears small, succulent fruits, only four millimetres long.

OTHER NAMES: Tassel flower.

WHERE IT GROWS: Around Perth, tassel bush grows in wetter parts of the jarrah forest. Also a very common understorey species of the karri forest, it extends south to Albany.

FLOWERING TIME: August to October.

Photo – Andrew Brown

COMMON PIN HEATH

(Styphelia tenuiflora)

Family Epacridaceae, the Australian heaths

Many of the heaths (members of the family Epacridaceae) that grow in the Perth area have edible green berries and are known collectively as berry bushes. These include the common pin heath, bearded heaths, croninia, and astroloma species. Most pea, banksia and eucalypt species produce dry fruits, so members of the heath family are very important food for birds, mammals and Nyoongar people. The latter picked these berries opportunistically, during their seasonal travel (contrary to popular myth that Aboriginal people just went "walkabout", their treks through the country were actually regular and ordered and were tied in with their need to exploit seasonal food resources). They would chew the succulent coating, then spit out the seed, where it would later start to grow again.

DESCRIPTION: This shrub grows up to one metre high and produces very slender, tubular white to cream flowers about two centimetres long, from April to July. The upper parts of the petals roll back to reveal long stamens. Common pin heath has slender, pointed leaves. It produces small, oval, succulent fruits.

OTHER NAMES: Slender-flowered heath.

WHERE IT GROWS: Common pin heath is widespread in forests, woodlands and heaths, and it ranges from Gingin to Pinjarra and inland to Lake Grace.

COLLECTION TIME: Fruits appear in late winter and spring.

Photo – Tony Tapper

BORN

(Haemodorum species*)*

Family Haemodoraceae

The roots of three species of born (*Haemodorum spicatum, H. paniculatum* and *H. simulans*), also known as the blood roots, were harvested by local Aboriginal people. Blood roots were such an important component of the diet of the Aboriginal people near Albany, where the plants are known as mean, that they referred to themselves as Meanager (those who eat mean). The European common name of these bulbous herbs is derived from the blood-red gelatin that is exuded from the cut bulb. The bulbs have a mild onion flavour and were eaten either raw or roasted. After being roasted, they were often pounded together with bland foods to make a spicy meal.

DESCRIPTION: These plants are usually inconspicuous, until they are stimulated to flower by a fire. Then, their brownish-black flowers, on long slender flowering stalks, become a common sight the next spring. Flowering is between late October and December. An unusual feature of the flowers is that they never open. They are pollinated by native bees which are strong enough to push open the petals, diving head first into the flower to collect the pollen and copious nectar. The plants grow up to two metres tall, but are often considerably shorter, depending on the species.

OTHER NAMES: Blood roots, mardja, bohn.

WHERE THEY GROW: A number of species grow throughout a wide area of south-western Australia. They usually inhabit woodlands and heath.

COLLECTION TIME: All year round.

OTHER USES: All the members of the family Haemodoraceae have unusual chemicals (one of which is named haemocorin), which cause the reddish-orange colour in the roots of many species. These chemicals are not known elsewhere in the plant

Photo – Brad Daw

kingdom. They were used as a dye by some Aboriginal Australians. Haemocorin also shows promise as a pharmaceutical, having both antitumour and antibacterial properties.

DODDER LAUREL

(Cassytha species*)*

Family Lauraceae, the mistletoes

Dodder laurels (*Cassytha flava*, *C. glabella* and *C. racemosa*) are often seen clothing, and seemingly overwhelming, small trees such as wattles and paperbarks. Although they germinate by themselves in the soil they soon parasitise nearby plants, extracting nutrients by means of small suckers along their stems. These mistletoes produce fruits with a succulent outer part, attached to a seed. Some have a somewhat rubbery smell. They are edible, but you should be careful not to eat too many of them because they contain small quantities of a poisonous alkaloid. In fact, the fruits can be fatal if eaten in large amounts. They also have laxative properties.

DESCRIPTION: The greenish-brown to yellowish-orange stems of dodder laurel twine around those of its host. It has very small, scale-like leaves. Flowers are produced for most of the year. The fruits are only six to seven millimetres long and have a small stone embedded inside the succulent flesh. The remains of the calyx can be seen on the fruit.

OTHER NAMES: Love vine, bush dodder.

WHERE IT GROWS: These plants extend from Shark Bay around the coast to the Great Australian Bight. They are very common on the Swan Coastal Plain and in the Darling Range. *C. racemosa* is particularly common on south-western trees.

OTHER USES: The juice of dodder laurel can be applied to cuts and sores to help them heal. In India the stems of related species are dried, powdered and mixed with sesame oil to make a hair tonic. The stems are also used there to make an eyewash, to clean ulcers and are consumed to treat nausea and dysentery.

Photo – Greg Keighery

Dodder laurel (Cassytha flava) *fruits*

NYILLA-NYILLA

(Lysiana casuarinae)

Family Loranthaceae, the mistletoes

This attractive stem parasite relies on host plants for support, taking up food and water through the host's root system. It rarely grows on plants taller than two metres. If you see a mistletoe bird, nyilla-nyilla is usually close by. Each flower produces a seed covered with a sticky substance and a sweet, sugary layer encased in a thin red or pink skin. Mistletoe birds can often be seen squeezing the seed from the fruit and leaving the papery coating attached to the vine. The seed passes through the bird and is deposited on a branch when the bird wipes its bottom, ready to germinate.

DESCRIPTION: This mistletoe has a weeping, droopy habit. Its dull green leaves are up to nine centimetres long and one and a half centimetres wide. They are shaped like long cylinders and are slightly enlarged at their base. The bright red, tubular flowers, up to 50 millimetres long, are either solitary or held in pairs. They split open to expose the anthers and style. The flowers appear from May to September. The succulent, oval-shaped fruit reaches up to 10 millimetres long.

WHERE IT GROWS: Around Perth, nyilla-nyilla is found along the Swan, Canning and Mandurah River estuaries, where its host salt sheoak (*Casuarina obesa*) occurs. It is commonly found with slender mistletoe (*Amyema linophyllum*) on the same species. Other common mistletoes are wireleaf mistletoe (*Amyema preissii*), which parasitises wattles, and stalked mistletoes (*A. miquelii*), seen growing on eucalypts. All are rare on the Swan Coastal Plain, except in relatively fire-free areas.

COLLECTION TIME: The fruits appear mainly in summer time.

Above: *The fruits*

Below: *The flowers*

Photos – Babs & Bert Wells/CALM

MOOJA

(Nuytsia floribunda)

Family Loranthaceae, the mistletoes

Mooja, known to most Europeans as the Christmas tree, has roots with edible suckers. Aboriginal people used to dig up these suckers, which are juicy, succulent and may have a bitter or sweet taste. The covering of yellow bark was peeled off to expose the edible tissue inside. After taking slabs of wood from the trees to make shields, families returned later to collect and eat the raw, sweet gum that oozed from the wounded trees. They would also soak the flowers in water to make a sweet drink. Mooja is a semi-parasite and is the only member of the mistletoe family which grows as a tree. The root suckers are used by the plant to extract nutrients from the roots of neighbouring plants.

DESCRIPTION: This small tree or large shrub grows up to eight metres high and has grey to brown bark. The leaves are dull green or bluish-green. The brilliant gold flowers are arranged in dense sprays and make a showy display during the festive season. The dry, brown (and inedible) fruits are light and winged and are carried away from the parent tree by the wind.

OTHER NAMES: Christmas tree.

WHERE THEY GROW: These trees grow from Kalbarri to Israelite Bay and inland to near Kellerberrin. They are scattered through much of the south-west forests, woodlands and the adjacent coastal plain. They are still seen in many Perth suburbs and often grow in paddocks, where they can survive by parasitising nearby grasses. Despite their delightful appearance, Christmas trees are not often cultivated, as they take 10 years or so to mature and flower.

USES: According to Nyoongar people, when a person dies their spirit inhabits a Christmas tree, so its leaves should not be taken inside a house or camp shelter, lest the spirit becomes trapped. The flowers, however, can be used as a decoration.

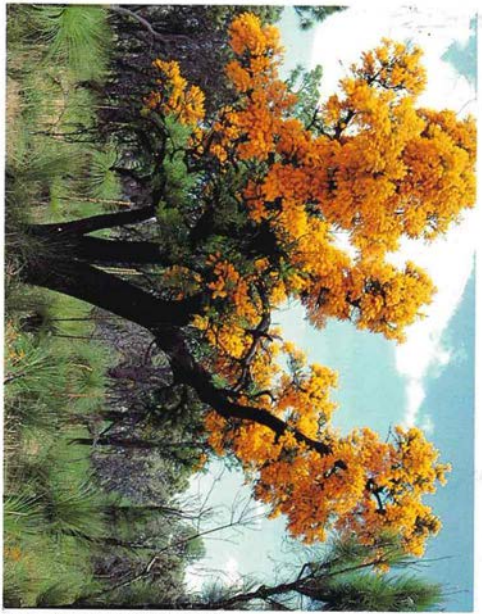


Photo – Babs & Bert Wells/CALM

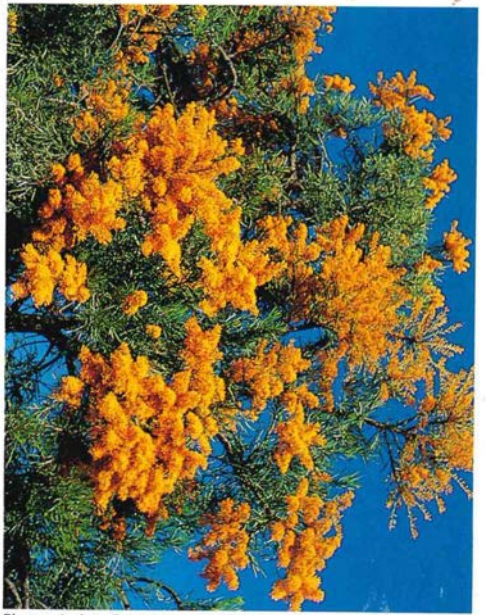


Photo – Andrew Brown

RED-EYED WATTLE

(Acacia cyclops)

Family Mimosaceae, the wattles

Each shiny, black seed of red-eyed wattle is circled with an orange to scarlet seed stalk, giving it the appearance of a bloodshot eye. The scientific name refers to Cyclops, the mythical one-eyed giant of Greek legend. The striking seeds are retained and displayed in the open pods. Aboriginal people collected the seeds of this and many other wattle species throughout Australia. The hard black seeds were ground to produce a chalky white powder, which was mixed with water and baked into cakes. Many insect larvae (bardi grubs) burrow into the stems, leaving a characteristic hole with a residue of sawdust that provides a clue to their presence. These grubs were a nutritious and sought after food. A gum is exuded from the stem and this is also edible.

DESCRIPTION: Red-eyed wattle grows as a domed shrub up to three metres high. Instead of true leaves, it has thick leathery phyllodes - flattened leaf stalks that look like, and function as, leaves - which are four to nine centimetres long. The spherical yellow flower heads, four to seven millimetres across, are arranged in groups of two or three, and appear from September to March. Each head is composed of numerous tiny yellow flowers, each with five lobes. The greyish-brown pods, four to 12 centimetres long, are also thick and leathery. They twist as they dry, and open to reveal black seeds surrounded by folded seed stalks.

OTHER NAMES: Western coastal wattle.

DISTINCTIVE FEATURES: Red-eyed wattle is most easily recognised by its seed pods with their striking seed stalks.

WHERE IT GROWS: This species is common in sandy and limestone soils along the coast, from Eneabba to the Great Australian Bight, continuing east into South Australia. It has also been introduced into South Africa, where it is now a serious weed.

Photo – Michael Morcombe

Above: *The distinctive seeds of red-eyed wattle*
Right: *Gum from an acacia*

Photo – Eric McCrumb

OTHER USES: This common coastal shrub is very tolerant of sea spray, drought and saline conditions and is often used to stabilise dunes.

WANDOO

(Eucalyptus wandoo)

Family Myrtaceae, the myrtles

Aboriginal people scraped off and ate the outer parts of the roots of young wandoo, which are deliciously sweet and juicy. In mature trees, a discolouration of the bark was an indication of tree hollows containing water, which would have been an important resource in some areas.

DESCRIPTION: Wandoo has a majestic appearance and grows to about 30 metres tall. The smooth-barked trunk rarely attains a diameter of more than a metre. It has dull, bluish-green foliage and white bark that is mottled with darker patches of old bark. Unlike the similar-looking powderbark, the bark of wandoo is not powdery, and unlike powderbark its buds have long, pointed caps. The white or cream flowers have numerous stamens. The fruits are either pear-shaped or cylindrical.

OTHER NAMES: White gum, wawnt.

WHERE IT GROWS: This attractive tree grows from Three Springs to the Kalgan River, and inland to Kellerberrin, and often forms open woodlands that make excellent habitat for numbats and orchids. It favours sandy or loamy soils.

FLOWERING TIME: Most flowering takes place from December to April.

OTHER USES: The flowers are used to produce an excellent mild-flavoured honey. The timber is highly durable but is little used today. The bark and timber is rich in tannin and this was extracted commercially to tan leather.

Photo – Jiri Lochman

DJUBAK

(Burnettia nigricans)

Family Orchidaceae, the orchids

Many Western Australian ground orchids produce edible tubers from just below the surface to 40 centimetres underground. In spring and summer, indigenous Australians would excavate the tubers, which are high in starch. During the early period of European settlement, there were reports of large gatherings of families from the Swan River area being invited by their northern neighbours to the area of swamps now known as Yanchep National Park. Here, the Nyoongar families would spend a few weeks feasting on the orchid tubers growing prolifically on areas burnt in previous seasons. Those of the red beak orchid were among the most commonly exploited. The jug (*Pterostylis recurva*) and sun (*Thelymitra* species) orchids were also targeted because of the large size of their tubers.

DESCRIPTION: The flowers are usually only present after a summer fire. At most other times the plant is simply a large, fleshy, heart-shaped leaf. This leaf is from two to eight centimetres long and two to six centimetres wide and lies flat on the ground. From August to October, the plant produces a fleshy green and red flower stalk, with between two and eight reddish flowers. Floral bracts sheath each flower, which has four petals and a labellum (lip). The fragrant flowers are red, striped with white, and the top sepal is prominently hooded.

OTHER NAMES: Red beak orchid, elephants' ears, elephants' tongues, potato orchid.

WHERE IT GROWS: Red beak orchid grows in a wide range of habitats and soil types, from Shark Bay, east to Israelite Bay and inland to Hyden. It is also found in New South Wales, the Australian Capital Territory, Victoria, Tasmania and South Australia.

COLLECTION TIME: October to November. Tasting somewhat like a juicy potato, the tubers can be eaten raw or roasted.

Photo – Babs & Bert Wells/CALM

AUSTRALIAN BLUEBELL

(Sollya heterophylla)

Family Pittosporaceae

The Australian bluebell is a common bushland plant of south-western Australia. Its flower colour is predominantly intense blue. Its fleshy fruits are edible when ripe and are quite sweet with a soft texture. This is the most common of the three species of *Sollya*, which are unique to WA.

DESCRIPTION: This small shrub or twiner reaches one and a half metres high. It has elongated leafy stems that characteristically twist around themselves and associated plants. Its glossy green, leathery leaves are up to five centimetres long. The pendulous deep blue flowers, up to three millimetres long, are generally arranged in loose inflorescences. Australian bluebell flowers sporadically throughout the year, but mainly from October to February. When mature, the fleshy, blue berries are up to two and a half centimetres long.

HABITAT AND DISTRIBUTION: This species is widespread, growing in a variety of habitats in the south-west, from Mogumber to Augusta and east to the Esperance area.

Photos – Andrew Brown

KOOLAH

(Podocarpus drouynianus)

Family Podocarpaceae

Koolah produces one of the largest edible fruits in southern WA, but it is flavourless. The single round seed, or cone, is attached to a fleshy "stalk" that resembles a large purple grape. As it is a very common plant in the southern jarrah forests, koolah probably helped to supplement the diet of southern Nyoongars.

DESCRIPTION: This shrub or tall tree grows no more than three metres high and has narrow pale green leaves. Following bushfires, it rapidly resprouts from a lignotuber (underground rootstock). Like the conifers, to which it is closely related, koolah lacks flowers and produces male and female cones on different plants. After pollination, the stalk of the cone becomes fleshy and swollen. It is plum-coloured when ripe.

OTHER NAMES: Emu bush, emu berry, wild plum.

WHERE IT GROWS: Koolah is distributed mainly in the south-west, between Busselton, Augusta and Mount Barker, but also grows at Mundaring Weir, near Bunbury and at Gidgegannup.

FRUITING TIMES: The fruits appear mainly from August through to April.

OTHER USES: The foliage of koolah is widely used in the cut flower industry.

Photo – Greg Keighery

POOLGARLA

(Banksia grandis)

Family Proteaceae

The large flower-spikes of this typical jarrah forest tree were used by Nyoongar people to make a sweet drink. The flowers would be soaked in water to produce a type of honey-sweet mead known as mangite, or mungitch. If this was consumed in large enough quantities, the drinker could become intoxicated. The nectar was also sucked directly from the plant. Grubs which burrow into the flower-spikes were gathered and eaten. When mature, the woody spikes of poolgarla were used by Nyoongars to carry a smouldering coal when travelling. A member of the group, often a young boy, would hold the fire stick under his cloak until they arrived at the next night's camp.

DESCRIPTION: Usually growing as a tree up to 10 metres high, poolgarla has the largest flower-spikes and leaves of all banksias. The flower-spikes are pale yellow and reach up to 40 centimetres long. They appear mainly from October to January. The leaves are held in clumps and are unmistakable, with striking triangular lobes arranged along a central spine.

OTHER NAMES: Bull banksia, mangite, beera, boolgalla, boorarup.

WHERE THEY GROW: Poolgarla grows from Mount Lesueur to Cape Leeuwin and east to Cape Riche and largely inhabits jarrah forest of the Darling Range and coastal tuart woodlands.

COLLECTION TIME: Among the Nyoongar people, there would sometimes be large gatherings during December to January to participate in drinking the nectar beverage (mangite).

Photo – Cliff Winfield

PUDJAK

(Dryandra sessilis)

Family Proteaceae

Aboriginal people either sucked the flowers of pudjak for their nectar, or soaked them in water to make a sweet drink. This abundant and widespread plant is also critical to the survival of many animals, providing nectar for numerous animal species such as honey possums and birds, while black-cockatoos and ringneck parrots devour its seeds. Pudjak flowers opportunistically and will put some flowers out at any time of the year after a rain storm. However, obtaining a reasonable quantity of flowers from this plant can be a prickly experience that is hardly worth the effort. Other dryandras, known as honey pots because they have cup-shaped flowers, can provide an easier source of nectar.

DESCRIPTION: This shrub or small tree is one of the most common and distinctive plants of south-western Australia, and may attain a height of five metres. It has a tendency to grow in dense, prickly thickets. The greyish-green leaves have prickly teeth and are mostly fan-shaped. They are usually held in clumps. The cream or yellow flowers are in dome-shaped heads, up to 35 millimetres across, and nestle snugly within the leaves. Flowers are produced mainly from May to November.

OTHER NAMES: Parrotbush.

WHERE IT GROWS: Pudjak grows from Kalbarri to Bremer Bay. In the limestone-derived soils of near-coastal areas it will often dominate the vegetation, and in the gravelly soils of the jarrah forest it forms a common understorey plant.

COLLECTION TIME: All year, but especially in winter and spring.

OTHER USES: This species is one of the most important honey-producing plants in WA, producing nectar over a long period of time.

Photo – Jiri Lochman

CADGEEGURRUP

(Persoonia saccata)

Family Proteaceae

The small, succulent, greenish-yellow, pear-shaped fruits of cadgeegurrup are edible. The pulp that surrounds the hard stone is very fibrous but nevertheless succulent and tasty. The ripest fruit will fall to the ground if the shrub is given a gentle shake. Emus also eat the fruits, which must first pass through the birds to trigger germination of the seeds. Persoonias are shrubs or small trees that belong to a primitive sub-family of the Proteaceae. There are about 75 species of persoonia in Australia and New Zealand; most are found in eastern Australia, where they are called "geebungs". There are 28 species in WA. Most persoonias have fleshy edible fruits, rather than the woody fruits of banksias and other family members. For instance, the snottygobble (*Persoonia longifolia*), a small tree which is common in the jarrah forest from Perth to Albany, has fruits that split open to reveal a mucous-like gel around the seed. You can gain moisture and sustenance by sucking this gel and spitting out the seed.

DESCRIPTION: This shrub grows to a maximum height of one and a half metres. It has narrow leaves eight to 17 centimetres long. The yellow cylindrical flowers, produced from July to January, are up to 13 millimetres long and have a pouch on the lower side. Four lobes roll back as the flower opens.

OTHER NAMES: Pouched snottygobble, pouched persoonia, snotty bobs, wild pear.

WHERE IT GROWS: Cadgeegurrup grows in jarrah or banksia woodlands in sandy or gravelly soil, from Moore River to Cape Naturaliste.

COLLECTION TIME: The fruits can be collected in October and November.

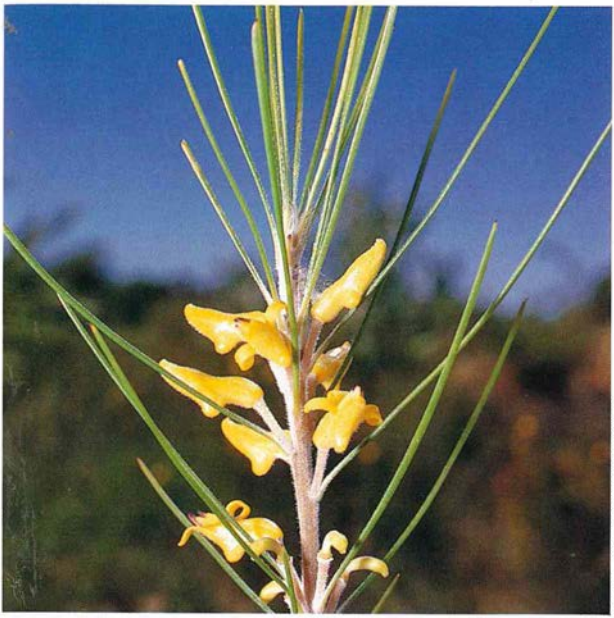


Photo – Babs & Bert Wells/CALM

Above: *The flowers*

Below: *The fruit*

Photo – Brad Daw

TAARUUK

(Clematis microphylla)

Family Ranunculaceae, the buttercups

This attractive creeper, with delicate white flowers and fluffy white seeds, climbs through and over other shrubs. Its mass of tuberous roots were roasted on coals and then pounded to make a paste. It is very hot. The protein content of this food source is relatively high, at more than six per cent, and the roots are also quite starchy. There are more than 250 species of clematis, mainly in temperate areas of the northern hemisphere, with only three species found in WA.

DESCRIPTION: From July to September, this twining creeper produces masses of attractive white flowers. Plants are either male or female. Each flower has four prominent, pure white, petal-like sepals, and male flowers have 20 or more cream stamens. The styles of female flowers persist in long, feathery plumes following fertilisation. This gives the fruit a beard-like appearance. The leaves are composed of three leaflets on the ends of tendril-like leaf stalks. Leaflets are three to eight millimetres wide, and thus more slender than those of the closely-related white clematis (*Clematis pubescens*), which are broad and 18 to 40 millimetres wide.

OTHER NAMES: Old man's beard, small-leaved clematis, slender clematis.

WHERE IT GROWS: In WA, taaruuk inhabits islands, coastal sands and limestones, from Kalbarri to Israelite Bay. It also grows in most other Australian States.

OTHER USES: The leaves were used by early settlers to make a poultice, to reduce irritation. However, they can cause blistering if left for more than three minutes.

Photo – Brad Daw

Above: *The fluffy seeds* Below: *White clematis* (Clematis pubescens)

Photo – Babs & Bert Wells/CALM

SOAPBUSH

(Trymalium floribundum)

Family Rhamnaceae

Although it is not strictly a bush tucker species, soapbush was nevertheless a useful and important species to the Nyoongar people. It grows in dense thickets along creeks and watercourses, where it was used to clean up at the end of the day. When the leaves are used to scrub the hands they produce a lather similar to soap. Parts of soapbush could be treated and placed in small waterholes. Animals that drank the affected water would become quite groggy and could be speared or clubbed more easily.

OTHER NAMES: Karri hazel, white hazel.

DESCRIPTION: This large shrub or small tree grows up to nine metres high. The leaves, 30 to 130 millimetres long, are green above but pale grey to white below, with minute hairs. The leaf margin sometimes has coarse teeth. Small white to pale yellow flowers are arranged in large, loose sprays. Each flower has five small, petal-like sepals and five very small petals. Each petal hides a very small stamen. The fruits, only two to three millimetres long, are brittle and separate into three segments (like pieces of a pie).

WHERE IT GROWS: Soapbush grows in karri forests, jarrah forests, mixed woodlands and shrublands. It extends from Mount Peron and York to the South Coast, and east to Mount Manypeaks.

FLOWERING TIMES: Winter and spring.

OTHER USES: When correctly treated, soapbush stems can be used to make a handy spearing implement.

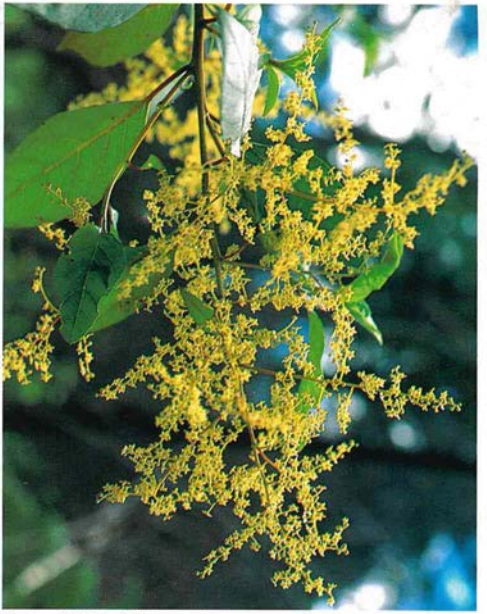


Photo – Cliff Winfield

DJUK

(Exocarpos sparteus)

Family Santalaceae, the sandalwoods

The fruits of this plant are small, measuring two to three millimetres across, however, one large bush can have thousands on it. Aboriginal people collected them by spreading kangaroo skins under the bush and shaking it. The fruits can be eaten when they become orange-red, but taste best when they turn a deep crimson colour. In semi-arid areas mistletoes, themselves bearing succulent orange-red fruits up to seven millimetres in diameter, may grow on djuk. These taste better and give a high return of food for effort. Many native animals, particularly birds, utilise this food source, so plants may sometimes be stripped of their fruit. Like sandalwood (*Santalum spicatum*) and quandong, to which it is related, this semi-parasitic plant obtains part of its food from the roots of other plants. The burnt leaves can be used to repel insects. The name *Exocarpos* was given to this species because the seed (*carpos*) is external to (*exo*) the fruit.

DESCRIPTION: This graceful, upright shrub grows up to three and a half metres high. The ribbed stems are usually leafless, except on the flowering branchlets. The tiny flowers are usually yellow or yellowish-green, but occasionally white. The flowers appear mainly from February to October. The fertilised flowers develop into small succulent egg-shaped fruits, held on a small stalk that is also edible.

OTHER NAMES: Broom ballart, native cherry.

WHERE IT GROWS: This species grows from Exmouth to Israelite Bay and is widely distributed throughout the State's interior. On the coast, djuk inhabits sandy areas over limestone, sometimes in winter-wet depressions. In the metropolitan area specimens can be seen at Thomsons Lake Nature Reserve and Yanchep National Park.

COLLECTION TIME: Fruits can be seen at any time of the year. However, in the Perth area most of the fruits mature between November and January.

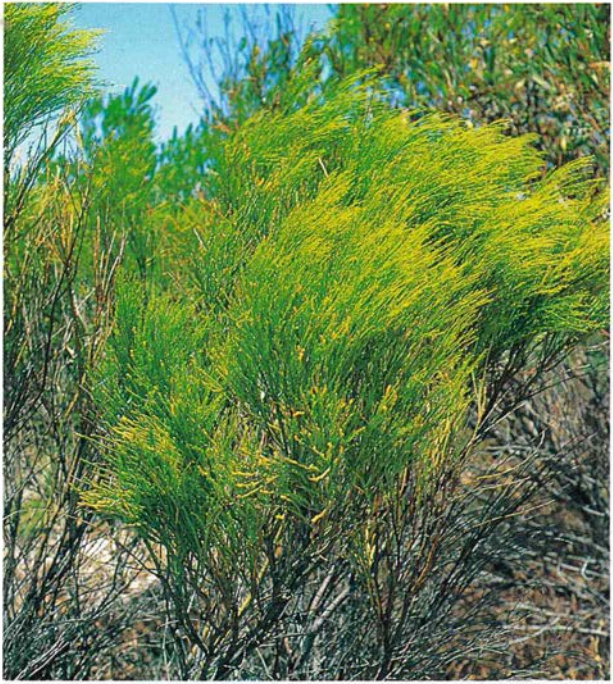


Photo – Andrew Brown

Above: *Djuk*

Below: *The fruits*

Photo – Brad Daw

QUONDONG

(Santalum acuminatum)

Family Santalaceae, the sandalwoods

This tree has attractive round, succulent fruits that turn bright red when ripe and make a tasty snack. They have red outer skin, like orange peel, surrounding a hard outer kernel, which can be cracked open to reveal the nut. The nuts are delicious when roasted. The outer part of the fruits can be made into jams or jellies. Quandong is a close relative of sandalwood, and it too parasitises other plants through its roots.

DESCRIPTION: This small tree has an upright growth habit and grows no higher than five metres. It forms clumps in dunes by means of underground suckers. The yellowish-green leaves are quite leathery and very slightly sickle-shaped. Around Perth, the small, fragrant green and brown flowers appear from February to March. The fruits are two to four centimetres wide and have a single seed.

OTHER NAMES: Dumbari, jawirli, native peach, Vasse apple, walku, wanga, wayanu, wongil.

WHERE IT GROWS: Quandong is found in all Australian States, but in WA it grows from Carnarvon south, and into inland areas. In metropolitan Perth it is largely a plant of coastal dunes and limestone areas, but also grows in the Darling Scarp.

COLLECTION: The fruits are ripe and ready to eat in September and October in the bushland near Perth. The best tasting kernels can be picked out of emu dung or collected from under a quondong tree.

OTHER USES: Pounded quandong leaves were reportedly used by some Aboriginal people to treat diseases introduced by European settlers. The seed contains a large amount of oil, which can be used as a moisturiser for the skin. Children may use the stones as beads or marbles.

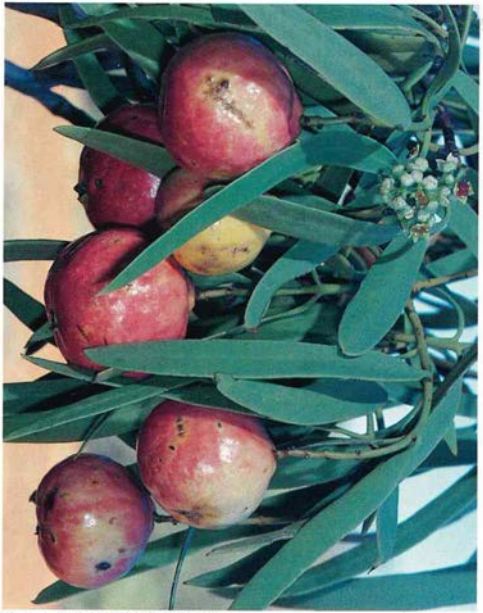


Photo – Babs & Bert Wells/CALM

Photo – Andrew Brown

YANGETI

(Typha species*)*

Family Typhaceae

Yangeti was a staple food for indigenous Australians in the Swan River area. The starchy tubers were dug from swamps such as those at Yangebup Lake and Yanchep (hence the names of these locations). Two species of bulrush are now found near Perth, one native (*Typha domingensis*) and the other introduced (*Typha orientalis*). The root must be treated before it is eaten. Aboriginal people would pound the white horizontal rhizomes to remove the fibrous parts, then mould the remaining paste into flattened shapes and roast them to produce cakes tasting similar to asparagus. The centre of the stem is also edible at the base. Young flowering spikes can be eaten raw, or cooked and served with butter like a corn on the cob. The hard centre of the spike is not edible.

DESCRIPTION: Both species look similar and grow up to four and a half metres high. They form dense thickets around swamps. The long, blade-like leaves are enclosed in a sheath. The cinnamon brown flowers are produced in long cylindrical inflorescences that look somewhat like sausages on spikes. The flowers are usually separated into male (above) and female portions (below). When mature, they turn into a mass of fluff. The introduced bulrush flowers from November to January, while the native species flowers for most of the summer months and possibly for most of the year.

WHERE IT GROWS: The introduced bulrush grows in permanent wetlands and winter-wet depressions throughout the south-west of the State, where it is often partly submerged in winter. It quickly colonises disturbed sites. The native species is much more common in the north-west of WA but does grow in scattered locations throughout the south-west.

COLLECTION TIME: When the swamps dry up in summer and autumn, the bulrushes become accessible.

Photo – John & Val Butler

OTHER USES: The edible underground stems have been used in India and parts of the Pacific to treat gonorrhoea and dysentery.

MIMIDI

(Xanthorrhoea gracilis)

Family Xanthorrhoeaceae, blackboy family

Four species of blackboy or grass tree grow in Perth, although they are often referred to collectively. Once you learn how to distinguish between them, you will realise that the balga and mimidi are really quite different. The flowers of mimidi and other grass trees produce copious nectar. Aboriginal people would soak the flowers in water to make a sweet drink. If you see any flowers with a drop of nectar, try tasting it.

DESCRIPTION: Mimidi has smaller clumps of foliage and more slender flower-spikes than balga. The trunk is absent on this species, though the leaves are up to 60 centimetres long and the flower-spike may reach two metres tall. It does, however, have an underground stem and may grow in clumps (formed from the same plant). The spike is dark brown and velvety before flowering.

OTHER NAMES: Graceful blackboy, slender blackboy.

WHERE IT GROWS: Mimidi is common in the jarrah forest understorey from Perth to Busselton and the Porongurup Range.

FLOWERING TIME: Spring and early summer.

COLLECTION: Once the flowering stalk has sprouted (by early spring), it can be pulled out of the plant and the succulent white base chewed and ground to obtain the sweet, juicy white pulp. Continue chewing up the stem until it becomes too woody.

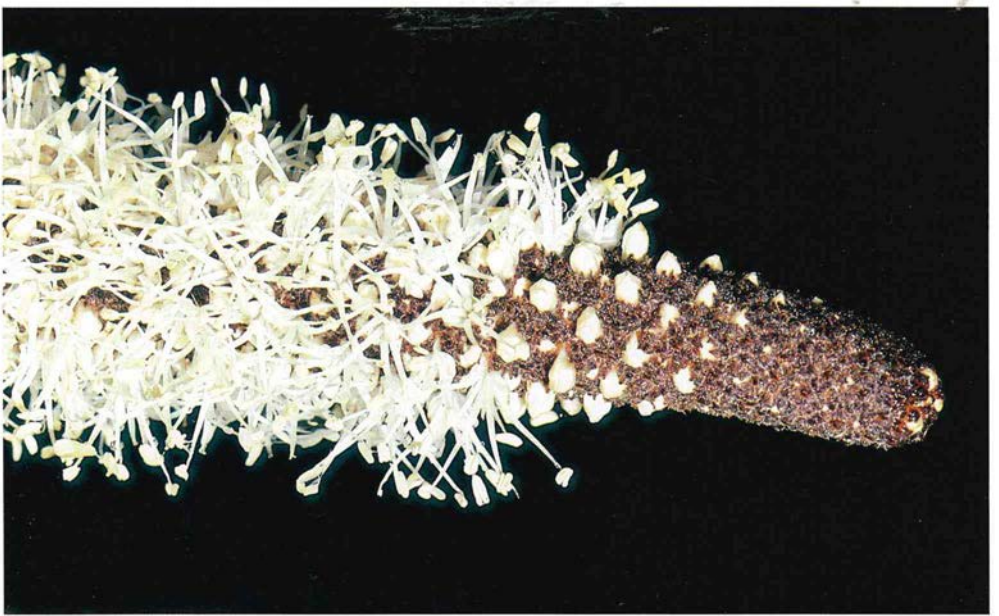


Photo – Bill Belson

BALGA

(Xanthorrhoea preissii)

Family Xanthorrhoeaceae, blackboy family

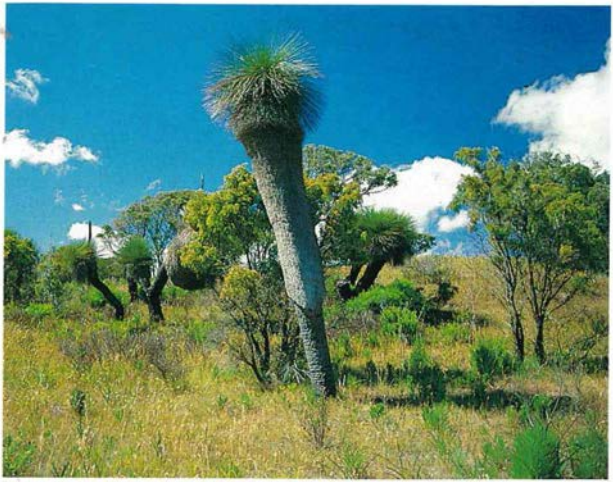
Balga had many uses for local Aboriginal people. The gum from the flowering spike was made into cakes. Bunches of dried leaves were made into torches, used when hunting at night, while the leaves were thatched into roofing material for huts. The dead flower stem was even used as a friction instrument to make fire. A black resin from the trunk was used as an adhesive to attach spear points to shafts. The resin may accumulate on the trunk in lumps up to five centimetres across. Bardi grubs were collected from the trunks of dying trees, and Aboriginal people could tell whether they were present in large numbers by looking at the tree and reading the signs of decay. Alternatively, Nyoongars would knock the tops off grass trees, to kill the plant. They then "owned" the tree and, months later, grubs could be harvested from it. The grubs could be eaten raw or roasted in hot ashes.

DESCRIPTION: This impressive plant may reach up to five metres tall, with a three-metre-long flower-spike. It has one or more clumps of long, slender and brittle leaves, which are diamond shaped in cross-section. The distinctive, and often crooked, trunk is formed from old leaf bases. Balga may branch into several crowns of foliage. Thousands of small white flowers are produced on the tall green stem, with a single stem on each crown.

OTHER NAMES: Common blackboy, balka.

WHERE IT GROWS: Balga grows on a wide range of soils, from Kalbarri to the South Coast.

FLOWERING TIME: January to November. Fire will stimulate flowering.



Above: *The balga*

Below: *Larvae in blackboy*

Photo – Babs & Bert Wells/CALM

JEERIJI

(Macrozamia riedlei)

Family Zamiaceae

Sailors on Dutch navigator Willem de Vlamingh's ship became ill after eating the fruit of jeeriji around the Swan River in 1697. However, the fruits were regularly eaten by local Aboriginal people, who removed the toxins and carcinogens through a lengthy process. They were first buried for some time, then soaked in water. The pulp which encased the nut was then usually roasted before being eaten. It is said to taste similar to tomato flesh. In other parts of Australia it is believed that the seeds were also eaten.

DESCRIPTION: This palm-like shrub usually has a short trunk covered with leaf bases. The fronds are between one and two metres long. There are separate male and female plants. Female plants usually produce one or two cones, up to 40 centimetres long. When ripe, they are red and fleshy. The male cones were not eaten.

OTHER NAMES: Zamia palm.

WHERE IT GROWS: Jeeriji grows in all soil types, from the Hutt River in the north to Esperance in the south.

COLLECTION: The cone disintegrates from February to March, shedding the ripe seeds. These would be collected in March. At the time the seeds were abundant, Aboriginal people would often camp on the shores of the Swan River to catch the mullet and mulloway. The long period of encampment also allowed them to undertake the lengthy treatment needed to exploit this plant.

OTHER USES: The name jeerji may refer to the woolly substance that can be found around the base of the fronds, on top of the trunk. This was used as fire tinder or as an absorbent fibre for hygienic purposes. As the seeds were very starchy, some early settlers would crush them and steep them in water. The starch would settle on the bottom and could be dried and used later.

Photo – Babs & Bert Wells/CALM

Above: *Female plant*
Right: *The fruit*

Photo – Tony Tapper

SIGHTING RECORD	
SPECIES	**REMARKS**
bain	
tjunguri	
berry saltbush	
kara	
kerbein	
bracken fern	
warrine	
tassel bush	
common pin heath	
born	
dodder laurel	
nyilla-nyilla	
mooja	
red-eyed wattle	
wandoo	

Photo – Eric McCrumb

SIGHTING RECORD	
SPECIES	**REMARKS**
djubak	
Australian bluebell	
koolah	
poolgarla	
pudjak	
cadgeegurup	
taaruuk	
soapbush	
djuk	
quondong	
yangeti	
mimidi	
balga	
jeeriji	

Photo – Andrew Brown

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Greg Keighery is a botanist of some note in CALM's Science and Information Division. He has more than 22 years botanical experience in all areas of the State.

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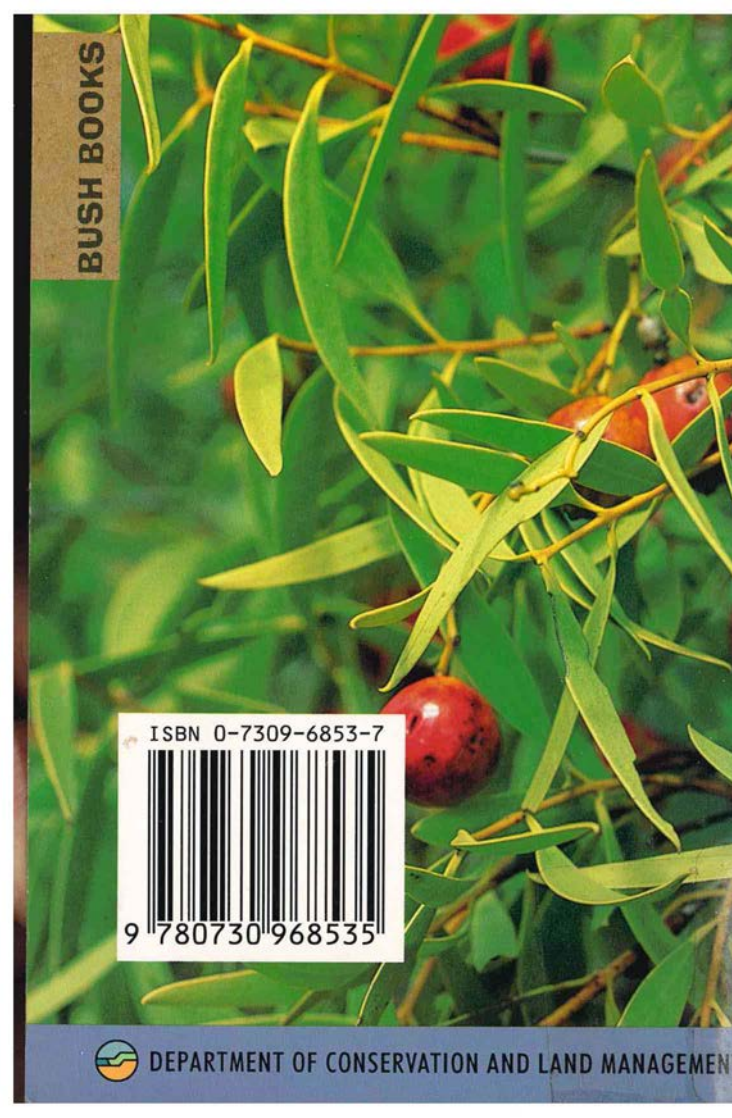
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