The Value of

Fringing Vegetation

Una Bell

Dedicated to the memory of Dr Luke J. Pen
An Inspiration to Us All

Acknowledgements

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All illustrations and most photographs are by the author except for the photos of Alternanthera denticulata, Baumea juncea, Juncus caespiticius, Juncus pallidus, Juncus subsecundus, Eucalyptus rudis taken by the author and Craig Wansbrough; Banksia littoralis by Shenaye Hummerston; Acacia pulchella, Kennedia coccinea, Lepidosperma tetraquetrum and Trymalium odoratissima by Graham Zemunik.

Front Cover Photo – Upper Helena River Catchment, 2005, by Craig Wansbrough

Back Cover Photo – Long-necked or Oblong turtle, Chelodina oblonga, a species that relies on fringing vegetation for survival, 1995, by Una Bell

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Tawny Frogmouth WA Herbarium Garden
March 21, 2010

Introduction

Fringing vegetation along watercourses is important. Local native plants provide habitat and food for insects, birds and animals. There are often bands of different vegetation types, depending on the moisture and soil conditions.

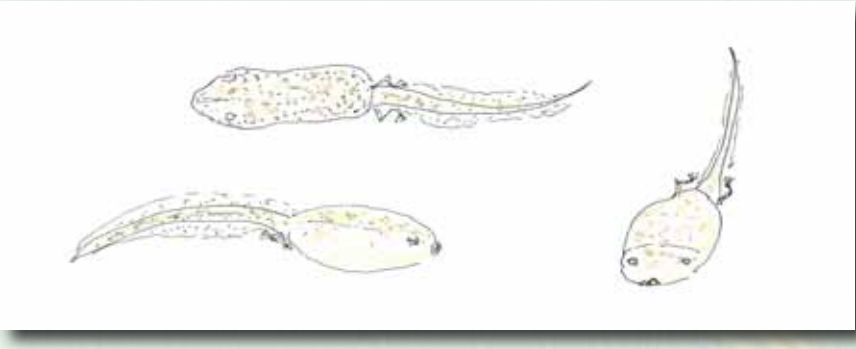
This work features some of the native plants that are found along watercourses and damp areas in Perth Hills; many of the plants are suitable for revegetation.

If you have a degraded watercourse, dam or drain, then planting it with local native species suitable for your area and site will help to restore it.

What is Fringing Vegetation?

Fringing vegetation –

- Includes trees, shrubs, understorey plants and other life forms such as fungi that grow along our creeks and rivers;
- Provides habitat for birds and animals and creates a wildlife corridor, including a refuge for birds and animals during the hot summer months; pools of water are important for wildlife in summer;
- Moderates the water temperature, which is important as many of our native fish and fauna cannot tolerate high temperatures; planting trees on the north side of waterways is important to lessen the impacts of climate change as this helps to keep the water temperature lower in summer;
- Starts the ecological processes in a watercourse or a pool. Leaves and insects dropping into the water from overhanging branches provides food for fish and other creatures;
- Stabilises the creek banks and helps prevent erosion, while woody debris such as logs and branches slowsthe water and create habitat;
- Helps to create a pool and riffle system;
- Acts like a filter as it captures and absorbs fertilizer and debris in runoff, keeping the water cleaner.



Fungi

...neither plant nor animal

Fungi are neither plants nor animals. They have a separate kingdom of their own and are an important but often under-appreciated part of the ecosystem. Fungi are the basis of many natural processes, such as breaking down debris and leaf-litter into nutrients to make it available for plants. They also provide food for animals. Truffles are underground fungi which are dug up and eaten by bandicoots.

Gymnopilus junonius — Spectacular Rustgill

Gymnopilus is from gymn meaning naked, and describes the cap without a cover. Juno was a Roman goddess, the wife of Jupiter.

Orange coloured fungus with red-brown spores. It is a common fungus which attacks dead wood such as jarrah, marri and paperbarks. Belongs to the Cortinariaceae which have a veil. Other common names are Laughing Jim or Gym.

Hydnum repandum — Hedgehog Fungus

Hydnon means truffle, while hydor means water or with abundant moisture. Repandus means bent back or turned upwards, and with a slightly uneven edge.

Cap is cream or pale yellow to orange with unusual spine-like teeth on the underside. The stem is often offset and not central. Occurs in damp areas, often covered by leaf litter. Also known as Tooth Fungus. Belongs to the Hydnaceae.

Pycnoporous coccineus Scarlet Bracket Fungus

Pyknos means dense and coccineus means scarlet.

The Scarlet Bracket Fungus has a tough leathery texture and is a long lasting reddish orange fungus commonly found on fallen logs or dead branches of trees. Photo shows a Scarlet Bracket Fungus and a white skin fungus.

Slime Moulds

... the mobile Myxomycetes

Slime Moulds (*Myxomycetes*) vary a lot, and they can look like bits of brightly coloured jelly, or strange brown growths that seem to come from nowhere. Like fungi they are neither plants nor animals, but, unlike fungi, they can move around.

Slime moulds have a vegetative phase called plasmodium, which can move by creeping and flowing. The plasmodium can change to sporangia or fruiting bodies when the plasmodium is mature and environmental conditions are favourable. If environmental conditions are unfavourable, then the plasmodium changes to a sclerotium, which is a hardened resting body.

These stages in the life of a slime mould are shown in the photographs of *Leocarpus sp.,* which changed from a yellow-brown slime, to a yellow egg-like mass, then to the brown fruiting bodies over the course of a few days. It finally dried out after moving up onto a piece of timber.

The brown *Stemonitis sp*. (see below) has stems which are the mature sporangia. This particular one came up on our back verandah.

A few days in the life of Leocarpus sp., a slime mould

Moss

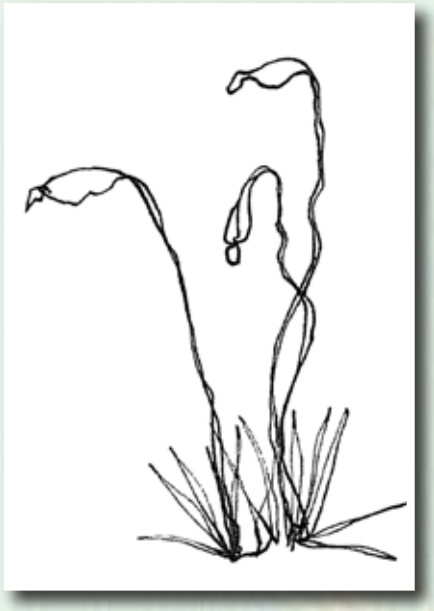
... a miniature forest

Moss are ancient plants which existed before flowering plants evolved, and belong to the Bryophyte family.

Moss consist mostly of stems and leaves, and are small because they do not have lignin. Stems are usually brown, and some species have minute fine hairs. Moss leaves are usually arranged in a spiral with a central mid-rib and a distinct border. Leaves are very thin, often only one cell thick so moisture goes directly into the leaves. Instead of roots, moss has rhizoids which are fine hairs, usually brown and branched, to hold the plant in place.

Moss can dry out and then rapidly take up water when wet. Water is needed for fertilisation, but most moss can also reproduce when fragments are broken off and small groups of cells can grow into new plants.

Moss has an interesting life cycle with alternating generations of plants. The gametophyte is the leafy structure which produces the semi-parasitical sporophyte which is attached to the gametophyle by a foot. The sporophyte consists of a thin stalk topped by a capsule which is green when immature, changing to brown or black. A covering protects the capsule lid until maturity, when the lid separates and the spores are released. The capsule has rows of teeth which control the time and rate at which spores are released.



Moss does not like changes in its habitat, and care needs to be taken when weeding or planting to avoid damaging moss.

Because moss does not have roots and the leaves take in nutrients, they are good indicators of ecological health.

Two species of common local moss are Didymodon torquatus (left) and Campylopus introflexus (below)

Sundews

... plants that eat insects

Only one Western Australian species *(Drosera glanduligera)* is annual. All other species are perennial and survive over summer as a tuber or a stipule bud. Leaves are often in a small rosette; the upper leaf surface has hairs which secrete mucilage to trap insects. Some species have an aerial flowering stem which has modified leaves which also trap insects. Sundews usually grow in damp areas. They belong to the Droseraceae family.

Drosera pallida — Pale Sundew

Drosera means dewy, a description of the glandular hairs which make the plant look as if it is covered in dew. Pallidus means pale.

Perennial herb with a white tuber, and a hairless climbing stem which grows up to 1.8 m long. White flowers appear from July to November, and open during the day. Common in the South-West within 100 km of the coast, from Geraldton to the south coast. Grows in damp areas including woodlands and forests, and on granite outcrops.

Rushes and Sedges

... water filters

Rushes and sedges usually grow along the edge of a watercourse and they prevent the banks from eroding and provide habitat. Rushes and sedges also act as a filter. An old saying has it that "rushes are round, and sedges have edges." This is only partly true, as there are sedges with round stems.

Rushes belong to the Juncaceae family, sedges belong to the Cyperaceae family, while reeds are grasses and belong to the Poaceae family.

Four-sided Sedge (Lepidosperma tetraquetrum) stabilises the banks; rocks in the stream aerate the water and provide habitat which helps aquatic fauna to survive.

Baumea juncea Bare Twigrush

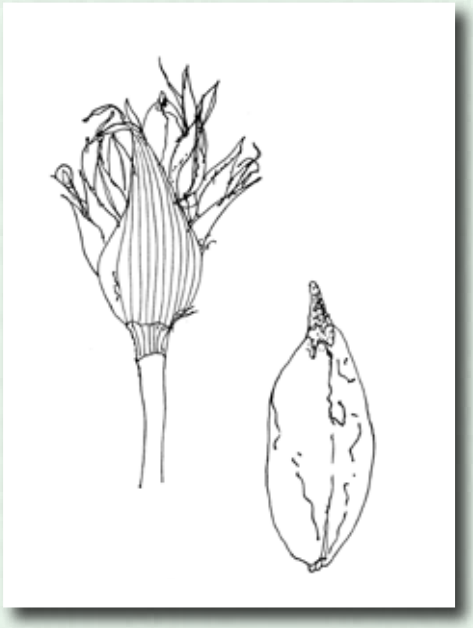
Named for Antoine Baume (1728-1804), Professor of Chemistry and Apothecary in Paris, author of "Elements of Theoretical and Practical Pharmacy" and inventor of the hydrometer with a uniform gradational scale. Juncea means rush-like.

Perennial, spreading from a rhizome, with pithy, straight stems from 20 cm to 1.2 m high. Inflorescence is brown to grey. Although it is a sedge, it has a round stem and looks like a rush. Flowers from October to March. Grows in damp areas and along waterways, often covering a considerable area and protects the banks from erosion. Found from Geraldton to Albany, also near Esperance. Belongs to the Cyperaceae family.

Baumea rubiginosa River Twigrush

Rubiginosa means rusty or rust-coloured.

Perennial with a spreading rhizome which can form large thick clumps up to 2m wide. Stems are from 1 to 2 m high. Leaves are flat and strap-like, and the inflorescence is brown.
Flowers from August to March then produces small, round, orange nuts. Common along waterways as well as seasonally wet areas including roadside drains. Found from Geraldton to Albany, and at Esperance. The iridescent sheen on the water in the photograph is from naturally occurring oils.



Ficinia nodosa Knotted Club Rush

Ficinia was named in 1832 in honour of D.H. Ficini, author of Flora of Dresden. Most Ficinia occur in South Africa, particularly in the heathlands or fynbos. Nodosa means a knot or knob-like swelling.

Perennial clump growing to 1 m high, with a woody rhizome and rigid straight stems. Inflorescence is a knot of brown spikelets with a stem-like bract extended above it. Nut is smooth, with 3 angles, and about 1 mm long. Flowers from October to January. Grows in sand near the coast and along rivers. It is often used for landscaping as well as rehabilitation of watercourses and damp areas. Found across much of the southern hemisphere including Australia, New Zealand and Chile. In the South-West it grows from Shark Bay to east of Esperance. Belongs to the Cyperaceae family.

Juncus caespiticius Grassy Rush

Juncus means rushes. Caespes means a mound or thatch of turf.

Perennial clump up to 45 cm high, which can have a short rhizome. Leaves taper to a fine point. Flowers from October to December with almost round clusters of brown flowerheads. Capsule is brown. Grows in winter-wet areas from Dandaragan to the south coast as far east as Esperance. Belongs to the Juncaceae family.

Named for Ferdinand Krauss (1812-90) director of the zoological museum at Stuttgart, Germany, who in earlier years had collected plants in South Africa.

Perennial up to 1.2 m high, with straight stems coming from a rhizome. Flowers from October to January. Seed is contained in red-brown capsules, and is winged. Grows along watercourses, in swamps, brackish estuaries, and saline flats. Copes with waterlogging and is salt tolerant. Found from Shark Bay to Esperance. Belongs to the Juncaceae family.

Juncus pallidus — Pale or Straw Rush

Pallidus means pale.

Perennial clump with a rhizome and round stems to 2 m high. Stems are pithy inside, and the pith is continuous up the stem. Leaves are reduced to small brown scales at the base of the stem. Inflorescence is straw-coloured, up to 15 cm long, terminating in a long stem-like bract. Flowers from October to December, followed by a pale brown capsule which contains hundreds of tiny seeds which look like dust. Grows in winter wet areas from Shark Bay to Esperance, and is one of the most common rushes in the South-West. Belongs to the Juncaceae family.

Sub can mean underlying, almost, less than, or below; secundus means second in line and is used botanically where flowers are arranged on one side of the stem, or facing only one way.

Perennial clump with round stems up to 1 m high and usually only 2 mm wide. Stems are pithy inside, but the pith is discontinuous up the stem; this is one difference with *Juncus pallidus*. Leaves are reduced to small brown scales at the base of the stem. Inflorescence is up to 7.5 cm long, with a bract continuing the stem. Flowers from October to January then produces capsules which are pale brown. Grows in winter wet areas from Gingin to the south coast, and as far east as Esperance. Belongs to the Juncaceae family.

Lepidosperma tetraquetrum — Four-sided Sedge

Lepido means a scale and sperma means seed; this describes the scale-like perianth surrounding the nut. Tetra means four and quetrus means angle, a description of the stem.

Large perennial clump up to 3 m high and several metres across, growing from a rhizome. Distinctive stems are either square or rectangular in cross-section. Flowers from November to March. Nut is usually 3-angled. Grows along watercourses and in winter wet areas from Perth to Albany. Belongs to the Cyperaceae family.

Bulrushes

..."Typha growth in fennes and water sides among the reedes"

Turner 1598, Names Herbes

Typha domingensis **Narrowleaf Bulrush**

Typha means reed-mace; it also means a marsh. The species name is from ensis meaning a native of, and San Domingo in Haiti in the West Indies.

Perennial with stems from 1.5 to 3 m high, which grow from an edible, starchy rhizome. Leaves are spongy, alternate along the stem, and mostly grow from the base. The leaf-sheath is long and split, and closely wraps around the stem. Inflorescence is made up of numerous very small flowers which form a brown spike, usually with two sections; the lower section is female and is cinnamon brown, the upper section is male. Flowers from May to September, then fruits from June to March. Widespread in the South-West in freshwater. Belongs to the Typhaceae family. Also known as Cumbungi or Yanjeb.

Native Grasses

... the grain-bearing plants

Not all grasses are weeds. Grasses that were here before European settlement are native grasses. The grass family can be called either Poaceae *(from Greek for a grass),* or Gramineae *(from Latin for grain-bearing).*

The native Weeping Grass (Microlaena stipoides) often forms a natural lawn or glade along watercourses. Not all watercourses are covered in thick vegetation, as open areas like this are recorded in the early explorer's journals.

Eragrostis elongata Clustered Lovegrass

Eragrostis is from eros meaning love or era meaning earth, and agrostis meaning grass. Elongata means lengthened, a description of the inflorescence and the spikelets.

Clumping summer-active perennial grass with flowering stems to 90 cm high, and clusters of purple, mauve or green spikelets forming the inflorescence. Flowers from November to May. In the South-West it is found from Jurien Bay to Albany. Grows in seasonally wet areas, along watercourses, and roadside drains. Propagates easily from seed which germinates best in warm weather, providing it is kept damp. Mature seed-heads can be used for direct seeding in damp areas or edges of wetlands. Individual seeds are tiny. Other common names are Lavender Grass and Common Lovegrass.

Hemi means half and arthron means joint; the stem of the inflorescence breaks at the joints when it dries out. Uncinatus means hooked; the upper glume of one of the paired spikelets is usually hooked.

Spreading summer-active perennial grass with rhizomes and stolons, growing to 80 cm high. It can form a dense thicket. Leaves are usually bright green, smooth and hairless. Inflorescence is an elongated green spear which appears from December to April. Found from Geraldton to Albany, also at Esperance, in damp areas along watercourses, on the edges of wetlands and estuaries. Spreads by rhizomes and runners, and is easy to propagate from these. Good for revegetation where sites are damp all year.

Microlaena stipoides — Weeping Grass

Micros means small and chlaina means cloak; this describes the tiny glumes which remain on the stem after the florets fall. Stipoides means like Stipa (Austrostipa spp.).

Perennial spreading winter-active grass, growing in short tufts from a rhizome. Leaves have an ear-like extension (auricle) where the leaf-blade and leaf-sheath meet. Has a long flowering stem which can be up to 1 m long (occasionally longer) with a drooping inflorescence from August to December. Grain is like wild rice. Common in understorey near creeks, where it can form a natural lawn or glade, and as understorey in bushland from Jurien Bay to Albany, also at Esperance. Has been investigated as a native, perennial seed-bearing crop. Easy to grow from seed which is collected in December. Do not remove the outer husks, but keep intact, as cleaning the seed can damage it. Seed has a 6-month dormancy period and is ready to direct sow or propagate the following autumn. Another common name is Meadow Rice Grass.

Groundcovers, Herbs and Scramblers

... low growing plants

These plants provide useful understorey and can protect the ground from erosion. Despite some having weedy names, all are local native species.

Alternanthera denticulata — Lesser Joyweed

Alternus means alternate and anthera means anther; the alternate stamens can lack an anther. Denticulata means a small tooth, and describes the margins of the leaves.

Annual spreading plant with opposite leaves. The flowers are white, and do not have petals. Grows rapidly over summer and dies back over winter. Found along watercourses and in seasonally wet areas from Shark Bay to Walpole, as well as the Esperance region. Flowers from April to August. Despite the common name, it is a native plant. Similar to Common Joyweed (*A. nodiflora*) which is also native. Belongs to the Amaranthaceae family.

Billardiera fusiformis Australian Bluebell

Named for Jacques Julien Houton de la Billardiere (1755-1834) a naturalist on the voyage of Bruni d'Entrecasteaux, one of the French expeditions which visited WA. The expedition was sent to search for La Perouse. Labillardiere wrote the first general flora of Australia, Novae Hollandiae plantarum specimen. Fusiformis is from Latin meaning shaped like a spindle, circular in cross-section at the middle and tapering at both ends.

Low growing sprawling shrub with twining stems. Seedling leaves have three lobes which change as they mature. Flowers are blue although occasionally pink or white. A feature of the flowers are the anthers which join near the top (see photo of dissected flower below), and the pollen is shed inwards. Flowers from October to February. Fruit is green with numerous seeds. Grows on a variety of soils, often as forest understorey, as well as coastal areas and salt lakes. Found from Mogumber southwards and as far east as Esperance. In Perth Hills it can provide cover for bandicoots. Belongs to the Pittosporaceae family.

The derivation of Centella is uncertain; it is possibly from Latin cento meaning a patchwork covering. Asiatica means from Asia.

Spreading perennial herb up to 40 cm high, which roots at the nodes. Leaves are kidney-shaped, similar to violet leaves. Flowers are grouped together in small umbels or clusters and have petals 1 mm long. Flowers are pink, purple, red or white, appearing from August to April. Grows in winter wet areas from Geraldton to Esperance; it is also found in the eastern states and Asia. Used medicinally for arthritis. Belongs to the Apiaceae or carrot family.

Kennedia coccinea Coral Vine

Named for John Kennedy (1759-1842) a nurseryman from Hammersmith in London who supplied plants to the French Empress Josephine, wife of Napoleon. Josephine's country house, Malmaison, had an outstanding botanical garden where Australian plants were grown. Coccinea means scarlet.

Groundcover or climber with twining stems and leaflets in groups of three. Flowers are in showy clusters in an amazing colour combination of pink, red, orange and yellow, and appear from August to November. Grows from Perth to Esperance, occasionally further north, and is often found in sandy soils. Belongs to the Fabaceae or pea family.

Prostrata means prostrate, or trailing on the ground.

Groundcover with hairy stems and red pea flowers, often with a spot of yellow. Leaflets have a wavy margin and are in groups of three. Flowers from July to November. Grows in sandy gravelly soils, and is widespread throughout the South-West from Shark Bay to Esperance. Belongs to the Fabaceae or pea family. Also known as Running Postman.

Lobelia anceps — Angled Lobelia

Lobelia is named for Mattias de l'Obel (1538-1616) a French botanist and physician to King James I. Botany originated with the study of herbs for medicine. Anceps means two-edged or two-sided which describes the stems.

Perennial herb which can grow to 1.2 m high under good conditions. Leaves are long and thin, with minute saw-like edges. Stems are angular and winged, and often have a milky sap. Blue flowers have two small upper petals and three larger lower petals; occasionally a plant can be found with white flowers. Flowers mostly from September to May, but can flower almost all year. Grows in damp and seasonally wet areas, and along watercourses throughout the South-West from Geraldton to east of Esperance. Belongs to the Campanulaceae family.

Persicaria means peach; it describes the peach-like leaves. Decipiens means deceiving.

Perennial terrestrial or aquatic herb up to 1 m high, with stems rooting at the nodes. Flowers are pink and appear from February to June, and November to December. Grows quickly over summer in seasonally wet areas, along watercourses, lakes and wetlands. Found from Jurien Bay to Albany.
Also found in Europe and Asia; some consider it to be doubtfully native.
Belongs to the family Polygonaceae.
Another common name is Slender Knotweed. There are several similar-looking introduced species in the South-West.

Shrubs

...woody plants

Dense thickets of shrubs growing along the banks of watercourses are important for many reasons. Shrubs stabilise the banks, prevent erosion, and act as a filter to prevent fertilizer, manure and rubbish entering the water. Thickets of shrubs also provide food and habitat for wildlife, and are often places where birds come to roost at night.

Acacia alata — Winged Wattle

Acacia means 'a pointed instrument', and was used by Dioscorides, a first century AD Greek physician and botanist, to describe prickly plants growing in Egypt. Alata means winged which describes the stems.

Shrub to 2 m high with wide, flattened stems. Flowers are creamy white to yellow, from April to December. Seedpod is brown when mature, forming a narrow sickle-shape with thickened margins, and can be hairy. Seeds are brown. Grows along watercourses from Geraldton to Albany. Wattles are important as they provide food for fauna, and the roots enrich the soil by fixing nitrogen, so they are often used in revegetation projects. Belongs to the Fabaceae or pea family.

Extensa means stretched out, spread out or spreading.

Perennial shrub up to 3 m high with wiry, angular phyllodes and branchlets. Flowers range from pale to mid-yellow from August to October. Seedpods are greenish brown, flattened, narrow, and contain black seeds. Grows from Victoria Plains to Albany, and is common in the forest as understorey, as well as along watercourses and wetlands. Belongs to the Fabaceae or pea family.

Acacia pulchella Prickly Moses

Pulchella means small and beautiful.

Short lived perennial shrub, often under 1 m high but can grow to 3 m. Leaves are fern-like, in pairs, with a sharp, prickly stipule. Flowers are bright yellow and appear from May to December and are very noticeable as understorey, especially after a fire. Seedpod is brown, with pale thick margins, and the seed is greyish brown. Widespread from Geraldton to Esperance in a variety of habitats. Important in the jarrah forest and along watercourses as it keeps the forest healthy to protect against jarrah dieback disease. Belongs to the Fabaceae or pea family. Another common name is Yellow or Golden Stardust.

Acacia urophylla Net Leaf Wattle

Oura means tail and phyllon means leaf.

Shrub from 1 to 5 m high with angular branchlets and leaf-like phyllodes with a distinct network of pale veins. Flowers range from pale lemon yellow to creamy white and appear from May to October. Seedpods are green changing to black when mature, curved and twisted, smooth with very thick pale margins. Seeds are greenish brown and shiny. Grows in damp areas and along watercourses from Victoria Plains to Albany. Belongs to the Fabaceae or pea family.

Myrtles were sacred to Venus, the Roman goddess of love. Astartea was the equivalent Syro-Phoenician goddess. Affinis means allied or similar.

Shrub, usually slender and open, growing to 3 m high. Flowers can be white, purple, or violet, appearing mostly from late October to January. Grows in seasonally wet areas and along watercourses. Found from Gingin to Augusta and is common in Perth Hills. Belongs to the Myrtaceae or myrtle family. *Astartea scoparia* is similar, but has larger flowers.

Callistemon phoeniceus Lesser Bottlebrush

Calos means beautiful and stemon means thread, which describes the stamens. Phoeniceus describes the purple-red colour of the flowers; the discovery of this colour dye is attributed to the Phoeniceans.

Shrub or small tree which can grow up to 6 m high. Leaves are grey-green, and the flowers are brilliant red from September to January. Widespread throughout the South-West, it is found from the Murchison to the south coast, and inland to east of Kalgoorlie. Belongs to the Myrtaceae or myrtle family. Another common name is Fiery Bottlebrush.

Calothamnus graniticus subsp. leptophyllus Granite Calothamnus

Calos means beautiful and thamnus means bush or shrub. Graniticus means living on granite soil.

Shrub to 1.5 m high with thin stems, smooth bark and noticeable scars where the leaves have been attached. Leaves are 4-8 cm long, similar to pine needles, and are clustered at the end of the branches. Red flowers grow in clusters on the bare sections of the stem from May to June. Seeds are contained in an attractive woody capsule. Found only in the South-West growing on the Swan Coastal Plain and in the Jarrah forests, particularly along watercourses and granite outcrops in the Darling Range. Belongs to the Myrtaceae or myrtle family.

Grevillea is named for Charles Francis Greville (1749-1809) who grew rare plants at Paddington in London, and was one of the founders of the Royal Horticultural Society. Captain James Mangles (1786-1867) visited WA in 1831 and was a botanical patron and collector. He brought many Australian plants into cultivation, including this species. His brother Robert (d.1860) was an English horticulturalist who grew the type specimen for Kangaroo Paws (Anigozanthos manglesii) from seed brought to England by Sir James Stirling, first governor of WA. The Mangles brothers were cousins of Lady Stirling.

Shrub to 2.5 m high, has leaves divided into 3, and then lobed. Delicate white or pinkish flowers can be found almost all year round. Grows in the Perth region, extending into the Avon Valley in damp areas and along watercourses, often as a pioneering species. Belongs to the Proteaceae family.

Hakea erinacea Hedgehog Hakea

Hakea is named for Baron von Hake (1745-1818) a German patron of botany. Erinacea means like a hedgehog.

Shrub to 1.5 m, often rather sparse. Divided leaves are short and thin and give the plant its name, as they are supposed to look like prickles on an echidna; the persistent woody fruits also look like little echidnas. Flowers are yellowish from May to November. Grows in damp areas as well as higher upslope, and on or near granite outcrops. Found from Victoria Plains to Boyup Brook. Belongs to the Proteaceae family.
Another common name is
Porcupine Hakea.

Hakea trifurcata — Two-leaf Hakea

From tres meaning three, and furca meaning fork, which describes the leaves divided into three.

Large rounded shrub to 3 m high with two types of leaves — long thin spine-like leaves which divide into three, and broader leaves which look like woody fruits. The real seedpods are surrounded by the spine-like leaves which protect the seeds, as they are food for black cockatoos. Flowers from April to October with delicate, creamy white to pink flowers. Often found in damp areas, particularly if it has been disturbed. Widespread throughout the South-West from Shark Bay to Esperance.
Belongs to the Proteaceae family.

Hakea varia Variable-leaved Hakea

Varia means variable and describes the varying shapes of the leaves.

Shrub or small tree to 4 m high with creamy white flowers from July to November. Woody fruits are dark brown, rough and wrinkled on the surface. Grows near watercourses and swamps from Geraldton to Esperance. Belongs to the Proteaceae family.

Hypocalymma angustifolium White Myrtle

Hypo means under and calymma means a covering or hood; this describes the cap of the calyx in bud. Myrtus is the Greek name for myrtle; the ancient apothecaries name for the berries was myrtilli. Dioscorides, the first century Greek physician and herbalist, called the myrtle Myrrhis. Angusti means narrow and folium means leaf.

Shrub to 1.5 m high, often shorter, with many stems coming from the base. Leaves are dark green, linear, and often curved. Flowers July to October with creamy white to pink flowers. Common and widespread from Geraldton to Albany in damp areas and along watercourses. Belongs to the Myrtaceae or myrtle family. Another common name is Narrow Leaf Myrtle.

Kunzea recurva Purple Kunzea

Kunzea is named for Gustav Kunz (1793-1851) professor of botany at Leipzig, also an entomologist and physician. Recurva means backwards, a description of the leaves.

Shrub to 2 m high with small alternate leaves. Flowers from August to December with masses of pink to purple (occasionally white) flowers with showy yellow-tipped stamens. Fruit is a woody capsule with hardened sepals at the top. Fruit is shed shortly after the capsules mature. Common in seasonally wet areas and rocky slopes from Perth to Esperance. Belongs to the Myrtaceae or myrtle family.

Labichea lanceolata Tall Labichea

Labichea is named for Jean Jacques Labiche (1784-1819) second lieutenant on the French ship Uranie on Freycinet's voyage around the world from 1817-20. Labiche died on the voyage. Lanceolata means shaped like a lance, narrow with curved sides tapering to a point; this describes the leaves.

Shrub to 3 m high. Leaves are smooth, pointed, and have from one to three leaflets; the central leaflet is the largest. Flowers appear from July to December, and are yellow with four unequal petals. The upper petals have a splotch of red near the base. Anthers are a feature of the flower, one is long and curved, the other is short and straight. Seedpod is flat. Grows along watercourses, near granite outcrops and stony hillsides. There are two separate populations: one extends from Shark Bay to Perth and inland through the Wheatbelt, while the other population extends along the south coast on the Esperance Plains. Belongs to the Caesalpinaceae or cassia family.

Melaleuca incana Grey Honeymyrtle

Melaleuca means black and white, a description of the black trunk and white branches of some Asian species. Incana means grey or hoary.

Shrub or small tree to 5 m high with smooth bark. Leaves can be grey and hairy, or green and hairless. Flowers from May to November with creamy white to pale yellow flowers. There are two types of flowerheads — cylindrical (male) and round (female). Grows in seasonally wet areas. Found from north of Jurien Bay to Albany. Plants from Perth Hills have smaller leaves and flowers than those from the coastal plain.
Belongs to the Myrtaceae or myrtle family.

Melaleuca lateritia Robin Redbreast Bush

Lateritia means brick, a description of the brick-red flowers.

Shrub to 2.5 m high with short, narrow leaves. Produces bright red to orange bottlebrush flowers from September to April, and it is often one of the few shrubs flowering over summer. Woody capsules remain in clusters on the stem. Grows on the edges of seasonally wet areas from Shark Bay to Albany. Belongs to the Myrtaceae or myrtle family.

Taxandria linearifolia Swamp Peppermint

Taxandria is from taxus meaning yew tree, and andros meaning male or stamens. Taxandria was named by the eminent British botanist Bentham in 1867. It was originally described by the French naturalist Labillardiere in 1806 as a species of Leptospermun or Tea Tree. Linearifolia means the leaf is linear.

Shrub or small tree up to 5 m high with alternate, aromatic leaves. Small white flowers occur in clusters from September to December, and from March to May. Fruits from December to February then has round woody capsules. Common along watercourses, wetlands and in seasonally wet areas. Grows from Chittering to Albany. Belongs to the Myrtaceae or myrtle family.

Trymalium odoratissimum — Soapbush

Trymalium means the eye of a needle, a description of the three slits at the top of the open fruit. Odoratissimus means very fragrant.

Shrub to 5 m high. Leaves are smooth and glossy green on the upper surface and hairy underneath. Flowers from August to September with clusters of small, creamy white, fragrant flowers. Grows from Jurien Bay to Albany. Common along watercourses and near damp areas, as well as forest understorey. Belongs to the family Rhamnaceae.

Viminaria juncea Swishbush

Viminaria means withy or osier, a description of the rush-like stems. Withy is from Old English and means a tough flexible branch, such as willow, used for binding bundles. Juncea means made of rushes or rush-like.

Fast-growing tall shrub or small tree to 4 m high. What appear to be long thin wiry leaves are green branchlets. Small, bright yellow pea flowers are produced in showy sprays from October to January. Grows along watercourses, wetlands and in damp areas from Shark Bay to Esperance. Can be short lived, from 5 to 8 years, but will establish quickly on sites where it may be hard to get anything else to grow. Belongs to the Fabaceae or pea family. Another common name is Native Broom.

Trees

... define a waterway

Many watercourses are defined by a line of trees along the banks. Often this riparian zone is only narrow, but it is important for habitat, shade and refuge.

Trees, particularly on the north side of a waterway, provide summer shade to keep the temperature down. This is important for aquatic animals such as turtles, native fish and mussels, which cannot survive if the water gets too hot. Lower temperatures can also help prevent algae blooms. Leaves and sticks from overhanging branches stain the water, and insects falling into the water are food for aquatic animals. Logs and large woody debris in a watercourse provide shelter for fish and other aquatic creatures, slow the speed of water during flooding, and preserve moisture when the creek starts to dry out. All this is beneficial.

Banksia littoralis Swamp Banksia

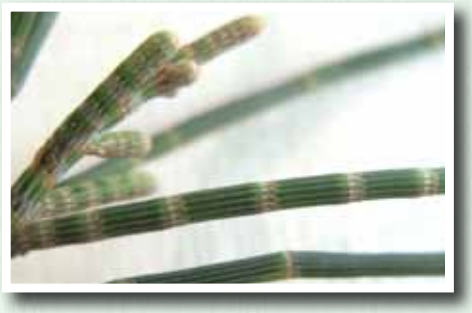
Joseph Banks (1743-1820) was a botanical collector and patron, amassing a private herbarium of 30,000 specimens. Banks sailed with Captain Cook on the Endeavour, was director of the Royal Gardens at Kew, and a friend of King George III. Littoralis means of the seashore.

Small tree to 12 m high, with rough bark. Leaves are long and narrow with serrated edges. Yellow flowering cones appear from March to August. Grows in sandy soil in seasonally damp areas along watercourses. Found in WA from Jurien Bay southwards, and as far east as the Esperance sandplains. Belongs to the Proteaceae family.

Casuarina obesa — Swamp Sheoak

Casuarina is from a Malay word casuari meaning cassowary, a description of the drooping branches which look like the feathers of a cassowary. Obesa means stout, plump or heavy.

Tree up to 10 m high, with separate male and female plants. Scale leaves are in whorls of 12 to 15, with the teeth-like edges pressed flat against the stem. Cone is grey or pale brown. Can flower throughout the year. Grows on saline flats, near watercourses, and seasonally wet areas from the Murchison River to Israelite Bay, and inland to Kalgoorlie. It is a salt tolerant, hardy plant much used in revegetation projects.
Belongs to the Casuarinaceae family.



Corymbia calophylla Marri

The botanical term corymbose describes a cluster of flowers with a flat top. Calos means beautiful and phyllon means leaf.

Tall tree up to 40 m high with thick, rough, dark brown bark which is often stained with red sap hence the common name Red Gum. Flowers consist of creamy white (occasionally pink) stamens. Marri capsule is broad, with a rim at the top. Seeds are black. Flowers in summer from December to May. Grows from Geraldton to Albany and is common and widespread from Victoria Plains southwards. Marri is an important habitat and food tree for wildlife, one of the mainstays of the forest. Belongs to the Myrtaceae or myrtle family.

Eucalyptus patens **Blackbutt**

Eucalytpus means well covered, a description of the cap (operculum) which covers the stamens when in bud. Patens means open, exposed or spreading.

Large tree up to 25 m high, with light grey to brown bark which is deeply furrowed. Leaves change as the plants mature; the young leaves are large and grey-green. Flowers consist of creamy white stamens and appear from July to February, often followed by small oval or round capsules. Grows in the loamy soils of valley floors, along watercourses, as well as higher upslope. It is an elegant, stately tree which is found from Wooroloo to the south coast at Albany. Belongs to the Myrtaceae or myrtle family. Other common names are the Swan River Blackbutt and Yarri.

Eucalyptus rudis Flooded Gum

Rudis means rough or wild.

Tree to 20 m high, usually with a short trunk. Bark is dark grey and is rough from the base of the trunk to the lower branches. Above this point, the bark is pale grey and smooth. The young leaves are pale green to grey, and round to oval in shape, while the mature leaves are more elongated. Flowers are creamy white from July to September. Capsule is a small hemisphere. Found from Geraldton to the Albany region along watercourses, on heavy loams but also on low hills and lighter soils if there is moisture available. Belongs to the Myrtaceae or myrtle family.

Melaleuca means black and white which describes the black trunk and white branches of some Asian species. Johann August Ludwig Preiss (1811-1883) was from Prussia. He collected natural history specimens in the South-West between 1838 and 1842, sometimes in collaboration with Drummond and Gilbert. Many of his specimens in the Berlin Herbarium were destroyed in a bombing raid in 1943. His plant collections were written up by European botanists and published as Plantae Preissianae and edited by Lehmann between 1844 and 1848.

Tree to 9 m high with white or pale papery bark. Leaves are short, flat and dark green. Flowers are white to pale yellow, appearing from November to February. Grows near watercourses, wetlands and seasonally wet areas from Jurien Bay to Albany. Belongs to the Myrtaceae or myrtle family. Other common names are Modong and Stout Paperbark.

Melaleuca rhaphiophylla Swamp Paperbark

Raphis means a needle and phyllon means leaf.

Tree to 10 m high with pale papery bark. Leaves are needle-like, curved, usually grey-green, and spaced apart along the stem. Flowers are white to cream, from July to January. Grows along watercourses and permanent swamps from Kalbarri to Albany and is also found on the Esperance sandplains. Belongs to the Myrtaceae or myrtle family.

Para means besides or alongside, and serianthus means silken flower.
Lophos means a crest on a helmet or a bird, and anthos means flower.

Tall shrub or small tree up to 10 m high with fern-like leaves. Flowers from April to October with flowers in tassels, the whole inflorescence resembling a greenish yellow bottlebrush. Seedpod is flat, curved, with black seeds. Grows near watercourses, swamps, seasonally wet areas and granite outcrops. Found from Gingin to Albany, as well as the Esperance region. Belongs to the Fabaceae or pea family. Another common name is Black Wattle, as it looks similar to a wattle with ferny leaves. Black Wattle is also used as a common name for some introduced wattles, but Albizia is native.

APPENDIX 1: Bush Regeneration–Bradley Method

The Bradley Method is a system of weeding bushland to encourage natural regeneration. It was developed by the Bradley sisters who worked in bushland in Mosman on Sydney's north shore. The aim is to "use the naturalist's approach, and help the bush to help itself" (Bradley 1971:1). The Method's general principles are:

- **Work from good areas towards bad areas -** In planning your work, the important thing is to prevent the deterioration of good areas. Once this is done, improve the next best area, and lastly move into the bad areas.
- **Disturb the soil as little as possible, keeping the surface deeply mulched with native bush litter** - In weeding bushland try to cause as little damage as possible. Weeds that do not have seeds, bulbs, corms, rhizomes or other any thing that can spread, can also be used as mulch.
- **Allow regeneration to dictate the rate of clearing -** Large cleared and disturbed areas will encourage the spread of weeds. It is better to weed small areas in many places than to over-clear one area.

Plant identification is extremely important as not all weeds look like weeds, and not all native plants look like native plants. Take photographs, have plants correctly identified, learn to recognise the weeds, and start a weed herbarium. This can be pressed specimens in a file. Have new weeds identified as soon as possible, and then eradicate them while you can. Only remove a plant if you can identify it; if you don't know what it is, leave it alone.

It is also important to work efficiently, so that your time and effort is put to best advantage. Experiment to find the minimum work necessary to control each kind of weed.

Keeping a barrier between lawn and bush, such as a path or a kerb, helps to separate weeds and bushland.

Keep photographic and written records, even map your weeds, to show how much you have accomplished.

Reference: Bradley, J. (1971) Bush Regeneration. Published by The Mosman Parklands and Ashton Park Association assisted by a donation from Rotary Club of Mosman.

APPENDIX 2: Dieback

Dieback (*Phytophthora spp.)* is a pathogen that is widespread in the South-West. Warm, moist soil helps dieback to spread, and it can move downhill with water movement. Dieback will also spread more slowly uphill, by root to root transmission.

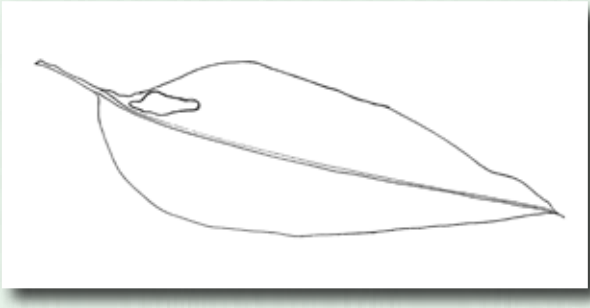
Care needs to be taken to limit the spread of this plant disease, as up to 25% of plant species in the South-West are susceptible to it. Garden plants, fruit trees and other horticultural crops can also be susceptible.

Dieback can be spread by moving infected earth, e.g. from dirty vehicles, dirty tools and boots on bushcare sites. To limit or prevent the spread of this disease make sure that:

- No soil is moved between areas within bushland
- When soil is wet or muddy, do not work or enter bushland; only work in dry conditions when soil cannot stick to boots and tools
- Keep boots, tools and gloves free of mud and soil when moving to different areas within bushland, or to different sites
- Do not take vehicles into bushland; vehicles need to be clean and confined to hard, well drained surfaces, and if horse riding, keep to the track
- Plants are grown in hygienic conditions, mulch is well composted, and mains or sterilised water is used to water the plants, or use direct seeding

Important! *Treat boot soles and equipment with a methylated spirit spray; this is a simple but effective way to make sure you do not spread dieback. Remember, dieback can contaminate your own garden.*

Reference: Kilgour, S. (1999) Managing Dieback in Bushland: a guide for landholders and community conservation groups. Published by the Dieback Working Group.



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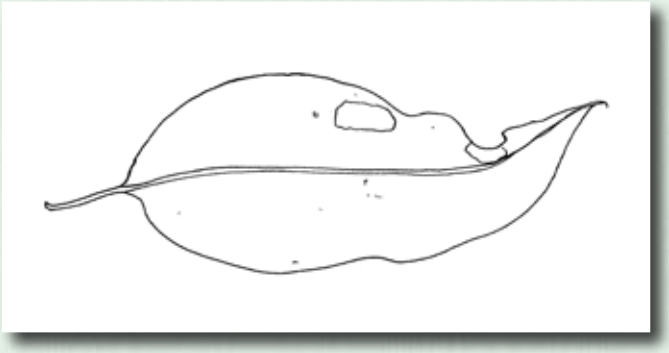

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“The value of fringing vegetation on creeklines is seldom appreciated until it is lost. Not only does fringing vegetation play an integral role in stream ecosystems, by casting shade, providing a rain of leaves which are food to stream invertebrates, it also has two more fundamental functions. Put simply, these are the slowing of the flow of water, through friction, and the support of the bed and banks by roots.

In the absence of protective fringing vegetation, creeklines and artificial drainage lines begin to erode … The result is, that where there was once a narrow creek with a narrow riparian zone, there will be a broad area of erosion, which will be costly to repair. Ironically, it is often at this stage that people develop an appreciation for the value of fringing vegetation.”

Dr Luke Pen (1996) excerpt from “The Value of Fringing Vegetation on Natural Drainage Lines” in Land Management Society Newsletter.