



# Coastal Plant Identification Workshop

**Coffs Harbour Regional Landcare**

**11<sup>th</sup> November 2015**

**Presenter: John Ross**

## Resources:

Mangroves to Mountains Logan River Branch, SGAP

Grasses of Coastal NSW. Harry and Carol Rose DPI

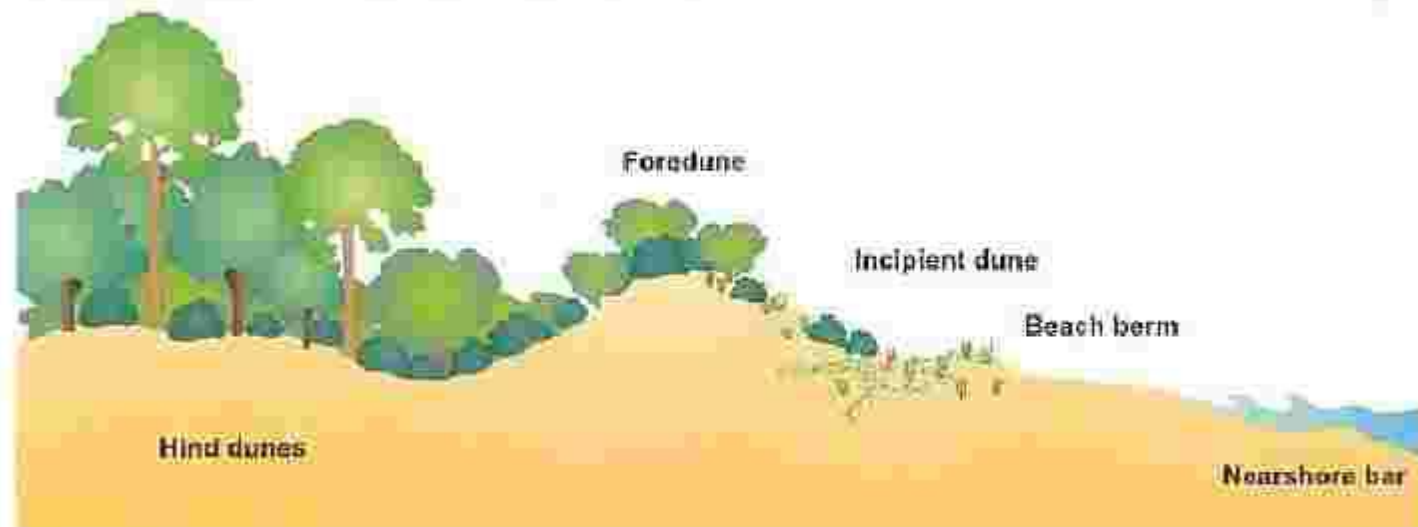
Beach Plants of South East Australia. Carolin R, Clarke P, 2<sup>nd</sup> hand only

Rainforest Trees and Shrubs. Gwen Harden, Bill McDonald & John Williams

*[www.plantnet.rbgsyd.nsw.gov.au](http://www.plantnet.rbgsyd.nsw.gov.au)*

## Dune Structure

Stage 3 - Long-lived trees (tertiary species)



## Incipient Dune or Strandline

This highly unstable zone is occupied by colonizing plants which are particularly resistant to salt spray, strong winds and sand abrasion. These plants catch wind-blown sand, can withstand burial and develop mounds to begin the dune building process after dune erosion. After major dune erosion events impacting on not just the incipient dune but the foredune where these colonizing plants also occur, reintroduction may be helpful in providing future protection.



## Common species found in the Incipient Dune or Strandline Zone

### *Ipomoea pes-caprae* ssp. *Brazilliensis*

Common Name : Beach Morning Glory, Goats Foot Convolvulus

#### Habit and Distinguishing Features:

- vine with long trailing stems rooting at the nodes
- leaves glossy, waxy, and notched at apex to give goat's foot shape.
- large (to 6cm diam) pink to mauve funnel shaped (funneli-form) flowers in leaf axils.

#### Fruit and Propagation:

- fruit a 3 valved ,flattened globose capsule splitting to release 3
- hard coated seeds with dense covering of short hairs which facilitates floating and thus dispersal by water
- propagation by stem cuttings or seed



### *Spinifex sericeus*

Common Name: Spinifex

#### Habit and Distinguishing Features:

- Coarse robust grass with long creeping stems rooting at nodes
- Leaves are bluish silky hairy and fold inwards in the heat of the day reducing water loss
- The roots have an association with a fungus whose fine strands help absorb limited nutrients available and bind sand grains.

#### Fruit and Propagation:

- the "Roly-Poly" fruit blow along the beach and collect in depressions in the foredunes where they may be buried and germinate after future erosion events. The fruit may also be moved along the shore by the current.
- the 'Roly-Poly' fruit are collected when rolling in November.
- various methods have been developed for establishing on badly degraded dunes. These include burial of seed heads, sowing of threshed seed and planting of "sprigs". Details can be found in Coastal Dune Management (Soil Conservation Service)





***Sesuvium portulacastrum***

**Common Name : Sea Purslane**

**Habit and Distinguishing Features:**

- Sprawling, prostrate, succulent, herb with ascending stems to 3m long and rooting at nodes. Forms dense mats in saltmarsh and mudflats and forms hummocks on bare sand of incipient dunes
- Cosmopolitan.
- Succulent glossy green leaves and reddish stems (distinguished from Pigface which has less glossy, and more bluish foliage)
- small (to 1cm), 5 petalled pink flowers.

**Fruit and propagation**

- small (1.5m) black seed in a capsule to 8mm long



## The Foredune Zone

This is a zone of dense matting herbs, grasses and sometimes shrubs which catch wind-blown sand further building the dunes, protecting them from erosion and deflecting wind upwards.

The nutrient status of the dune soils is gradually increased as these species capture the mineral nutrients in salty sea winds and gradually increase the soil nutrient binding capacity by increasing the soil humus levels from decomposing organic matter. Several common species most notably Coastal Wattle (*Acacia sophorae*) have root nodules with nitrogen fixing bacteria thus further increasing soil fertility over time.

On many beaches suffering from increasing erosive pressures the Foredune Zone is narrow and eroding.



## Common species found in the Foredune Zone

### *Dianella congesta*

Common Name: Blue Flax Lily, Bluetongue

#### Habit and Distinguishing Features:

- tufted perennial herb forming dense swards.
- occurs on coastal sand dunes only.
- Strap-like linear leaves alternate on wiry stems, prominently pleated above the sheath.
- 2 to 8 purple-blue flowers on spikes shorter than leaves.
- distinguished from *D. caerulea* which may occur in hind dunes by the shorter flower spikes (*D. caerulea* spike is longer than the leaves) and by the smooth leaf margins and keel (*D. caerulea* has finely serrated leaf margins and keel)

#### Fruit and Propagation:

- edible purple –blue berries to 12mm in summer/autumn
- small, glossy hard black seeds germinate well in warmer months



### *Lomandra longifolia*

Common Name: Mat Rush, Spiny-headed Mat Rush

#### Habit and Distinguishing Features:

- tufted perennial herb with tough strap like leaves to 80cm
- widespread in many habitats
- leaves with 2 or 3 pungent teeth at the apex
- plant dioecious. Male and female inflorescences with similar distichious branching. Flowers in whorled clusters on side branches.
- flowers spring.

#### Fruit and Propagation:

- small seed like wheat grains collected late December/January by collecting spikes when some seed is beginning to be shed
- seed has limited longevity so sow within 2-3 months.





***Zoysia macrantha***

**Common Name:** Prickly Couch, Coastal Couch

**Habit and Distinguishing Features:**

- grass forming dense mats to 30cm tall spreading by rhizomes and stolons. Leaf tips sharp to the touch.
- occurs in coastal dunes and near tidal flats
- inflorescence is a spike like raceme with spikelets appressed against the zig-zag rachis
- flowering is in spring and summer.
- similar looking *Sporobolus virginicus* (Saltwater Couch) occurs on tidal flats and is distinguished by hairy leaves and the inflorescence being a branched panicle.

**Fruit and Propagation:**

- Seed collected summer/ autumn.
- Direct seeding worth trial
- division of rhizomes and stolons

***Imperata cylindrica***

**Common Name:** Blady Grass

**Habit and Distinguishing Features:**

- grass forming dense swards by long creeping rhizomes
- Leaves to 1m by 2cm wide with a minutely scabrous sharp edge.
- widespread in many habitats especially with regular burning.
- inflorescence a dense cylindrical spike like panicle with long silky white hairs

**Fruit and Propagation:**

- not normally propagated but could be using seed or division of rhizomes



***Ficinia nodosa* syn *Isolepsis nodosa***

**Common Name:** Knobby Club Sedge

**Habit and Distinguishing Features :**

- perennial sedge with a long creeping rhizome and clustered culms (a flowering stem with basal leaves) to 1m tall.
- occurs in coastal dunes , saltmarsh and tidal flats.
- inflorescence is a dense globose cluster of spikelets to 1cm diameter.
- Flowering mostly spring.

**Fruit and Propagation:**

- Seed is a brown/black nut collected summer/autumn
- Propagated from seed using “bog” method. Trials of direct seeding may be worthwhile.



***Senecio pinnatifolius* ssp *maritimus***

**(*S. lautus* ssp. *maritimus*)**

**Common Name:** Coastal Fireweed , Coast Groundsell

**Habitat and Distinguishing Features:**

- a perennial herb on the dunes often confused with the exotic weed Fireweed (*S. madagariensis*) and mistakenly removed.
- distinguished by the number of involucral bracts (*S. pinnatifolius* ssp *maritimus* has about 13, *S. madagascariensis* about 20 )



### ***Carpobrotus glaucescens***

**Common Name : Pigface**

#### **Habitat and Distinguishing Features:**

- sprawling prostrate herb forming small mats. Stems rooting at nodes.
- leaves succulent, glaucous, triangular in cross section.
- flowers terminal on side shoots and to 6cm diam. 100 to 150 purple petaloid staminodes.
- flowers throughout year.

#### **Fruit and Propagation:**

- fruit a 2-3 cm long red/purple succulent dehiscent capsule.
- numerous tiny seeds embedded in mucilage **DELICIOUS**.
- easily propagated by cutting
- seed separated from flesh by soaking in warm water
- germinates well



### ***Canavalia rosea***

**Common Name: Beach Bean, Coastal Jack Bean**

#### **Habit and Distinguishing Features ;**

- herb with climbing or trailing stems to 3m.
- a cosmopolitan species on beaches of the tropics/subtropics
- leaves trifoliate with leaflets circular to oblong.
- inflorescence is an axillary raceme of approx 8 mauve “pea” flowers.
- Flowers most of year

#### **Fruit and Propagation:**

- flattened green pod to 15 by 2.5 cm.
- germination of large hard seeds may be improved by soaking in hot boiled water prior to sowing.





***Hibbertia scandens***

Common Name : Climbing Guinea Flower

**Habit and Distinguishing Features :**

- climber or trailer with long woody stems
- occurs in foredune and hind dune vegetation as well as many other habitats.
- leaves are alternate ,stem clasping, obovate and with a silvery hairy undersurface.
- large yellow flowers with 5 petals and approx. 30 stamens
- flowers occur throughout the year and open with sunlight.
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**Fruit and Propagation :**

- fruit a 3 cm green capsule splitting to reveal seeds surrounded by a fleshy orange/red aril. Seeds mostly in summer.
- seeds germinate well after removal of aril and washing
- cuttings strike readily.

***Wollastonia biflora syn Melanthera biflora***

Common Name: Melanthera

**Habit and Distinguishing Features:**

- perennial herb to 1m. tall. Can form dense mats in dunes.
- leaves opposite , ovate to rhombic , 3 veined , slightly toothed margins and with white , closely appressed hairs
- flowers in heads to 2cm diameter with yellow ray florets.
- with similar yellow flower heads, Melanthera is sometimes confused with Bitou Bush, but distinguished by the dull hairy leaves with finely toothed margins.

**Fruit and Propagation:**

- the fruit is a cypsela (a one seeded , dry, indehiscent fruit) as in most plants of Family Asteraceae.
- propagation from seed or cuttings





### ***Scaevola calendulacea***

**Common Name :** Dune Fan Flower , Beach Fan Flower

#### **Habit and Distinguishing Features :**

- prostrate shrub with flowering stems ascending to 40cm
- forms dense mats on foredunes
- leaves alternate , fleshy, oblanceolate to obovate , to 2.5cm
- flowers in upper axils, fan shaped , the corolla light blue with a yellow centre, to 15mm long.
- Some flowering all year

#### **Fruit and Propagation:**

- fruit a fleshy drupe to 10mm diameter , creamy turning purple/black.
- edible and eaten by birds including by some reports Coastal Emu.
- untreated seed reported to germinate well, especially if sown in winter and kept cool and moist.
- cuttings propagate readily.



### ***Oxalis rubens* and *Oxalis exilis***

Several indigenous *Oxalis* species occur on the coastal dunes.

These 2 species are yellow flowered and with long creeping stems and lacking thick taproots. They are difficult to distinguish.

**As a general rule any yellow flowering *Oxalis* on the dunes can be assumed to be native and not one of the exotic weedy species**



## ***Acacia sophorae***

**Common Name : Coastal Wattle**

### **Habit and Distinguishing Features:**

- decumbent shrub , prostrate or forming dense shrub to 2.5m.
- phylloides ( flattened petiole functioning as a leaf) to 10cm long and 2cm wide.
- rich yellow flowers in spikes (rods) to 3cm .Flowering August/September
- very important dune stabilizer which also enriches the dune soil through nitrogen fixing bacteria in root nodules

### **Fruit and Propagation :**

- pod to 8cm long dries, browns, twists and opens when ripe releasing small hard coated black seeds.
- collect pods when some beginning to open in late October or November.
- as with most wattles seed germination is hastened and increased by heat treatment using boiled water.
- procedures for direct seeding using a mix of heat treated and untreated seed have been developed (see" Coastal Dune Management".Soil Conservation Service



***Leucopogon parviflorus***

**Common Name :** Coastal Beard Heath , White Currants

**Habit and Distinguishing Features:**

- dense erect shrub to 2.5m
- leaves to 25mm by 6mm, stiff, sharply pointed ,parallel veined and whitish lower surface
- inflorescence a spike of small (5mm) white tubular flowers with hairy throat.
- flowers September.

**Fruit and Propagation:**

- fruit is a succulent drupe. DELICIOUS
- nursery germination of seed of *Leucopogon* species is generally very difficult.
- Can be grown by cuttings.

***Rhagodia candolleana***

**Common name:** Sea-berry Saltbush

**Habit and Distinguishing Features:**

- straggly shrub to about 1m. or sometimes climbing to 3m.
- leaves alternate or opposite, elliptic ,ovate or hastate, fleshy with a silvery sheen on the undersurface.
- small flowers in terminal panicles to 15cm long ,mealy white.

**Fruit and Propagation :**

- fruit a small (2-3mm) red succulent drupe said to be edible
- seed reported to germinate readily without treatment
- also grown from cuttings.



***Banksia integrifolia* subsp. *integrifolia***

**Common Name : Coast Banksia, Coast Honeysuckle**

**Habit and Distinguishing Features :**

- may be a wind shorn shrub on foredunes and headlands to a moderate sized tree to 20m in protected hind dunes.
- a member of Family Proteaceae with particularly dense mats.
- fine roots (“Proteoid Roots”) which are very efficient in absorbing nutrients , especially phosphorous from the infertile sandy soils.
- leaves are whorled, entire or with a few teeth, narrow-obovate, 5-10cm by 1.5cm, dark green above, silvery below.
- pale golden yellow flower spikes (brushes ) to 15cm are a very important nectar source for honeyeaters from late autumn to spring.

**Fruit and Propagation:**

- unlike most Banksias the seeds are shed from the cones (ie not held) on maturity. Cones must be collected when mature and seeds are beginning to be shed in December/January.
- fresh seed germinates well. Seed has short longevity.





## The Hind Dune Zone

The Hind dune Zone generally supports woodland or forest communities of various types according to conditions and history. The build-up of humus and soil nutrients over time and the continued input of mineral nutrients in sea winds allows the development of trees and these forest communities.

More exposed upper slopes and ridges often support a woodland or open forest community dominated by Coast Banksia (*Banksia integrifolia*) and Tuckeroo (*Cupaniopsis anacardioides*). More protected areas support, in the absence of fire, Littoral Rainforest of varying complexity, from simpler types dominated by Tuckeroo and Three Veined Laurel (*Cryptocarya triplinervis*) to more complex communities which at their richest may have 50 to 60 species of trees and shrubs. After fire open forest communities with the canopy dominated by Bloodwood (*Corymbia intermedia*) with a developing rainforest understory occurs. In low swales with a high water table Swamp Forest dominated by Broad-leaved Paperbark (*Melaleuca quinquenervia*) and Swamp Oak (*Casuarina glauca*) occur.

These Hind Dune forests are very important food sources for many bird species. During winter *Banksia integrifolia*, *Melaleuca quinquenervia* and *Eucalyptus robusta* (Swamp Mahogany) are major nectar sources for many honeyeaters including the Threatened Species Regent Honeyeater and Swift Parrot. In January and February, heavily flowering Bloodwoods attract a large migration of Flying Foxes. Littoral Rainforests provide fruit for frugivorous birds for much of the year and may be particularly important during late winter/spring when fruit is scarce in highland forests. At this time species such as *Acronychia imperforata*, *Acronychia oblongifolia*, *Syzygium australe*, *Syzygium smithii*, *Ficus* species, *Trochocarpa laurina*, *Endiandra sieberi*, *Diospyros pentamera*, *Podocarpus elatus*, *Olea paniculata*, *Synoum glandulosum* and *Cissus sterculifolia* are fruiting in these coastal forests.

## Common species found in the Hind Dune Zone

### *Cupaniopsis anacardioides*

Common Name : Tuckeroo

#### Habit and Distinguishing Features:

- a wind -sheared shrub in exposed sites to a tree to 10m.
- major species in depauperate littoral rainforests. Also occurs along banks of lower reaches of coastal rivers
- leaves are alternate , pinnate with 4–11 leaflets. Leaflets obovate or ovate with rounded ,notched apex,dark green upper surface, lighter green below, to 15cm long. There is a prominent swelling ('pulvinule') at the base of the petiolule.
- the inflorescence is a panicle to 30cm long. Flowers small greenish-white. Flowers in winter.

#### Fruit and Propagation:

- the 3 valved capsules are orange yellow when ripe splitting to expose 3 black seeds surrounded by a fleshy orange aril which are avidly eaten by birds such as Figbird and Oriole.
- fruit collected in late November or December when some opening will split within days releasing seeds. Remove aril then soak seed for a day or so before sowing.



***Cryptocarya triplinervis* var. *triplinervis***

**Common Name :** Three Veined Laurel

**Habit and Distinguishing Features:**

- a shrub or medium size tree depending on exposure.
- major species in less complex Littoral Rainforests.
- leaves are simple, alternate, to 10cm, elliptic or ovate, dark green above, paler below with hairs on the veins. There are 2 or more domatia in the lower vein angles.
- tiny cream flowers in panicles in late spring.

**Fruit and Propagation:**

- the fruit is a shiny black ovoid drupe
- ripens in late January/February. The fruit is eaten by birds e.g. Topknot Pigeon.
- collect ripe fruit, soak to soften then macerate to remove flesh from seed before sowing.



***Alectryon coriaceus***

**Common Name:** Beach Birds-Eye

**Habit and Distinguishing Features:**

- sprawling shrub or small tree often part of a dense wind-sheared barrier protecting hind dune vegetation
- leaves pinnate with 2 leaflets, rarely 3 or 4. Leaflets obovate 6-11cm, apex rounded or notched, glossy green above, grey green below, margins entire.
- inflorescence a panicle of small cream or green male or female flowers. Flowering late November and December

**Fruit and Propagation :**

- fruit a capsule, 3 or 4 lobes, splitting when ripe March-July
- exposing the 3 or 4 black seeds each partly surrounded by a bright red edible "aril". Fruit eaten by birds eg Catbird, Lewin's Honeyeater
- collect fruit when ripe, remove aril, soak then sow in a well-drained seed mix. Germination often poor...??



***Guioa semiglauca***

Common Name: Guioa

**Habit and Distinguishing Features:**

- small or medium sized tree ,common ,in all rainforest types except cool temperate
- leaves alternate , pinnate with 2-6 leaflets. Leaflets mostly alternate, obovate to elliptic to narrow-elliptic, margins entire, undersurface dull pale grey green.
- Flowers small, cream. Inflorescence a terminal or axillary panicle, 5-15cm.
- Flowering September to November

**Fruit and Propagation:**

- fruit a green capsule 2 or 3 lobed , splitting when ripe to expose brown seeds each surrounded by a juicy orange “aril”. DELICIOUS.
- fruit ripe mostly February but through till May
- collect fruit when ripe, remove ‘aril’, soak for 24hrs then sow in well drained seed mix. Germination reliable.

***Acronychia imperforata***

Common Name: Beach Acronychia

**Habit and Distinguishing Features:**

- shrub or small tree only in littoral forests.
- leaves mostly opposite, 1-foliolate, elliptic to broad elliptic to obovate, apex rounded or notched, thick and leathery, glossy dark green above lighter below, hairless. Oil dots are absent or very difficult to see even with a hand lens.
- Inflorescence a few flowered cyme. Flowers cream with 4 sepals and 4 petals (Family Rutaceae, to which the Genus *Acronychia* belongs together with Citrus and many other Genera of Australian plants, eg. *Boronia*, *Flindersia*, is characterised by having 4 or 5 sepals and petals with twice the number of stamens).
- Flowering occurs February to April.

**Fruit and Propagation :**

- fruit a cream or lemon yellow drupe. DELICIOUS.
- the seeds are surrounded by a stony layer. Fruit is eaten by birds and Flying Foxes.
- seed propagation is very slow and difficult. Cuttings are difficult to strike





## ***Syzygium australe***

**Common Name:** Brush Cherry , Scrub Cherry

### **Habit and Distinguishing Features :**

- large shrub in exposed sites to small or medium tree to 15m along protected watercourses. Widespread, mostly in rainforest
- leaves opposite, entire ,elliptic , oblanceolate or obovate, 2.5 to 8cm long ,apex shortly narrowed to a fine point, glossy green above, lighter below. Oil dots scattered and indistinct. Crushed leaves aromatic.
- inflorescence a small panicle of white stamen dominated flowers to 2cm diameter. Flowers late summer/autumn in coastal littoral locations

### **Fruit and Propagation :**

- fruit a berry, light pink to red, ovoid to pear shaped to 2.5cm. DELICIOUS. Ripe late winter/spring in coastal littoral areas.
- collect fruit when ripe, remove the single seed from fruit, then soak at least 1 day before sowing. Germinates easily.



## Coastal Headlands

Two Vegetation Communities are confined to and characteristic of Coastal Headlands. These are **grassy Coastal Headland Heath** and **Brush Box Littoral Rainforests**.

The headland soils differ from the sandy coastal dune soils being derived from a range of bedrocks . They are generally grey/black due to a high organic matter resulting from slower decomposition due to high salt levels. These different, generally richer, soils result in different vegetation communities and suites of species as briefly described below.

**Grassy Coastal Headland Heaths** are dominated by dense low swards of *Themeda triandra* (syn *Themeda australis*), (Kangaroo Grass), amongst which grow low prostrate herbs such as *Senecio pinnatifolius* ssp. *maritimus*, *Pimelia linifolia*, *Xerochrysum bracteatum*, and the Threatened Species *Zieria prostrata*, *Pultenaea maritima* and *Thesium australe* (Austral Toadflax).

Grassy Coastal Headland Heath is maintained by exposure and fire. Without fire, windswept Coastal Banksias, Coastal Wattle, Tuckeroo and other species tolerant of strong sea winds develop and over time begin to form a low coastal scrub vegetation.

**Brush Box Littoral Rainforests** occur on soils developed from a range of bedrocks and generally in less exposed situations. Brush Box (*Lophostemon confertus*) dominates the generally low canopy with a variable range of other species of trees and shrubs present. Typical species are *Ficus rubiginosa*, *Cupaniopsis anacardioides* , *Drypetes australis* , *Diospyros pentamera*, *Cassine australe* and *Euroshinus falcatus*.

### Common species found on Coastal Headlands

#### ***Themeda triandra* (syn *Themeda australis*)**

**Common Name:** Kangaroo Grass

**Habit and Distinguishing Features :**

- tufted grass with blue green reddish foliage forming dense low mats on headlands but taller to 1m in other habitats
- inflorescence a loose panicle to 50cm.
- flowering spring to summer

**Fruit and Propagation:**

- seed generally mature and ready to collect in this area after Christmas. Indications that seed is mature are when the long black Awl on fertile florets is fully black and comes away easily with seed when hand is run up the inflorescence.
- some seed appears to require an after-ripening period. Other seed will germinate when planted soon after collection. Best therefore to plant some of a batch quickly but hold some for 3-4 months.



#### ***Lophostemon confertus***

**Common Name:** Brush Box

**Habit and Distinguishing Features:**

- small to large tree from a range of moist forests.
- bark rough, scaly, grey on lower trunk, pinkish brown above
- leaves dark, glossy, to 16cm long in whorls or irregularly spaced
- flowers white, to 25cm diameter with stamens dominant in 5 bundles.
- flowers spring and summer.

**Fruit and Propagation:**

- fruit a woody capsule.
- collect old, grey capsules. Allow capsules to dry out releasing small seeds. Seeds germinate readily.



## Notes