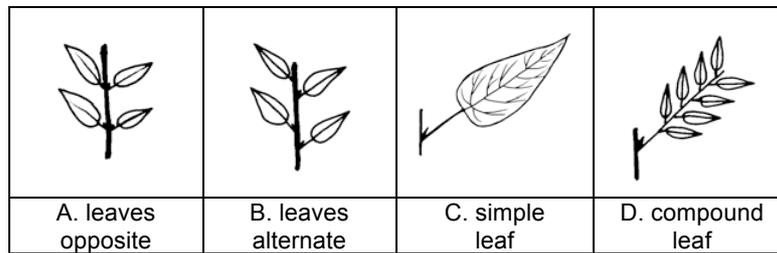
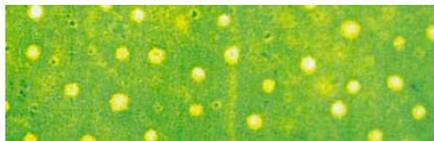


KEY TO GROUP 1

Mangroves and plants of saline habitats, i.e., regularly inundated by king tides.



- | | | |
|----|---|------------------------|
| 1 | Mature plants less than 60 cm high, often prostrate and succulent | go to 2 |
| 1* | Mature plants greater than 60 cm high, shrubs or trees | go to 4 |
| 2 | Plants without obvious leaves, succulent (samphires) | go to Group 1.A |
| 2* | Plants with obvious leaves, sometimes succulent | go to 3 |
| 3 | Grass, non-succulent, leaves narrow, margins rolled inwards | go to Group 1.B |
| 3* | Plants with succulent leaves, may be flattened, cylindrical or almost so | go to Group 1.C |
| 4 | Trees or shrubs with opposite leaves (see sketch A) | go to 5 |
| 4* | Trees or shrubs with alternate leaves (B) | go to 6 |
| 5 | Leaves with oil glands visible when held to the light and an aromatic smell when crushed or undersurface whitish | go to Group 1.D |



Large oil glands as seen with a good hand lens

- | | | |
|----|--|------------------------|
| 5* | Leaves without oil glands or a whitish undersurface, but prop roots, knee roots or buttresses may be present | go to Group 1.E |
| 6 | Plants with copious milky sap present when parts, such as stems and leaves are broken (CAUTION) | go to Group 1.F |
| 6* | Plants lacking milky sap when stems or leaves broken | go to 7 |
| 7 | Shrubs or trees with simple leaves (C) | go to Group 1.G |
| 7* | Trees with compound leaves (D) | go to Group 1.H |

GROUP 1.A Plants succulent with no obvious leaves (samphires).

Tecticornia halocnemoides subsp. *tenuis* (Also treated as *Halosarcia* – Chenopodiaceae)

Tecticornia is derived from *tecti* – covering, and *cornu* – horn, referring to the bracts which cover the flower.

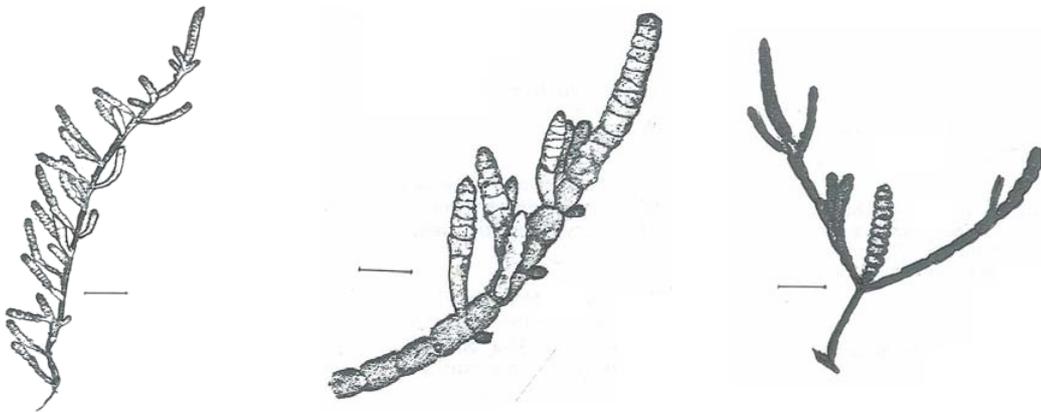
Shrub to 50 cm high with slender branchlets, segments narrowly barrel-shaped to 5 mm long, 2 mm wide. Flowers in slender spikes.

Tecticornia indica subsp. *indica* (Also treated as *Halosarcia* – Chenopodiaceae)

Decumbent or prostrate plant, segments cylindrical to barrel-shaped, 10 mm long x 4-6 mm wide, often becoming corky.

Tecticornia indica subsp. *julacea* (Also treated as *Halosarcia* – Chenopodiaceae)

Decumbent plant with slender branchlets, segments narrowly cylindrical, 4-10 mm long x 2-3 mm wide.



T. halocnemoides subsp. *tenuis*.

T. indica subsp. *indica*

T. indica subsp. *julacea*

Tecticornia australasica (Chenopodiaceae)

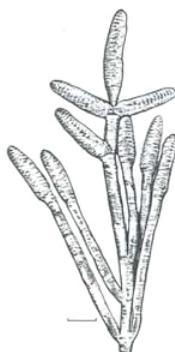
Decumbent or erect plant to 40 cm, segments narrowly cylindrical. Flowering spike usually terminal, up to 7 mm wide, bracts free.

GROUP 1.B Grass, non-succulent, leaves narrow and margins rolled inwards.

Sporobolus virginicus (Saltwater Couch, Sand Couch – Poaceae)

Sporobolus, from the Greek *sporo* – seed, and *bolos* – throwing, referring to the seed, which is easily shed.

Commonly found in mangrove and saltmarsh habitats. The leaves are narrow and stiff; the inflorescence is a narrow spike.



T. australasica



S. virginicus

GROUP 1.C Plants with succulent leaves, which may be flattened, cylindrical or almost so.

Suaeda arbusculoides (Seablite – Chenopodiaceae)

Suaeda from the Arabic word *suwaida*.

This erect herb, to 1 m high, has narrow elliptical leaves to 2.5 cm long that are somewhat flattened at the apex. The stem has a zig-zag appearance. Seeds are 2-4 mm diameter, *Suaeda australis* has linear, semi-terete leaves to 5.5 cm long; seeds are 1 mm diameter.

Salsola kali (Roly-poly, Prickly Saltwort – Chenopodiaceae)*

Salsola was derived from the Latin *salsus* meaning salty.

An erect, succulent shrub to about 60 cm high with semi-cylindrical leaves that end in a short needle-like point. Leaves very variable in size. Fruits surrounded by membranous, horizontal wings formed from the perianth. Colour of the plant varies from green to red. Old plants break off and blow/roll along the ground, hence the common name. The fruits are dropped as the plants blow around.

Sesuvium portulacastrum (Sea Purslane – Aizoaceae)

Sesuvium, named by Linnaeus after the Gallic tribe, the “Sesuvii”.

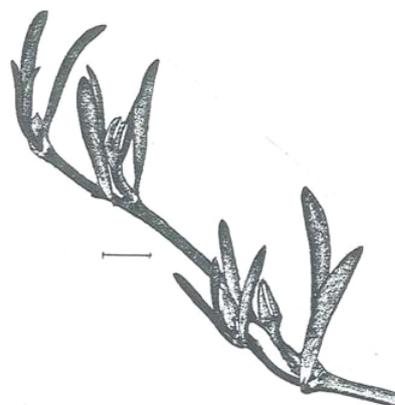
A procumbent herb rooting at the nodes. Leaves opposite, narrow with bases clasping the stem, edible. Flowers usually solitary, **pink to purple** to 1 cm diameter. Fruit a capsule to 6 mm long; numerous black seeds.



S. arbusculoides



S. kali

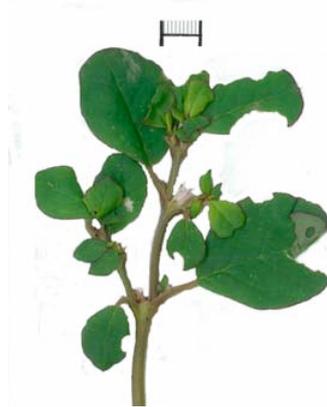
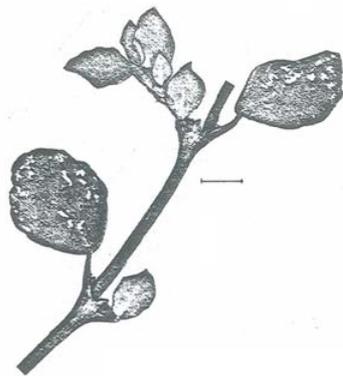


S. portulacastrum

Trianthema portulacastrum (Pigweed – Aizoaceae)

Trianthema, from Greek *treis* – three, and *anthos* – flower, since the flowers are often in groups of three.

A procumbent herb with opposite leaves and sheathing leaf bases. These pairs of broadly obovate leaves are unequal in size. Flowers **pink to purple**, usually solitary in the axils, 10-25 stamens present per flower. *Trianthema triquetra* has narrower leaves and the flowers form clusters in the axils and there are only 5 stamens per flower.



T. portulacastrum

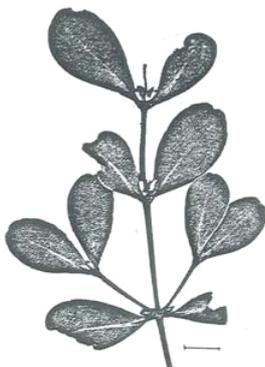
GROUP 1.D Leaves with oil glands visible when held to the light or undersurface whitish.

Osbornea octodonta (Myrtle Mangrove – Myrtaceae)

Osbornea, named by Ferdinand von Mueller after the chemist John Osborne. A shrub with stringy, fibrous bark on the trunk, which is often multi-stemmed. Leaves are opposite, oil glands are present, eucalyptus smell when crushed; leaf apex rounded or with a notch, petiole and adjacent midrib are often reddish. Flowers are pale-coloured and hairy, calyx lobes 8, **white**, petals absent, stamens numerous. Flowers in summer. Fruit a greenish berry to 10 mm long, small hairs present.

Avicennia marina* subsp. *eucalyptifolia (Eucalypt Mangrove – Avicenniaceae)

Avicennia, named after the Persian physician and philosopher Ibn-Sina or Avicennia. This species has smooth pale green to mottled bark; numerous thin pencil-like pneumatophores or aerial roots, protrude through the mud. The leaves are opposite, narrowly lanceolate to lanceolate usually with a distinct yellowish tinge. Undersurface appear white or silvery, salt glands present on both surfaces. The **yellow to white** flowers are clustered in the axils, the style extends above the top of the anthers or close to the top; fruit compressed, greenish-yellow, cotyledons folded. A tropical subspecies it extends down the eastern Australian coast about as far as Mackay. Subspecies *australasica* (Grey or White Mangrove) has ovate to lanceolate leaves and the style only reaches to the middle of the anthers. This subspecies is common in southern Australia extending north to the Rockhampton area. (Duke, 2006)



O. octodonta



A. marina subsp. *eucalyptifolia*

GROUP 1.E Leaves without oil glands or a whitish undersurface.

Ceriops tagal (Yellow or Spurred Mangrove – Rhizophoraceae)

Ceriops, from the Greek *ceras* – horn, and – *opsis* appearance, i.e., horn-like, referring to the appearance of the fruit.

This shrub has flaky bark on the buttressed or flanged trunk. The leathery leaves are yellowish green. The 5-6 recurved sepals resemble spurs, petals **white**.

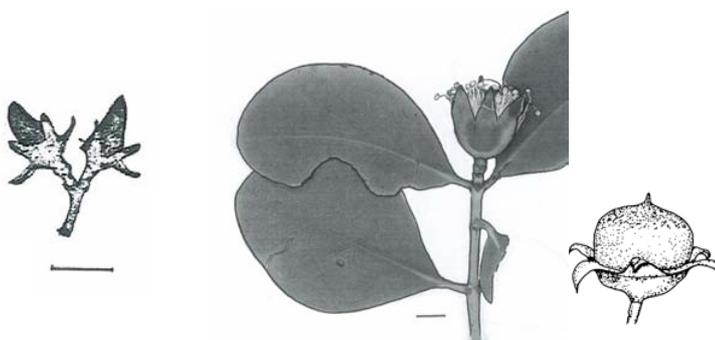
Propagules ribbed in *Ceriops tagal*, smooth in *Ceriops australis*. Flowering June.

Sonneratia alba (White-flowered Apple Mangrove, Pornupan – Lythraceae formerly in Sonneratiaceae)

Sonneratia was named for the 18th Century French explorer and naturalist, Pierre Sonnerat. This plant grows from 3-20 m tall and has thick peg-like roots or pneumatophores which poke up through the mud. Leaves opposite, slightly reflexed at the tip, apex acute to obtuse. Flowers large with numerous long **white** stamens followed by a cupular fruit more than 2 cm diameter, greenish, sepals persistent. Flowers may be present throughout the year, but chiefly winter.



C. tagal



S. alba

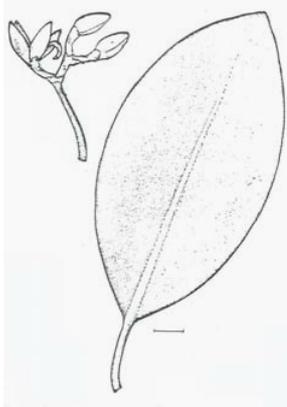
Rhizophora stylosa (Red Mangrove – Rhizophoraceae)

Rhizophora, from the Greek *rhiza* – root, and *phora* – bearing, referring to the prop roots.

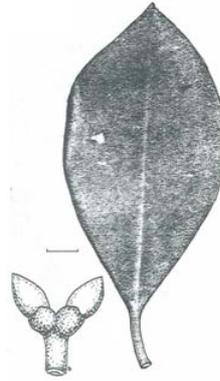
This small tree is readily distinguished by the reddish-brown spots or glands that are commonly found on the lower surface of the leaf. Prop roots present, bark reddish to light grey. Inflorescence branched; sepals 4, petals 4, **white**, with hairs on the margins, style 4-6 mm long; propagules to 65 cm long. Flowering February to May.

Rhizophora apiculata (Tall-stilted or Corky-stilt Mangrove – Rhizophoraceae)

A shrub or small tree with prop roots, very dark bark, and glossy green, leathery leaves. Flowers paired with corky brown bracts below; sepals 4, petals 4 **cream**, hairs absent from margin; style very short; propagules to 37 cm long. Flowers chiefly in autumn. *Rhizophora mucronata* is a similar species but the leaves are much larger and the inflorescence is branched.



R. stylosa



R. apiculata



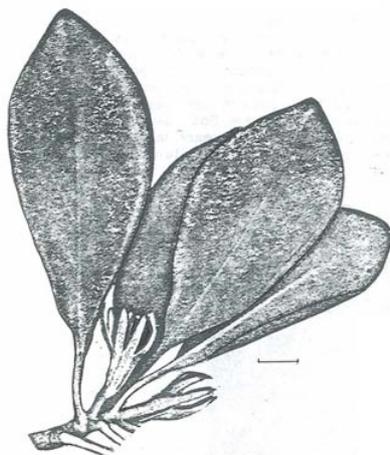
Bruguiera exaristata (Small-leaved Orange Mangrove – Rhizophoraceae)

Bruguiera is named after the French explorer and botanist, J.G. Bruguieres (1750–1799). This genus is distinguished by the “knee-like” pneumatophores and the calyx, which has from 6-14 parts depending on the species. *Bruguiera exaristata* has 8-10 **yellowish** sepals and petals, propagule somewhat ribbed to 11 cm long. Flowering occurs in spring. *Bruguiera gymnorrhiza* (Large-leaved Orange Mangrove) has 12-14 **reddish** sepals but some specimens with 9 only may occur, petals pale **brown to orange**. Propagule ribbed, to 25 cm long.

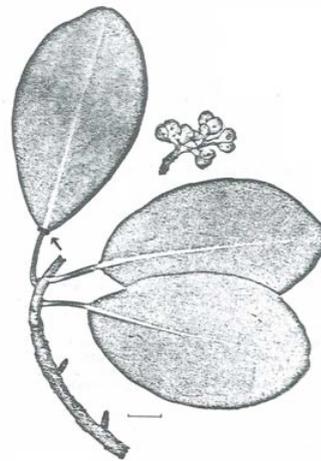
GROUP 1.F Plants with copious milky sap.

Excoecaria agallocha (Milky Mangrove, Blind-Your-Eye – Euphorbiaceae, **CAUTION**)

Excoecaria is from the Latin *excaecare* – to blind, referring to the toxic nature of the latex. This tree is readily recognized by the copious white latex, which may blister the skin or cause temporary blindness if it gets into the eye. There are two small glands or nectaries, at the base of the leaf blade (↑), as well, there are usually a few old red leaves present. The trunk is covered with dark grey, corky bark with numerous lenticels. Plant may become deciduous when stressed. Flowers with 2-5 **green to yellow** sepals, petals absent. Flowering summer. Fruit a 3-lobed brown capsule.



B. exaristata



E. agallocha



GROUP 1.G Plants with simple alternate leaves.

Lumnitzera racemosa (White-flowered Black Mangrove – Combretaceae)

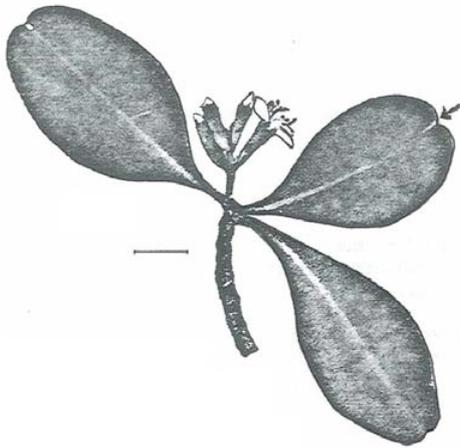
Lumnitzera is named after Stephan Lumnitzer, a Hungarian botanist (1750-1806).

The obovate leaves on this shrub are notched at the apex. A small gland(↑) is present just behind the notch on the lower surface. **White** flowers are borne in axillary racemes. Fruit fleshy drupe, flattened to 1.5 cm long. Flowering November.

Aegialitis annulata (Club Mangrove – Plumbaginaceae)

Aegialitis, from the Greek *aigialos* – seashore, referring to its preferred habitat.

Slender shrub to 1 m, stem usually swollen at the base. Leaves have a sheathing base (↑), which falls off leaving an annular scar. The upper surface of the leaf is pitted with salt glands, numerous salt crystals are usually present on the surface. Flowers **white**, calyx prominently ribbed. Propagule (↑) sometimes referred to as being 'spaghetti-like'. Flowering summer.



L. racemosa



A. annulata

Aegiceras corniculatum (River Mangrove – Myrsinaceae)

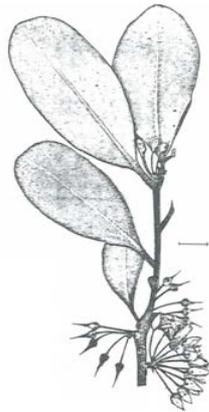
Aegiceras, derived from the Greek *aix* – goat, and *keras* – horn, referring to the fruit resembling goat's horns.

A bushy shrub with a smooth stem and obovate, glossy green leaves which bear small salt glands. Resin is also secreted. The fragrant, **white** flowers are followed by the cylindrical, curved, horn-like fruits. Flowering winter and spring.

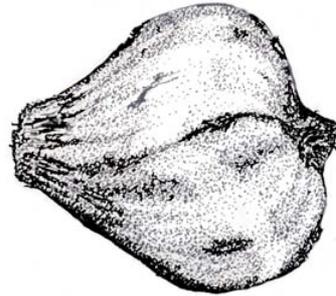
Barringtonia asiatica (Fish Killer Tree – Lecythidaceae)

Barringtonia, named after an 18th Century English jurist and naturalist, Daines Barrington.

A large tree with large, obovate to oblong leaves, which tend to cluster at the ends of branches. The **white** flowers are borne in pendulous racemes. The large, to 15 cm wide, 4-angled fruits, which have a fibrous pericarp, are often washed up as flotsam. Flowering April.



A. corniculatum



B. asiatica

GROUP 1.H Trees with compound, alternate leaves.

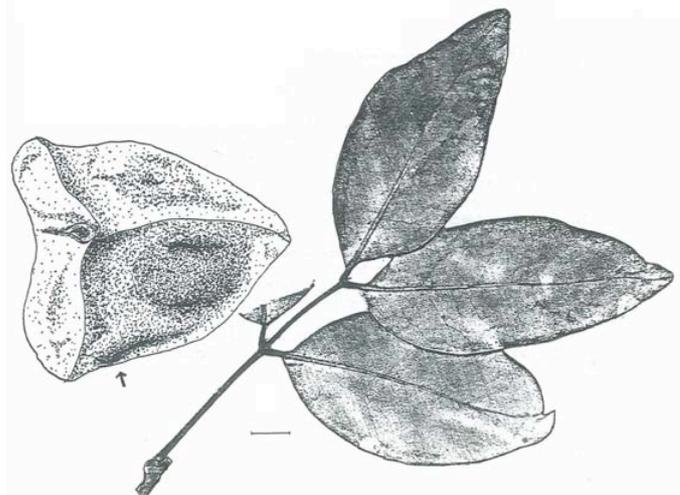
***Xylocarpus moluccensis* (Cedar Mangrove – Meliaceae)**

Xylocarpus derived from the Greek words *xylon* – woody, and *karpos* – fruit, referring to the woody fruit.

This tree, deciduous when flowering, has dark brown, fibrous bark, which peels off in strips. There are numerous conical aerial roots, or pneumatophores, produced near the base of the trunk. This contrasts with *Xylocarpus granatum* (Cannonball Mangrove) found on the nearby mainland; here the flaky bark results in a blotchy appearance. It is buttressed at the base of the stem but pneumatophores are absent. Both have large (6-12+ cm wide) leathery fruits, which break open to release large angular seeds (↑) with a corky covering. These are often found in flotsam. Flowering January, flowers are cream to pink.



Photo-S.Fry



X. granatum on left, *X. moluccensis* on right

***Cynometra iripa* (Wrinkle Pod Mangrove – Caesalpiniaceae/Fabaceae)**

Cynometra is derived from the Greek words for dog and womb, apparently an allusion to the shape of the pods.

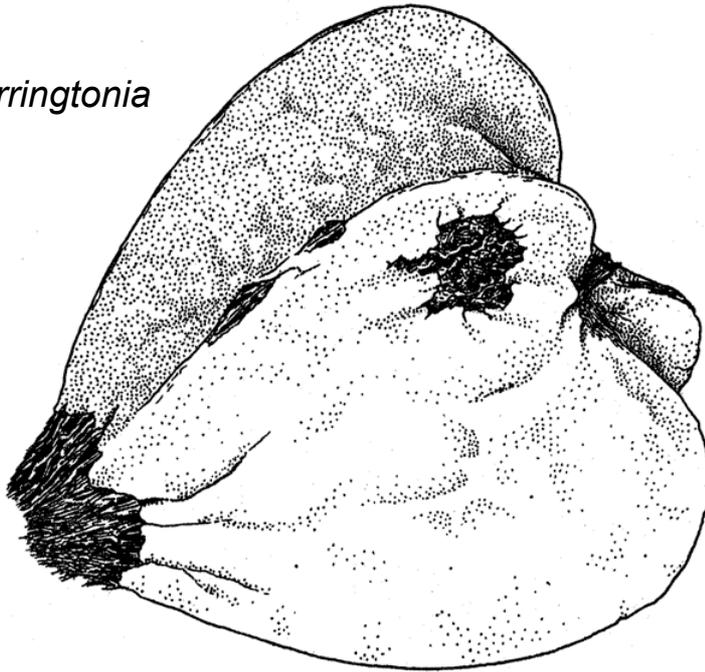
This spreading shrub or small tree has been found in the Picnic Bay area. It is readily recognised by the alternate leaves which have 2 pairs of leaflets, the lower pair of leaflets are smaller than the upper pair. There is usually a notch at the apex of each leaflet. The small white to pink flowers are followed by the

characteristic hard, wrinkly brown pods. The pods are up to 5 cm long and 4 cm wide, often smaller. There is a beak-like projection on the side. There are 1-2 seeds per pod. It is reported to only fruit in wet years.



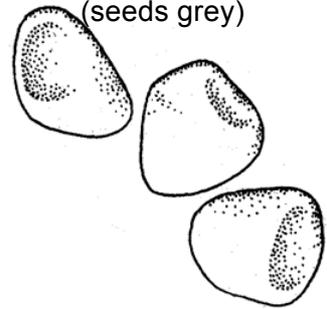
Some drift seeds...

Barringtonia

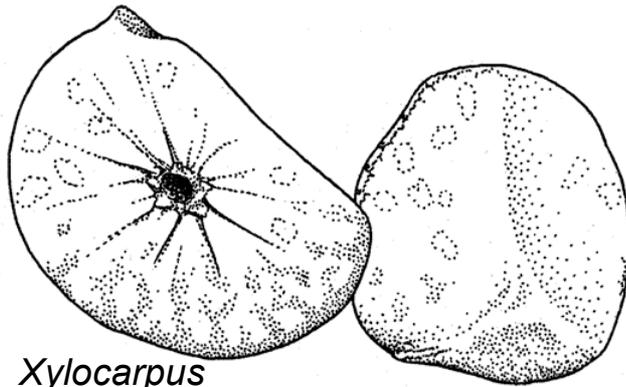


Caesalpinia

(seeds grey)

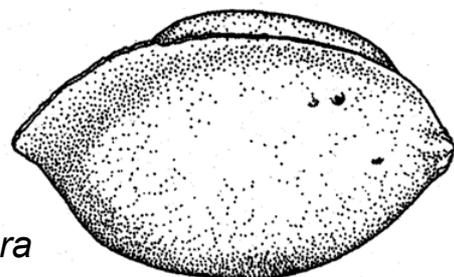


Pandanus



Xylocarpus

Cannon ball mangrove



Heritiera

Looking-glass mangrove

Sketches by Ashley Field