Water, Fire & Treehouse

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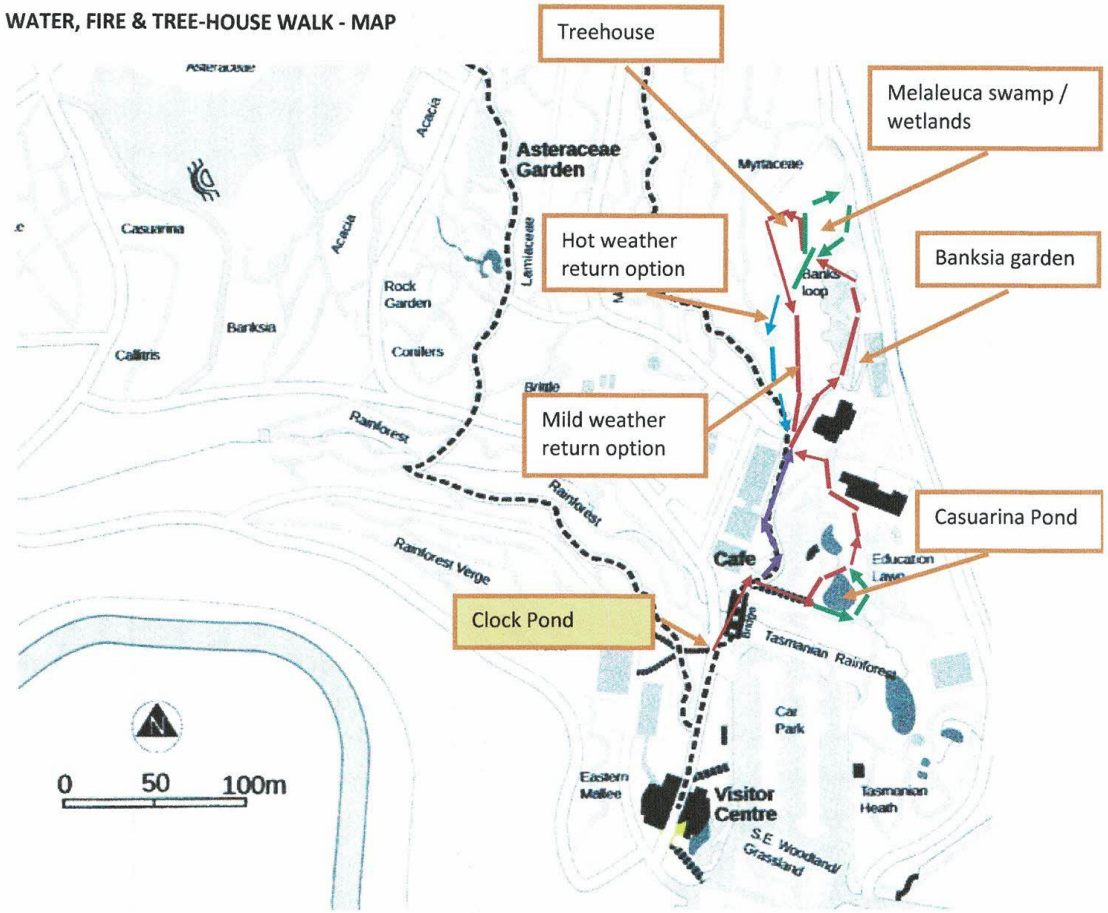
Water, Fire & Treehouse

- **Water**: plants grow in, near water or in well- drained areas. We shall also look at a wetland.
- **Fire**: part of Australian environment; some plants that rely on or respond well to fire, and some others killed by fire, and an example where fire rarely occurs
- **Tree-house:** charred timber treehouse near a wetland, where fire seldom occurs naturally.

Clock Pond



Key

	Usual route
	Avoid stepping stones
	Return – Option 2 – Leptospermum and Callistemon
	Stairless walk with some red and green loop at Melaleuca Swamp

Carex fascicularis Tassel sedge

- Lower left of pond
- **Flowers**: the uppermost spike male, the lower spikes female with occasionally a few male flowers at the tips.
- Flowering spring–summer.
- **Grows** in swampy areas; widespread on coast and tablelands.
- All states and ACT.
- **Uses**: Excellent for floral arrangements

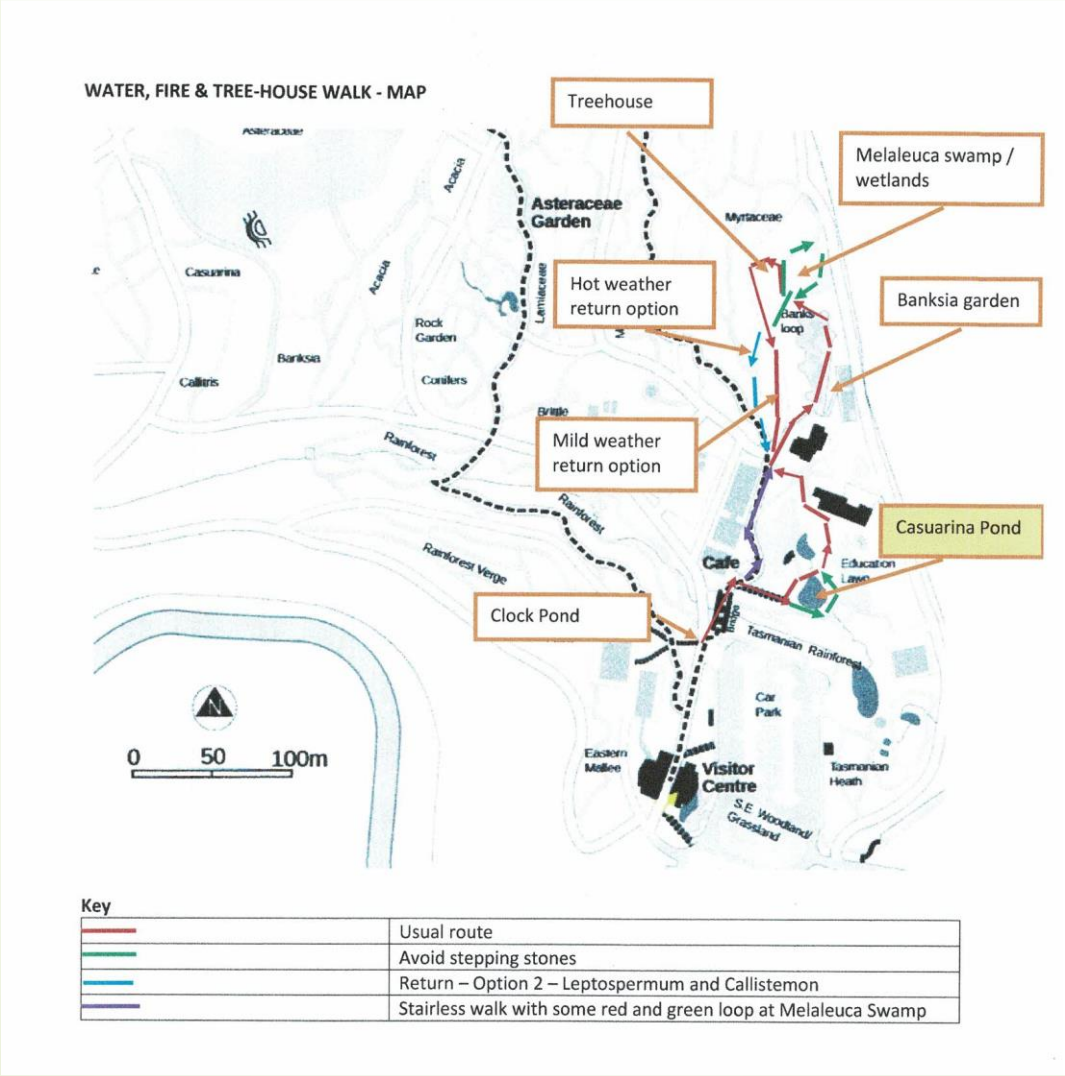
Ludwigia peploides subsp montevidensis Water Primrose

- Bright yellow **flowers** on long petioles
- **Grows** in moist and muddy margins of water. Trails across the water with floating stems that develop roots at the nodes.
- **Use**: Valuable wetland plant providing habitat for fish, seeds for water birds,
- Removes phosphorus and other nutrients.
- Habitat restoration
- Does well in the wetlands and river margins at Woodstock Reserve where the Murrumbidgee leaves the ACT.

Azolla filiculoides Water Fern

- **Flowers**: none; spores. It can also be dispersed on the feet and feathers of water birds.
- **A** free-floating fern of slow flowing streams and rivers, ponds and lakes; if minimum water temperature remains above 0°C throughout the year.
- **Use**: The species has nitrogen-fixing ability and it often grown in paddy fields as a fertilizer.
- Can be a nuisance in dams. An infestation can double in area every 4-5 days.

Casuarina Pond



Lomandra longifolia
Long-leaved Matrush, Spiky-headed Matrush

- **Flower** head is a panicle of clusters of sessile cream to yellow flowers

- **Grows near water**. From Northern Territory to QLD through NSW to Victoria

- **Uses:** Aboriginal people consume the base of the leaves as food, and
- use the leaves to make strong nets and baskets
- Excellent river or creek bank stabiliser.

Typha domingensis
Cumbungi

- Individual separate male and female **flowers** on same stem, with male above, and female flowers forming a dense brown rod

- **Fruit** is a dry single seed with a whorl of long silky hairs.

- **Grows in** still or slow-moving **water**, all over Australia.

- **Use**: Important habitat for birds and other wildlife.
- Valuable water cleanser, bank stabilizer.

- Aborigines ate new shoots like asparagus, prepared rhizome for bread. Seed fluff used for bandages. Plant also for twine, spears, and to start fires and ceremonial decoration

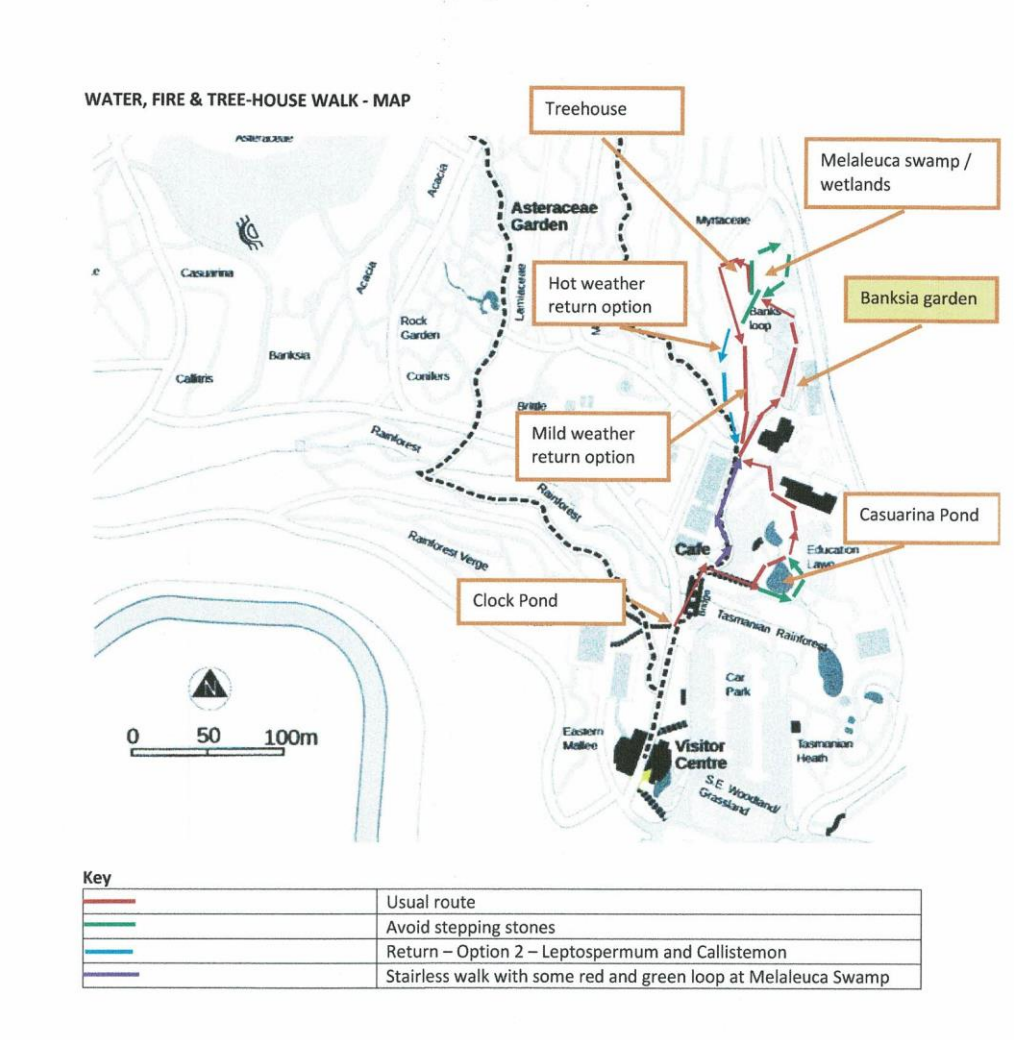
Casuarian cunninghmaniana subsp *cunninghamiana*
River Oak

- **Flowers and fruit:** Flowers are reddish-brown in the male and red in the female. Cones are small, nearly round to elongated
- **Grows:** sunny locations **near water** along stream banks and swampy areas.
- Eastern New South Wales, north and east Queensland and to Daly River in Northern Territory.
- **Use**: The roots have nitrogen-fixing nodules.
- Valuable source of timber and firewood.
- Important tree for stabilising riverbanks and for soil erosion prevention, accepting wet and dry soils.
- Widely used effectively as a screening plant on windy sites and coastal areas.
- The foliage is quite palatable to stock.
- Agroforestry here and overseas

Story of ship *Casuarina*

- Baudin's French expedition 1800 – 1803, which met Matthew Flinders at Encounter Bay in 1902, collected so many samples, that he sent one of his ships, *Le Naturaliste* home with the samples.
- Needed another ship
- He bought the 20-ton schooner, *Casuarina*, from Governor Philip Gidley King in Sydney
- After leaving Australia, Baudin sailed for Mauritius, where he and many other crew died
- All remaining crew sailed back to France in the ship *Géographe*
- *Casuarina* was left behind at Mauritius.

Banksia Garden



Banksia Garden - Introduction

- Have been with us since about 60 million years ago
- Great diversity
- Different heights: prostrate to tall trees
- Different inflorescences; candle-like, cup-like, upright or pendulous.
- Different foliage; e.g. 13 different patterns

Banksia Garden - Introduction (cont'd)

- Some grow in dry well-drained areas and mounds
- Others like growing near or in water
- Fire and /or smoke stimulates some species.
- Some don't need fire to open follicles.
- Fire kills other species which rely on seedbank in soil. If fires too frequent the plants become extinct.
- Attractive to many pollinators; bees, butterflies, insects, birds, and other animals.

Banksia menziesii

Firewood Banksia, Port Wine Banksia, Strawberry Banksia

- The prominent autumn and winter **inflorescences** are often two-coloured red or pink and yellow. Yellow blooms are rare
- **Grows** on well-drained sandy soils, in scrubland or low woodland
- Western Australia, from the Perth region north to the Murchison River
- Dependent on **fire** to reproduce as the follicles only open after being burnt

Banksia baueri
Possum Banksia, Woolly Banksia

- Large woolly **flower** spikes, cream to orange with greyish hairs, late winter and spring
- **Grows** in well drained soils in full sun to light shade. Tolerates at least moderate frost.
- The plant is **fire-sensitive**. The species relies on seed for regeneration.
- Excellent for attracting honey eating birds.

Banksia brownii
Feather-leaved Banksia, Brown's Banksia

- Fine feathery leaves and large red-brown **flower** spikes.
- **Grows** in sheltered positions in well-drained sandy soil, on rocky mountain slopes
- between Albany and Stirling Range, WA
- **Fire** destroys plants but releases seed from follicles. Intervals of 18 years recommended so that plants reach maturity.
- **Named** in honour of botanist Robert Brown.

Banksia robur

Swamp Banksia,
Broad Leaved Banksia

***Banksia robur* "Purple Paramour"**

Banksia robur (cont'd)

- **Flowers** at different times, some in spring and summer, others predominantly in autumn

- **Grows** in sand or peaty soil in coastal areas from Cooktown in north Queensland to the Illawarra region on the New South Wales south coast.
- Often in areas which are seasonally inundated.

- The plant is lignotuberous, regenerating from the ground after **fire**.

Banksia integrifolia
Coast banksia

- **Flowers** when aged 4-6 years from seed, mainly in autumn
- **Grows** usually in sandy soil; some in mountains in volcanic soil, along Eastern coast between Vic and central Qld
- Does **not** need **fire** to trigger release of seed
- **Use**: Widely planted in gardens, parks and streets.
- Stabilisation of dunes and for bush regeneration.
- Rootstock for WA species as it is resistant to dieback (*Phytopthera cinnamomii*).

Banksia serrata

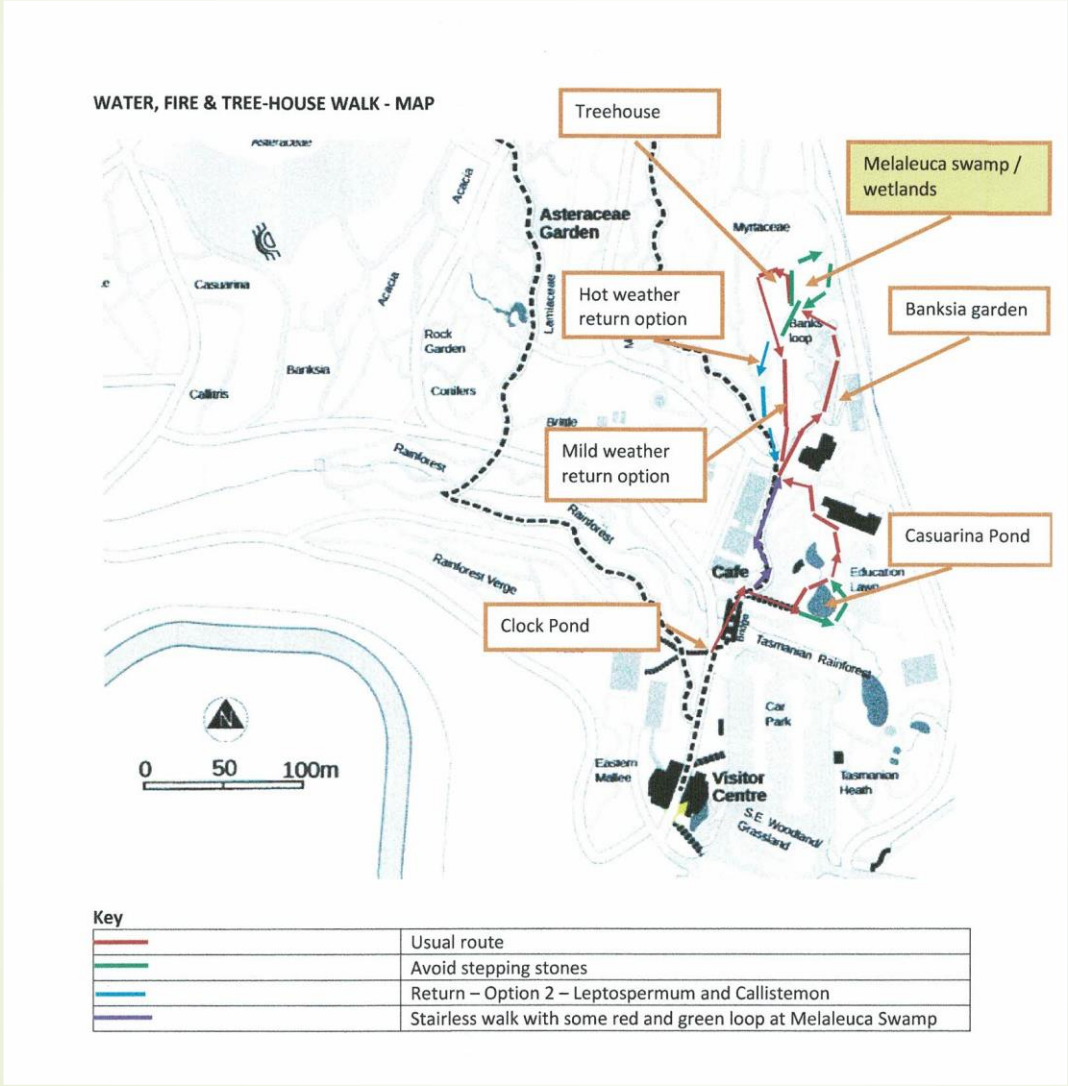
Saw Banksia, Old Man banksia, Saw-tooth Banksia, wiriyagan by Cadigal people

- Large yellow or greyish-yellow **flower** spikes appearing over summer.
- **Grows** exclusively in sandy soil, usually the dominant plant in scrubland or low woodland.
- Native to the east coast, from Qld to Vic with outlying populations on Tas and Flinders Island
- **Use**: food for a wide array of vertebrate and invertebrate animals in the autumn and winter, especially for honeyeaters.
- Common plant of parks and gardens.

Banksia serrata (cont'd)

- **After-Fire** display
- The seedbank in the plant's canopy is released after bushfire
- Not fire-tolerant until 5-7 years old
- Interval of at least nine years for plants to mature with viable seed
- The seedbank is most productive between 25 and 35 years after a previous fire

MELALEUCA WETLAND or MELALEUCA SWAMP



Why are wetlands important?

- Flood control
- Pollution filter
- Wildlife habitat and nursery
- Storm buffer
- Wind buffer
- Carbon sink

Why are wetlands important?

- Sea level rise mitigation
- Primary industry
- Secondary industry
- Recreation
- Tourism
- Cultural history

Melalecua ericifolia
Swamp Paperbark

- **Bark** is papery and grey to brown. Epicormic re-growth
- **Flowers** creamy yellow in Feb.
- **Grows** in wetlands and swamps
- Usually in coastal areas
- From north coast of New South Wales through Victoria to Tasmania, including King Island,
- **Fire** rarely occurs naturally in Melaleuca swamps.

Melalecua ericifolia *(cont'd)*
Swamp Paperbark

- **Threatened community** in Tasmania.
- The management for these vegetation types:
  - Fires prohibited in these areas
  - Woody weeds controlled

Melaleuca Swamp ANBG – history

- *Melaleuca ericifolia* was planted from the 1960s
- Copse by suckering and cloning
- Dick Burns, Tasmanian botanist, helped ANBG and Friends with Tasmanian plants and advice, including *Melaleuca ericifolia*. Life Member of Friends of ANBG in 1992

How are Melaleucas useful?

- Natural habitat for resident and migratory animals.
- Wildlife nursery
- Many insects, including flower wasps, native bees and various beetles, are attracted to the flowers
- Essential oils: see glands in leaves of prolific oil producers. Worth $15,2m in 2013.
- Anti-cancer properties being investigated, e.g. for treatment of melanoma

How are Melaleucas useful? (cont'd)

- Resistant to termites
- Rehabilitation of salt-affected lands
- Brushwood fencing
- Garden furniture
- Durable in water, e.g. Tasmanian canoe

Melaleuca canoe from Tasmania

Epacris petrophila Snow Heath

- Small alpine shrub
- **Flowers** . solitary at the bases of the upper leaves. Dec.–Feb
- **Grows** in subalpine heathland on the margins of pools, in bogs and frost hollows
- NSW, Vic and Tas.

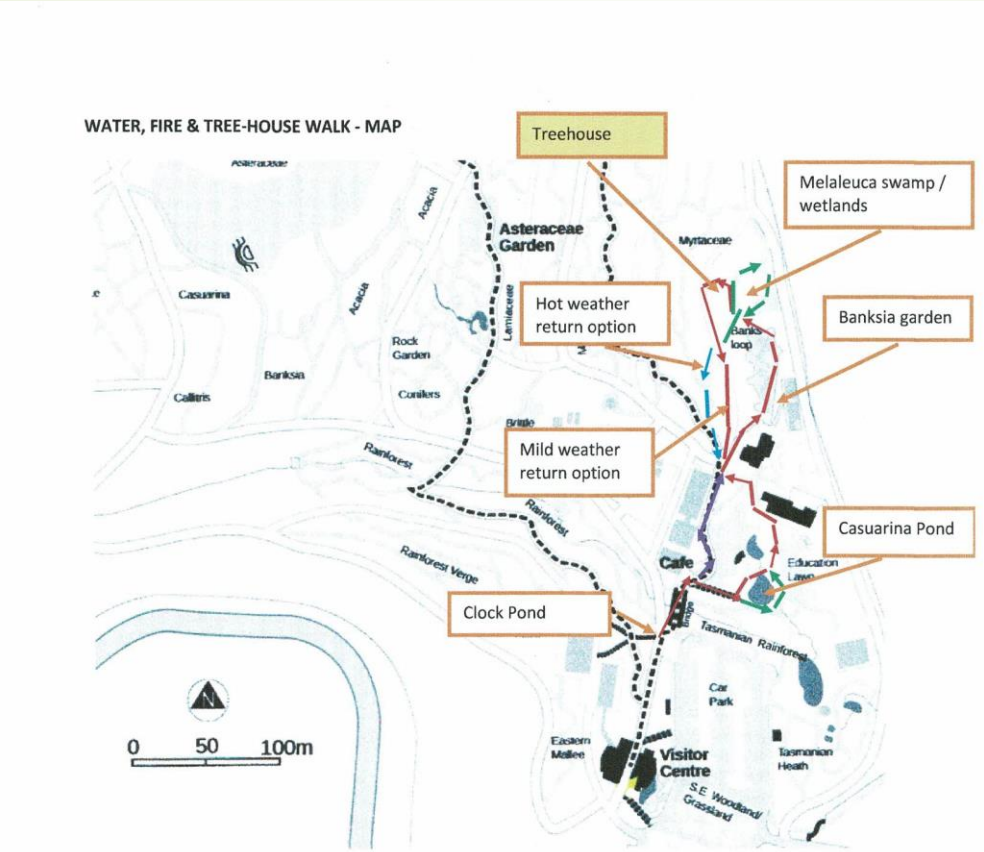
Blechnum penna-marina
Antarctic hard-fern, Alpine waterfern

- **Spores**, no flowers. Only produces fertile fronds in cool climates

- **Grows** in moist, well-drained soil, in a protected spot.
- In grasslands, stream banks, rock crevices, and *Sphagnum* bogs.
- Alpine areas across cooler latitudes in the Southern Hemisphere.

- **Use**: great ground cover

Tree-house


WATER, FIRE & TREE-HOUSE WALK - MAP
Treehouse
Melaleuca swamp / wetlands
Asteraceae Garden
Myrtaceae
Hot weather return option
Banksia garden
Banks loop
Rock Garden
Lamiaceae
Casuarina
Acacia
Banksia
Callitris
Conifers
Bridge
Mild weather return option
Rainforest
Rainforest Verge
Casuarina Pond
Cafe
Education Lawn
Clock Pond
Tasmanian Rainforest
Car Park
Eastern Mallee
Visitor Centre
Tasmanian Heath
S.E. Woodland Grassland
0 50 100m
Key
Usual route
Avoid stepping stones
Return – Option 2 – Leptospermum and Callistemon
Stairless walk with some red and green loop at Melaleuca Swamp

Tree-house
View from wetland loop

Tree-house
& stepping stones

Tree-house

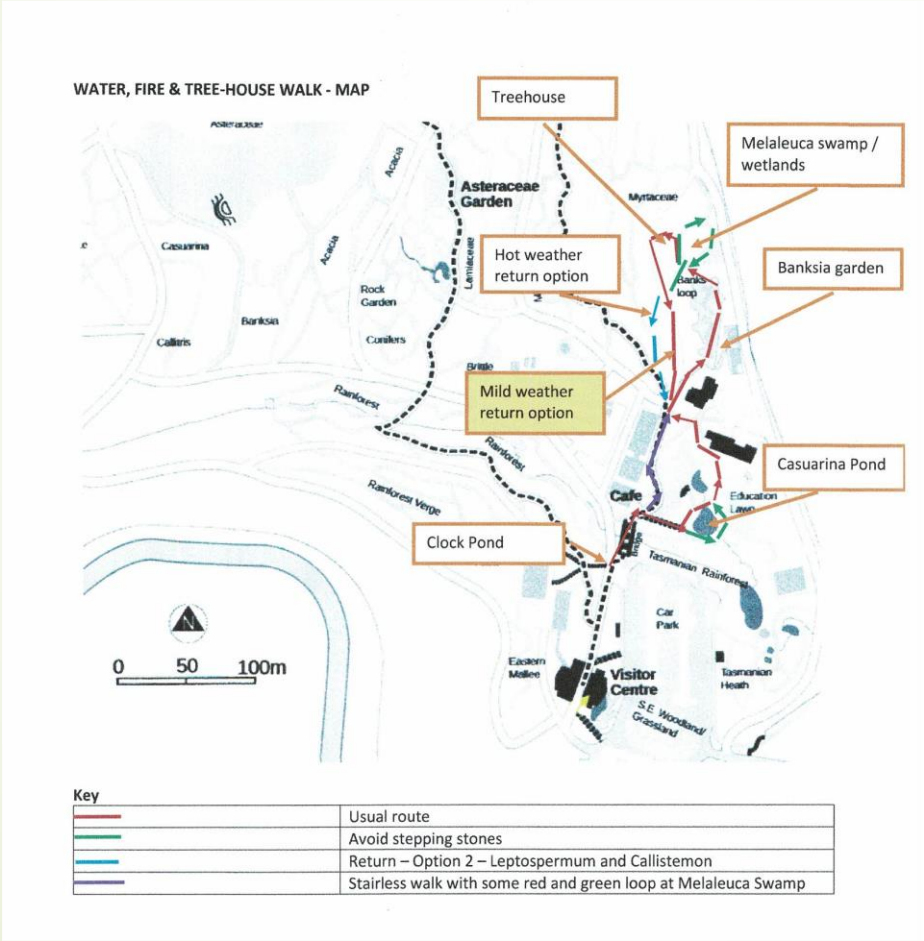
- **Name**:
  - *Mela* = black
  - *Leuca* = white
- Linnaeus', who named it, had specimen with some fire-blackened white bark.
- Inspiration for tree-house
- **Next** to Melaleuca wetland
- Recycled timber
- **Charred** by Friends using Japanese technique of "yaki-sugi" to protect from weather, fungus,

Melaleuca styphelioides Prickly Paperbark

- Great example of epicormic growth after damage
- **Flowers** in summer in cream or white cylindrical "bottlebrush" spikes
- **Grows** along stream banks or other moist situations, mostly in coastal areas from Nowra NSW and Queensland
- **Use**: variety of situations ranging from swampy to hot and dry; e.g. lawn grows under because of deep root.

Photo: Geoff Derrin

Return – Option 1 – Banksias Mild weather



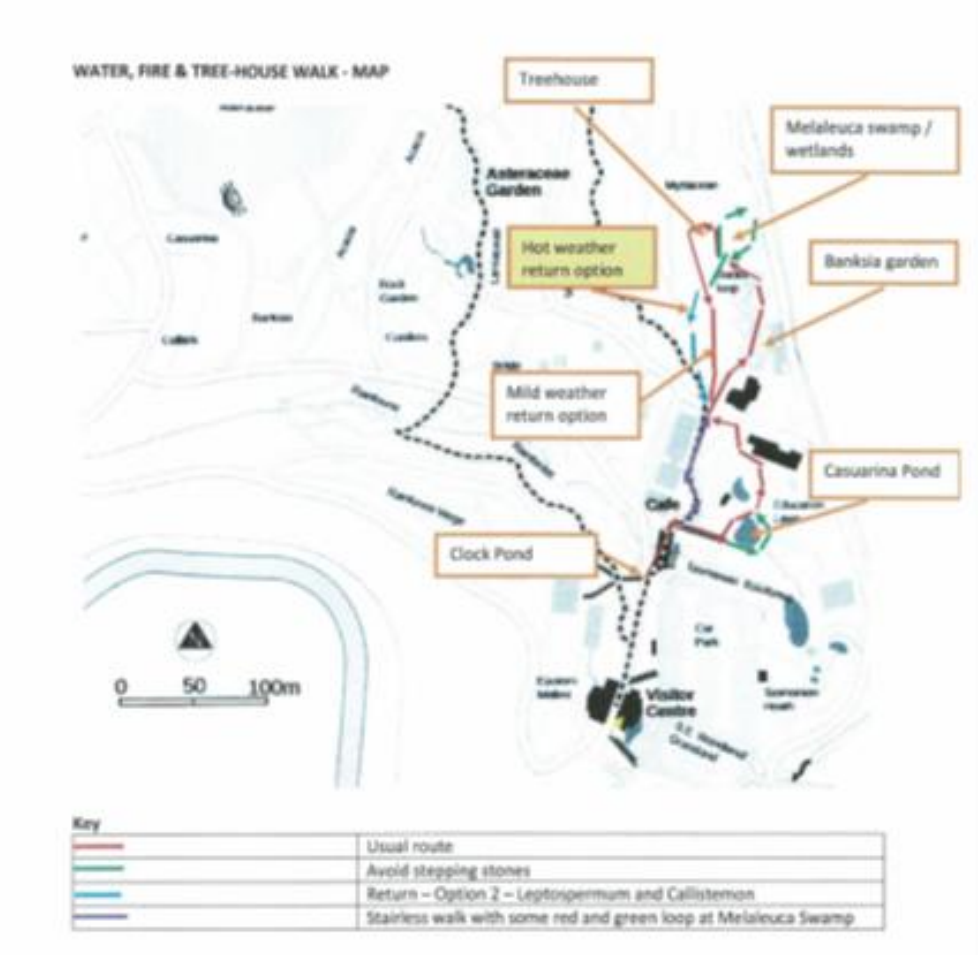
Banksia baxteri
Baxter's Banksia, Bird's Nest Banksia

- **Flowers** mainly Jan-Mar.
- **Grows** usually in well-drained deep sand.
- Mostly within 50 km of the coast between East Mt. Barren and Israelite Bay in West Australia.
- Aerial **seedbank** opened by **fire**. Releases seed in large numbers.
- Seed remains viable for years.

Banksia speciosa
Showy Banksia

- Prominent cream-yellow **flower** spikes throughout the year.
- **Grows** on white or grey well-drained sand in shrubland.
- Native to south coast of Western Australia between Hopetoun and the Great Australian Bight.
- Attracts a variety of insects, and nectar- and insect-feeding birds, particularly honeyeaters
- Plants are **killed by fire**, and regenerate from seed.
- Need several years to reach maturity and produce viable seed.
- Featured in sculpture on the Banksia Centre.

Return – Option 2 – Leptospermum and Callistemon



Leptospermum polygalifolium Tontoon

- **Flowers** are white, greenish, cream-coloured, sometimes pink, mainly from August to January
- **Grows** often in moist depressions or along watercourses
- Usually in sandy or sandstone-derived soils but sometimes in basalt soil or rocks
- Endemic to eastern Australia, including Lord Howe Island

Story of how Leptospermum got the name “Tea –Tree”

- When Lieutenant James Cook was in New Zealand in 1769 and later, he and his crew steeped leaves of *L. scoparium* in hot water, which they drank both as a substitute for tea and to offset scurvy
- This practice continued by early settlers in Australia
- Hence the common name, Tea Tree.
- It is different from Ti-Tree (*Melaleuca alternifolia*), the source of oil referred to as Ti-Tree Oil.

Calothamnus quadrifidus
One-sided Bottlebrush, Common Net Bush

- Red, four-part **flowers** in spring that line up on one side of the stem
- **Grows** in sand or sandy-gravel, however it adapts well to other soil types such as loam, and even clay
- Endemic to the south-west of Western Australia; common and widespread in the Eremaean (desert) and South-West (mediterranean) botanical provinces.
- First formally described in 1812 by **Robert Brown** from a specimen he collected at Lucky Bay near Esperance during *Investigator* expedition with **Matthew Flinders** about 10 years earlier

Calistemon citrinus
Crimson Bottlebrush

- A shrub or small-tree
- Lemon-scented leaves
- Crimson **flowers.** Mainly from early November, & autumn flowers from the end of March
- **Grows** in swampy areas of Victoria, New South Wales and Queensland.
- **Name**:
  - *Callistemon* – from two Greek words meaning beautiful stamens
  - *citrinus* – because of lemon-scented leaves.

Water, fire and the Treehouse

- **Water**: we have seen plants that grow in, near water or in well- drained areas. We have looked at values of wetlands and an example
- **Fire**: part of Australian environment; we have seen some plants that rely on or respond well to fire, and some others that are killed by fire, and an example where fire rarely occurs
- **Tree-house:** have seen a charred timber tree-house near a wetland, where fire seldom occurs naturally.

Water, fire and the Treehouse

- Themed walk with options for
  - ‘adventure’ on stepping stones,
  - weather, or
  - no stairs
- More in Guides Notes
- Guides Notes may change due to construction in gardens before October
- When preparing, please note that the walk can be noisy during school holidays, e.g. plan to use wetland loop rather than go into Treehouse
- Flowers are fabulous in January