

A Field Guide to Plants of Singapore

- *Adinandra* Belukar

Adinandra belukar is a type of young secondary forest characterised by the plant, *Adinandra dumosa* (Tiup-tiup), which is commonly found growing in this habitat. This forest type is different from primary forests in many ways as *Adinandra* belukar tends to have an open canopy, vegetation are adapted to degraded soil conditions, lower plant diversity, and higher fluctuations of day and night temperature and humidity. In Singapore, you can find this type of forest on disturbed lands left to fallow and sometimes on the outer edge of secondary forests at Kent Ridge Park, Upper Peirce Reservoir and Upper Seletar Reservoir.

Below is a simple key to identify 30 selected plants that can be found in this environment. The key was written with a predominant focus on vegetative characteristics.

KEY TO THE COMMON PLANTS FOUND IN ADINANDRA BELUKAR

1. Mature leaves less than 1 cm long; plants bear spore-looking sacs in cones *Lycopodiella cernua*
Mature leaves larger than 1 cm long; plants bear visible spores on leaves (ferns) or produce flower, fruits and seeds 2
2. Young leaves coiled up (fiddlehead), spores found on undersides of mature leaves *Dicranopteris linearis*
Young leaves not coiled up, plant has flowers, fruits or seeds 3
3. Plants with relatively long and slender stems, creeps or climbs, plants are equipped with tendrils, hooks or spines to support climbing Go to Climbers
Plants with single and erect main stem or trunk, or several erect main stems that do not need extra mechanical support 4
4. Plants non-woody (herbaceous), mature plants are not more than 1 m tall Go to Herbs
Plants woody, mature plants are more than 1 m tall Go to Trees & Shrubs

CLIMBERS

1. Leaves pinnate, palmate or trifoliate *Mimosa pudica*
Leaves simple 2
2. Stipules present, reddish tendrils *Cissus hastata*
Stipules absent, plants with non-reddish tendrils, or without tendrils 3
3. Tendrils present at leaf tips, sometimes develop pitchers *Nepenthes* spp.
Leaf elliptical, reddish petioles *Tetracera indica*
Leaf heart-shaped, stems with warty appearance *Tinospora crispa*
Leaves oval-shaped, whitish on the undersides of leaves with 3 distinct parallel veins
..... *Smilax setosa*
Leaves vary in shapes and sizes when young and mature, exudes white sap when broken 4
4. Young leaves arrow-head shaped *Syngonium podophyllum*
Young leaves heart-shaped *Epipremnum aureum*

HERBS

1. Grass-like leaves, tufted herb, bluish-white flowers are radially symmetrical with long
stamens, fruits are berry-type *Dianella ensifolia*
Succulent leaves, white to creamy flowers are bilaterally symmetrical, lipped with stamens
fused to styles, fruits are pod-type ... *Bromheadia finlaysoniana*

TREES & SHRUBS

1. Plants with compound leaves 2
Plants with simple leaves 4
2. Plants with an unbranched trunk, fish tail-shaped or rhomboid leaflets *Caryota mitis*
Plants with branched trunk / stem 3
3. Leaves pinnate, arranged in spirals or whorls around the stem *Arthrophyllum diversifolium*
Leaves pinnate, small *Adenantha pavonina*
Leaves palmate, usually with 3 leaflets *Vitex pinnata*
4. Stipules present but falls off early; leaves oval to heart-shaped to lobed; hairy on upper side
and whitish on underside of leaf *Ficus grossularioides*
Stipules present, entire or splitting; leaves palmate *Manihot esculenta*
Stipules present; leaves oval-shaped and three lobed *Macaranga bancana*
Stipules absent 5
5. Leaves larger than 30 cm, with toothed margins *Dillenia suffruticosa*
Leaves smaller than 30 cm 6

6. Crushed leaves with cinnamon fragrance	..... <i>Cinnamomum iners</i>
Crushed leaves with pungent smell	..... <i>Lantana camara</i>
Crushed leaves produce no smell	..... 7
7. Leaf blades with 3 or more distinct parallel veins	..... 8
Leaf blades with no distinct parallel veins	..... 9
8. Leaves oval-shaped and hairy on the surface	..... <i>Clidemia hirta</i>
Leaves oblong-shaped, glossy silvery on the undersides	..... <i>Rhodamnia cinerea</i>
Leaves elliptic-shaped, bristly on the undersides	<i>Melastoma malabathricum</i>
Leaves sickle-shaped	..... <i>Acacia auriculiformis</i>
9. Young leaves reddish pink	..... <i>Adinandra dumosa</i>
Leaves green with pink margin	..... <i>Ploiarium alternifolium</i>
Leaves green	..... 10
10. Leaves elliptical, oppositely arranged; tree bark is deeply fissured	..... <i>Cyrtophyllum fragrans</i>
Leaves teardrop-shaped, spirally arranged along the stem	..... <i>Morella esculenta</i>

Below are some examples of the plants found in the Adinandra belukar forest type.

TREES & SHRUBS

Adinandra dumosa (Tiup-tiup)

Family: Pentaphylacaceae



TREE up to 20 m tall

FOLIAGE leathery, oval shaped. Stipules absent. Reddish-pink when young

FLOWER cream-white, teardrop-shaped, flowers continuously throughout the year

FRUIT round shaped, ripens from green to brown

MICROCLIMATE disturbed land with nutrient poor soils

Acacia auriculiformis (Ear-pod Wattle)

Family: Fabaceae



TREE up to 30 m tall

FOLIAGE narrow, sickle-shaped, parallel-veined. Stipules absent

FLOWER yellow, slightly fragrant, long pendulous inflorescence, free-flowering

FRUIT green pods, curled, turn brown and split open when mature

MICROCLIMATE dry, seasonally waterlogged soils, poor infertile soils

Adenanthera pavonina (Saga)

Family: Fabaceae



TREE up to 25 m tall

FOLIAGE thin, bipinnate compound leaflets with unequal leaf bases. Stipules absent.

FLOWER inflorescence at tips of shoots. Small, star-shaped, white to yellow to dull orange flowers, free-flowering

FRUIT green seedpods, thin and curved, ripens to black- dark brown and coiling up before splitting open to release shiny, hard red seeds

MICROCLIMATE dry open and disturbed area, shallow ground, infertile soils, neutral to slightly acidic soils, sometimes on calcareous soils

Arthropphyllum diversifolium (Common Ivy Palm)

Family: Araliaceae



TREE up to 14 m tall

FOLIAGE pinnate, spirally arranged along the stem, old leaf falling off leaving leaf scars along the stem. Stipules absent

FLOWER tiny clusters, green

FRUIT tiny clusters, black, oval-shaped

MICROCLIMATE disturbed area, along forest edges

Caryota mitis (Fishtail Palm)

Family: Arecaceae



PALM up to 6 m tall, usually in clumps

FOLIAGE bipinnate, fishtail-shaped

FLOWER cream, long pendulous inflorescence

FRUIT small, round, ripen from green to red

MICROCLIMATE disturbed area and along forest edges, moist soil, tolerant to full sun and shaded conditions

Cinnamomum iners (Wild Cinnamon)

Family: Lauraceae



TREE up to 15 m tall

FOLIAGE leathery, elliptical, 3-distinct veins, young foliage light pink turning to cream and matures to green. Stipules absent. Cinnamon fragrance when crushed

FLOWER cream to yellow inflorescence, free-flowering

FRUIT round, fleshy, dark green with spots ripens to purplish black

MICROCLIMATE moist, hill side, tolerant of poor soils

Clidemia hirta (Koster's Curse)

Family: Melastomataceae



HERB to 2 m tall

FOLIAGE oval-shaped, wrinkled-texture, hairy, 5 distinct parallel veins. Stipules absent

FLOWER white, small, flowers throughout the year

FRUIT blue to black, oval-shaped, hairy

MICROCLIMATE humid, disturbed area, near waterbodies, open and dry land, near forest margin

Cyrtophyllum fragrans (Tembusu)

Family: Gentianaceae



TREE up to 50 m tall, with deeply fissured bark and buttress roots

FOLIAGE leathery, elliptical. Stipules absent

FLOWER cream-white to yellow inflorescence, fragrant, flowers in May-June and Oct-Nov

FRUIT round, green turning to orange or red when ripe

MICROCLIMATE open, swampy area, periodically inundated areas, tolerant to poor or degraded soils but well-drained

Dillenia suffruticosa (Simpoh Air)

Family: Dilleniaceae



SHRUB up to 7 m tall

FOLIAGE oval shaped, large, glossy, toothed edges. Young leaves reddish and have corrugated vein texture. Stipules absent.

FLOWER 5-petaled, bright yellow and large, free-flowering

FRUIT split open into star shaped, seeds covered by red flesh (aril)

MICROCLIMATE waterlogged soil, degraded soil, sandy soil

Ficus grossularioides (White-leafed Fig)

Family: Moraceae



SHRUB up to 15 m tall

FOLIAGE papery to leathery, hairy on upper side and white below. Oval to heart shaped and sometimes up to 7 lobes. Stipules present but falls off early

FLOWER tiny, developed within the syconium (fleshy, hollow fig containing numerous flowers)

FRUIT appear in pairs, round, yellow to brown to red when ripe

MICROCLIMATE sandy soil

Lantana camara (Common Lantana)

Family: Verbenaceae



SHRUB up to 1.2 m tall

FOLIAGE rough-hairy, pungent smell when crushed. Stipules absent

FLOWER multi-coloured, in clusters, free-flowering

FRUIT round, changes from green to deep blue to purple-black when ripe

MICROCLIMATE any soil types (dry soil, poor infertile soil, moist, compacted soil)

Macaranga bancana (Mahang)

Family: Euphorbiaceae



TREE up to 13 m tall

FOLIAGE oval-shaped, three lobed, reddish on underside of young leaf. Stipules present

FLOWER red inflorescence, branched

FRUIT round, bright green, covered with sticky yellow exudate

MICROCLIMATE disturbed area, forest edge, on clayey and sandy soil

REMARK similar to *M. triloba*, but *M. bancana* has hollow twigs and stipules circling the stem.

Manihot esculenta (Tapioca)

Family: Euphorbiaceae



SHRUB up to 2 m tall

FOLIAGE dark green, palmate shape, light green to red petiole. Stipules present, entire or splitting.

FLOWER tiny and inconspicuous inflorescence

FRUIT round shape, winged, contains 3 seeds

MICROCLIMATE moist sandy soil, can tolerate dry area

Melastoma malabathricum (Senduduk)

Family: Melastomataceae



SHRUB up to 5 m tall

FOLIAGE lance shaped with 3 prominent parallel veins, bristly on the underside. Stipules absent

FLOWER purple to white, free-flowering

FRUIT round, splits in the middle to reveal dark blue-black pulp with many seeds

MICROCLIMATE can tolerate poor soils, waterlogged soils

Morella esculenta (Telur Cicak)

Family: Myricaceae



TREE up to 15 m tall

FOLIAGE spirally arranged, leathery, narrow to teardrop-shaped; dark green above, pale green below. Stipules absent

FLOWER male flowers long and pendulous, female flowers shorter with absent or no visible petals, seasonally flowers from February to April

FRUIT round-shaped, changes from yellow to red when ripe

MICROCLIMATE dry soil, soil high in iron and aluminium, sand dunes

Ploiarium alternifolium (Cicada Tree)

Family: Bonnetiaceae



SHRUB up to 15 m tall

FOLIAGE fleshy, glossy, pink margin. Stipules absent

FLOWER star-shaped, white petals with pink tips, free-flowering

FRUIT 5-valved, dark purple, splits open like an umbrella to release tiny seeds

MICROCLIMATE boggy area, swamps, peat soil

Rhodamnia cinerea (Silver Back Tree)

Family: Myrtaceae



TREE to 15 m tall

FOLIAGE oblong-shaped, tapering at both ends, with 3 distinct longitudinal veins, glossy pale silver on the underside due to minute silky hairs. Stipules absent

FLOWER white and fragrant, free-flowering

FRUIT small and round, turning from green to red, purple and then black when ripe

MICROCLIMATE bare land, tolerant to any harsh conditions

Vitex pinnata (Leban)

Family: Lamiaceae



TREE to 30 m tall

FOLIAGE palmate, 3 – 5 leaflets. Stipules absent

FLOWER bluish white to purple inflorescence, free-flowering

FRUIT round, ripens from green to purplish black

MICROCLIMATE dry and open area, clay soil

FERNS & HERBS

Bromheadia finlaysoniana (Finlayson's Bromheadia)

Family: Orchidaceae



HERB terrestrial orchid, monopodial growth up to 1.5 m tall

FOLIAGE alternately arranged, leathery

FLOWER in cluster, zig-zag arrangement, white petals and purple lip, free-flowering

FRUIT long, green seedpod containing tiny dust-like seeds

MICROCLIMATE dry areas, hard compacted clay soils and sometimes on sandy soils

Dianella ensifolia (Flax Lily)

Family: Xanthorrhoeaceae



HERB to 2 m tall

FOLIAGE leathery, sword shaped. Stipules absent

FLOWER whitish or bluish-white, free-flowering

FRUIT round, shiny, deep blue

MICROCLIMATE near waterbodies, dry or moist soils, slopes, shaded area

Dicranopteris linearis (Resam)

Family: Gleicheniaceae



FERN spreading fern up to 3 m

FOLIAGE frond is divided into pairs (dichotomous); groups of yellow spores (sori) on the underside of fronds

MICROCLIMATE poor soils, forest margins, open grounds

Lycopodiella cernua (Scrambling Clubmoss)

Family: Lycopodiaceae



HERB terrestrial clubmoss up to 1 m

FOLIAGE bright green, soft, needle-like resembling bottlebrush, springy

MICROCLIMATE muddy ground in more exposed land, moist grassy area, poorly drained area, sunny disturbed area

CLIMBERS & CREEPERS

Cissus hastata (Akar Kerayong)

Family: Vitaceae



CLIMBER four-winged stem with red tendrils

FOLIAGE heart-shaped. Stipules present but falls off early, triangular-shaped

FLOWER tiny, cream at top with red at below, free-flowering

FRUIT round shaped, ripens from green to red to black

MICROCLIMATE disturbed area, forest margin, wet and moist areas, swamps

Epipremnum aureum (Money Plant)

Family: Araceae



CLIMBER up to 6 m, sometimes up to 12 m high

FOLIAGE green, some with yellow blotches, waxy. Young leaves are heart-shaped, older leaves are deeply lobed. Stipules absent

FLOWER green, spadix and spathe

FRUIT tiny

MICROCLIMATE shady area, shallow soil, tolerant to most soil conditions (clayey, sandy, wet or dry)

Mimosa pudica (Touch-me-not)

Family: Fabaceae



CLIMBER creeping, up to 1 m tall

FOLIAGE bipinnate, fold and bend upon being touched. Stipules absent

FLOWER pom-pom shaped, pink, free-flowering

FRUIT pods, flattened, green, bristly along the edges

MICROCLIMATE bright open area, tolerant to any soils (moist and poorly drained areas)

Nepenthes spp. (Pitcher Plant)

Family: Nepenthaceae



CLIMBER up to 15 m tall

FOLIAGE jug-like pitchers form at the end of tendrils of the leaf tips

FLOWER small, off-white to pale yellow in colour. Arranged in panicles, flowers seasonally

MICROCLIMATE damp, shady, peat swamps, eroded areas

Syngonium podophyllum (Arrowhead Vine)

Family: Araceae



CLIMBER herbaceous with creeping and semi-epiphytic growth habit

FOLIAGE young leaves are arrow-shaped, sometimes with green-white variegation. Older leaves are deeply lobed and dark green. Stipules absent

FLOWER greenish white, spadix and spathe

FRUIT berries, brown-black

MICROCLIMATE disturbed area, moist to wet area (ponds and swamps) and forest margins

Smilax setosa (Bearded Smilax)

Family: Smilacaceae



CLIMBER woody and stout with sharp, prickly stem

FOLIAGE oval shaped, dark green on upper-side, white on the underside, 3 prominent parallel vein. Stipules absent

FLOWER pale green inflorescence

FRUIT clusters of round berries, light green, ripens to dark red

MICROCLIMATE disturbed area, sandy soil, moist to aquatic environments (ponds and swamps) and forest margins

Tetracera indica (Fireweed)

Family: Vitaceae



CLIMBER up to 5 m long. Young stem is reddish while older stem greyish brown

FOLIAGE elliptical with toothed margin, veins on the undersides of leaves are hairy, petiole reddish. Stipules absent

FLOWER clusters of prominent pom-pom like stamens, pink at the tip. Flowering followed by fruiting occurs from April to September

FRUIT bright red and glossy, round shaped

MICROCLIMATE open and disturbed area

Tinospora crispa (Petawali)

Family: Menispermaceae



CLIMBER up to 15 m long, blunt warty appearance on stems

FOLIAGE heart-shaped. Stipules absent

FLOWER tiny, yellow to green in close cluster, flowers from Feb - June

FRUIT small, round, orange

MICROCLIMATE tolerant of a wide range of soils including poor infertile soils

References

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