

## EUPHORBIACEAE

Trees, shrubs or herbs, often with milky latex. Stipules usually present. Leaves usually alternate, opposite or rarely whorled, simple or rarely compound. Inflorescence diverse. Flowers unisexual, monoecious or dioecious, often reduced and in *Euphorbia* grouped into a cyathium. Tepals distinct or connate near base. Stamens (1)5-many, variously arranged. Nectary disc sometimes present. Carpels (2)3(many), united into a compound ovary; style usually 1, divided into 2 or more stigmas; ovules 1-2 in each locule, pendulous, placentation axile. Fruit capsular, drupaceous or baccate.

About 300 genera and 7500 species worldwide; 65 genera in Australia with 33 genera in the NT and 24 in the DR. [Airy Shaw, 1980a,b; Webster, 1994]. Important crop plants include: *Ricinus communis* L., the Castor Oil Plant; *Hevea brasiliensis* (A.Juss.) Muell.Arg., Para Rubber, a source of natural rubber; *Manihot esculenta* Crantz, Cassava or Tapioca. Species in the genera *Acalypha*, *Codiaeum*, *Euphorbia* and *Jatropha* are used as ornamentals.

1. Leaves opposite or whorled .....	2	
1. Leaves alternate .....	3	
2. Leaves opposite; flowers in a cyathium; latex present .....		Euphorbia
2. Leaves opposite or in whorl of 3; flowers not in a cyathium; latex absent .....		Choriceras
3. Leaves with minute vesicular glands on the undersurface .....	4	
3. Leaves lacking vesicular glands on undersurface .....	5	
4. Leaves peltate or cordate; lacking stellate hairs .....		Macaranga
4. Leaf bases otherwise; if cordate then stellate hairs present .....		Mallotus
5. Leaves with flattened glands at junction of blade and petiole .....	6	
5. Leaves lacking flattened glands at junction of blade and petiole .....	7	
6. Inflorescence racemose; fruit a capsule .....		Croton
6. Inflorescence paniculate; fruit drupaceous .....		Endospermum
7. Flowers in a cyathium; latex present .....		Euphorbia
7. Flowers solitary or in fascicles, racemes, cymes or panicles .....	8	
8. Fruit fleshy, sometimes thinly so .....	9	
8. Fruit dry .....	16	
9. Inflorescence racemose, cymose or paniculate .....	10	
9. Inflorescence fasciculate or flowers solitary .....	11	
10. Leaves with a cluster of minute spine-like glands at the distal end of the petiole; domatia absent; female inflorescence a cyme; fruit a capsule .....		Claoxylon
10. Leaves lacking a cluster of minute spine-like glands at the distal end of the petiole; domatia ± present; female inflorescence racemose; fruit fleshy .....		Antidesma
11. Fruit >10 mm long .....	12	
11. Fruit <10 mm long, rarely to 12 mm in <i>Breynia</i> .....	13	
12. Fruit a globular, thinly fleshy capsule, drying hard, 3-4-locular .....		Petalostigma
12. Fruit an indehiscent drupe, 1-locular .....		Drypetes
13. Fruit 2-locular; undersurface of leaves tomentose, tertiary venation ± parallel .....		Briedelia
13. Fruit 3-locular; undersurface of leaves usually glabrous, tertiary venation not ± parallel .....	14	

14. Ripe fruit white .....	Flueggea
14. Ripe fruit purple-black .....	15
15. Scrambling shrub; perianth of 6 free tepals .....	Phyllanthus
15. Erect shrub; perianth cupular .....	Breynia
16. Fruit >11 mm long; seeds carunculate .....	17
16. Fruit <11 mm long; seeds usually ecarunculate or rarely (Croton and Sebastiania) carunculate .....	18
17. Flowers in axillary fascicles .....	Petalostigma
17. Flowers in terminal dichasia .....	Jatropha
18. Seeds lacking caruncle .....	19
18. Seeds with caruncle .....	29
19. Female flowers in racemes .....	20
19. Female flowers in fascicles or solitary .....	24
20. Annual herbs; stipules gland tipped .....	Micrococca
20. Trees or shrubs; stipules lacking glandular tip .....	21
21. Plants entirely glabrous .....	22
21. Plants variously hairy .....	23
22. Seeds enclosed in a yellow fleshy layer; latex absent; tertiary veins $\pm$ parallel .....	Omalanthus
22. Seeds lacking a thin yellow fleshy layer; latex present; tertiary veins obscure .....	Excoecaria
23. Leaf blades with a pair of basal glands .....	Croton
23. Leaf blades lacking basal glands but with a cluster of minute spine-like glands at the distal end of the petiole .....	Claoxylon
24. Seeds metallic blue or green .....	Margaritaria
24. Seeds otherwise .....	25
25. Flowers 5-merous .....	26
25. Flowers 3-merous .....	27
26. Plants glabrous .....	Poranthera
26. Plants hairy .....	Leptopus
27. Shrubs or trees; seeds red; leaves 35-140 mm long .....	Glochidion
27. Herbs, small shrubs often with annual above ground parts or scramblers; seeds never red; leaves usually <35 mm long, rarely to 55 mm long .....	28
28. Capsule depressed globose; disk glands present in either male or female flowers; androphore usually absent .....	Phyllanthus
28. Capsule ellipsoid or ovoid; disk glands absent; androphore usually present .....	Sauropus
29. Leaf blades with a pair of basal glands, indumentum of stellate hairs or peltate scales, >18 mm wide .....	Croton
29. Leaf blades lacking basal glands, glabrous, <18 mm wide .....	Sebastiania

## ANTIDESMA L.

Deciduous shrubs or small trees. Stipules caducous. Leaves petiolate, alternate, entire, discolorous, shiny above, glabrescent. Domatia usually present, consisting of a cluster of hairs or web of tissue in the angles of

the main vein. Inflorescence a solitary, interrupted, axillary raceme or spike, with a persistent bract subtending each flower. Flowers dioecious, sessile to shortly pedicellate, 3-5-merous, less than 3 mm long; petals absent. Male flowers: calyx with 3-5 suborbicular lobes; disk present; stamens 2-5 arising from within the disk; anther loculi separate, borne on a thickened connective. Female flowers: calyx with 3-5 triangular lobes; styles 3-5, short, bilobed; ovary 1(2)-locular, ovules 2 per locule. Fruit drupaceous, fleshy, compressed ellipsoid, red when immature, turning dark purple to black when ripe; seeds compressed ovoid, endocarp irregularly pitted.

A genus of c. 170 species found in the Old World tropics and subtropics; c. 5 species occur in Australia, with 2 in the NT. The fruit of many species are edible (Scholefield, 1984).

1. Leaves usually >20 mm wide; inflorescence brown tomentose;  
on lowland sites on deep soils..... *A. ghesaembilla*
1. Leaves usually <20 mm wide; inflorescence glabrescent; on sandstone..... *A. parvifolium*

#### *A. ghesaembilla* Gaertn.

Shrub or tree to 8 m tall; bark grey to brown, fibrous, finely fissured, blaze deep pink. Young growth with brownish ± crisped hairs, becoming glabrescent with age. Indumentum persistent on petioles and undersides of leaves. Petioles 3-9 mm long. Leaf blades elliptic to broadly elliptic, obovate or broadly oblanceolate, 21-104 mm long, 18-60 mm wide, L/B 1.2-2.5, base broadly cuneate to rounded, occasionally cordate, apex obtuse to slightly emarginate. Inflorescence brown tomentose throughout, 21-91 mm long. Fruit 4-6 mm long, c. 5 mm wide. Flowering: with the new foliage, Sept - Dec; fruiting: Dec - June. Fig. 70

In Asia from India and China to New Guinea and in northern Australia from the Kimberley to Cape York. Common in the DR. Often occurs on the margins of floodplains and watercourses, near

monsoon forest and in wetter areas in Eucalypt communities.

#### *A. parvifolium* F.Muell.

Shrub or small tree 1-4 m tall, often with strongly developed short leafy lateral shoots. Young shoots shortly hairy, becoming glabrous with age. Stipules 1-2 mm long. Petioles 1-2 mm long. Leaf blades glossy above, typically obovate, also elliptic, 8-30 mm long, 6-20 mm wide, L/B 0.8-2, thin, base attenuate, apex rounded to emarginate. Inflorescence glabrescent, 20-30 mm long. Fruit 5-6 mm long, c. 4 mm wide. Flowering: Nov - Feb; fruiting: Jan - June. Fig. 70

Endemic to Australia in Qld and the NT, from Victoria R. to Cape York. In the DR known only from McMinns Bluff. On rocky slopes and in rocky gorges on sandstone.

## BREYNIA J.R. & G.Forst.

A genus of c. 25 species occurring from SE Asia to Australia. Two species occur in Australia, with 1 found in the NT and the DR.

#### *B. cernua* (Poiret) Muell.Arg.

Evergreen shrub or small tree to 4 m tall; bark brown, finely fissured; all parts glabrous. Stipules persistent, triangular, 1-1.5 mm long. Leaves alternate; petioles 2.5-5 mm long; blades discolorous, elliptic or ovate but occasionally suborbicular, obovate or lanceolate, 25-95 mm long, 12-56 mm wide, L/B 1.2-2.2, base broadly cuneate, attenuate or rounded, rarely truncate, margin entire, apex obtuse to rounded, occasionally acute. Inflorescence axillary, fasciculate, 1-5-flowered. Flowers monoecious, on

pedicels to 7 mm long. Male flowers c. 2 mm long, with the perianth united into a flat-topped turbinate tube, the 6 short blunt inflexed lobes almost closing the apical orifice; stamens 3, united into a column; anthers 2-celled, adnate to the column, almost entirely enclosed by the perianth. Female flowers c. 2.5 mm long, the perianth united into a campanulate tube with 6 short blunt lobes in 2 series; ovary 3-locular with 2 ovules in each locule, thick and fleshy above the locules; styles 3, short, slightly spreading. Fruit a thinly fleshy berry, white when immature,

turning red then black when ripe, depressed-globular, occasionally shortly beaked or shortly stipitate, 3-6(12) mm long, 4-8(10) mm diam., perianth persisting. Seeds brown, c. 4 mm long, 3-sided, with a straight inner angle and curved outer side, hilum small. Flowering and fruiting: most months. Fig. 70

In eastern Indonesia, New Guinea, parts of

western Polynesia and widespread in northern Australia from the Kimberley to Cape York. Common in the DR. On a variety of soil types in less fire prone habitats including edges of monsoon forest, riparian forest, edges of floodplains and maritime habitats. Plants with stipitate fruit have been referred to *B. stipitata* Muell.Arg. whilst those with beaked fruit have been referred to *B. rhynchocarpa* Benth.

## BRIEDELIA Willd.

*Bridelia* Willd. orth. variant

A genus of c. 60 species occurring in Africa and Asia. Four species occur in Australia, with 1 in the NT and the DR.

### *B. tomentosa* Blume

A deciduous shrub or small tree to 5 m tall; branchlets with whitish lenticels. Shoots, branchlets, petioles and undersurface of leaves rusty tomentose when young, becoming glabrous with age. Stipules caducous, narrowly triangular, 2.5-4 mm long. Leaves alternate; petioles 2-5 mm long; blades discolorous, elliptic, narrowly elliptic or obovate, rarely ovate, 32-99 mm long, 15-51 mm wide, L/B 1.4-2.4(3.5), with distinct yellowish venation, tertiary nerves  $\pm$  parallel, base rounded or cuneate, apex obtuse, subacuminate or rarely emarginate. Inflorescence axillary, fasciculate-glomerate, with small bracts, usually with only one fruit per inflorescence maturing. Flowers monoecious, 5-merous, pedicels 0-1.5 mm long. Male flowers: calyx triangular, c. 1.3 mm long; petals triangular, c. 0.5 mm long; disk c. 1 mm diam., flattened;

stamens 5, on an androgynophore. Female flowers: calyx broadly triangular, c. 1.8 mm long; petals obovate or elliptic, c. 1 mm long; outer margin of the disk thickened, undulating, entire, the inner margin clasping the ovary and irregularly 5-lobed; styles 2, each with 2 lobes, c. 0.5 mm long; ovary 2-locular, 2 ovules per locule. Fruit a thinly fleshy black berry, 5-7 mm long, 5-6 mm diam., depressed globular to ovoid, 1 seed per locule, calyx and petals persisting. Seeds brown, flattened ovoid, longitudinally furrowed on the inner surface. Flowering: Mar - June; fruiting: Mar - Sept. Fig. 70

Throughout SE Asia, extending as far as India, Taiwan and New Guinea and in Australia from the Kimberley to Cape York. Common in the DR. Often found with monsoon forest, but also on rocky slopes, beach dunes, riparian habitats and on laterite. The fruits are edible (Levitt, 1981; Russell-Smith, 1985).

## CHORICERAS Bail.

A genus of 2 species restricted to New Guinea and northern Australia. One species occurs in the NT and DR.

### *C. tricornis* (Benth.) Airy Shaw

Shrub or a small tree to 5 m tall. Young shoots, pedicels and peduncles white to fulvous tomentose-sericeous. Leaves opposite or on the main stems 3-whorled; petioles 2-3 mm long; blades discolorous, shiny above, elliptic, obovate or ovate, 25-53 mm long, 14-26 mm wide, L/B 1.7-2.6, base cuneate or attenuate, margin crenulate-serrate with a minute mucro at the base of each lobe, apex blunt, emarginate or occasionally acute. Flowers monoecious, in dense axillary cymes 6-12 mm long;

perianth segments 6 in 2 series. Male flowers: pedicels filiform, to 5 mm long; perianth segments membranous, orbicular, the outer c. 1.2 mm long, the inner c. 1.8 mm long; stamens 6 arising from a pilose receptacle, staminal filaments c. 2 mm long. Female flowers: 1-3 on a short common peduncle, pedicels thickened to 4 mm long; outer perianth segments triangular-ovate, c. 2 mm long, the inner ones triangular, c. 1.5 mm long; ovary of 3(4) sericeous 2-ovuled locules; styles thickened, divaricate, recurved, c. 2 mm long. Fruit a capsule, depressed globular, 7-8 mm

long, c. 9 mm diam., finely tuberculate and thinly tomentose, with the persistent style bases forming a horn-like projection from the apex of each cocci. Seeds smooth, brown, ovoid. Flowering: Oct - June; fruiting: Apr - Oct. Fig. 70

Found in the northern NT, Cape York and New Guinea. In the DR on Gunn Pt and Melville Is where it grows in thickets. Usually in monsoon forest on a variety of soils as well as in riparian forest, wetter eucalypt forest and in sandstone gorges.

## CLAOXYLON Juss.

A genus of c. 80 species occurring in the Old World tropics. Three species occur in Australia, with 1 in the NT and the DR.

### *C. tenerifolium* (Baill.) F.Muell.

A shrub or small tree to 10 m tall; bark rough. Young shoots sericeous, glabrescent with age. Branchlets pale, glabrous with scattered whitish lenticels. Leaves alternate; petioles purplish when dry, 13-133 mm long, below junction of blade sparsely tomentose and often with 2-4 minute yellowish spine-like glands on the dorsal surface; blades discolorous, ovate, elliptic or obovate, 116-223 mm long, 62-130 mm wide, L/B 1.5-2.2, glabrescent, scaberulous, veins turning purple when dry, base attenuate, truncate, margin crenate, with a mucro-like gland in the sinus between lobes, each mucro with a vein leading to it, apex acuminate, obtuse or acute. Inflorescence axillary, racemose, pubescent, male 35-170 mm long, female 22-55 mm long. Flowers dioecious. Male flowers: on filiform pedicels to 4 mm long; sepals 3, elliptic,

membranous, tomentose outside, c. 2 mm long; petals absent; stamens numerous c. 1.5 mm long; anther cells separated and erect. Female flowers: on thickened pedicels c. 1 mm long, sericeous throughout; calyx 3-lobed, lobes triangular, c. 1.5 mm long; hypogynous disk 2-3-lobed; ovary 3-locular, with 1 ovule per locule; styles c. 1.5 mm long, divergent, shortly connate at base. Fruit a purplish, thinly fleshy capsule, depressed globular, c. 5 mm long, 7 mm diam., with (2)3 1-seeded locules. Seeds globose, white, c. 3 mm long, ecarunculate. Flowering: Nov - June; fruiting: Feb - May. Fig. 70

Occurs from the Kimberley Region to the east coast of Qld as far south as Port Curtis, and also in New Guinea. Rare in the DR where known only from Melville Is. Occurs in monsoon forest, in sandstone gorges and on the coast.

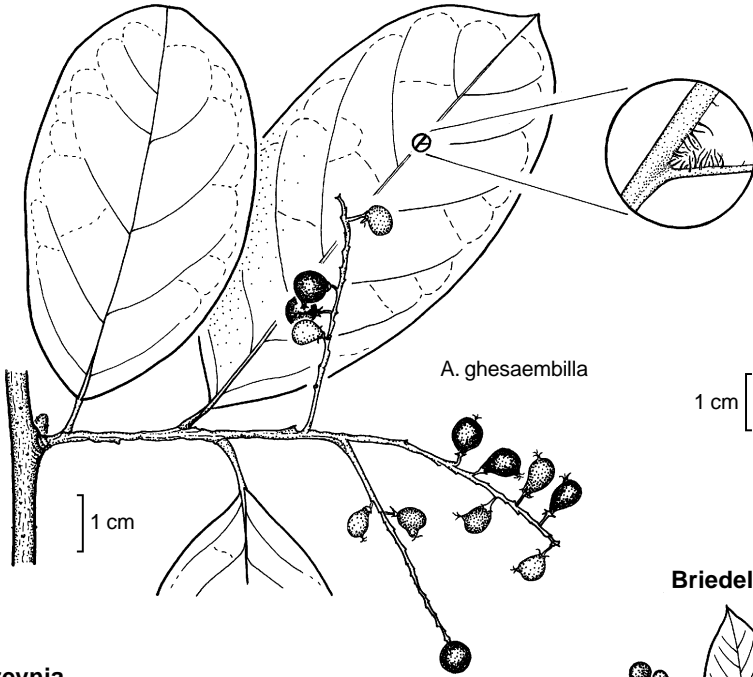
## CROTON L.

Deciduous shrubs or small trees, variously stellate hairy or with lepidote scales. Stipules minute. Leaves alternate; blades with 2 glands at base. Flowers monoecious, dioecious or a combination of both. Inflorescence racemose, usually terminal. Flowers 5-merous, males with small disk glands, stamens 5-30; females often with vestigial petals; ovary 3-locular. Fruit a capsule. Seeds ecarunculate or caruncle small.

A genus of c. 750 species found in the tropics and subtropics. In Australia there are c. 20 species, with 6 in the NT and 5 in the DR. Cultivated plants known as 'Croton' usually belong to the genus *Codiaeum* A. Juss. which is introduced to the NT. [Airy Shaw, 1980a, b; Wilmot-Deary, 1987]

- |    |  |                               |
|----|--|-------------------------------|
| 1. | Plants with peltate scales; leaf undersurfaces silvery shiny; sepals c. 5 mm long .....  | <i>C. argyratus</i>           |
| 1. | Plants glabrous, stellate hairy or with stellate scales; sepals <3 mm long .....   | 2                             |
| 2. | Leaves 2.2-4.5 times as long as wide, almost glabrous, base cuneate .....  | <i>C. sp. aff. dockrillii</i> |
| 2. | Leaves usually <2.2 times as long as wide, often densely tomentose,<br>base rounded, truncate or cordate .....                   | 3                             |
| 3. | Leaf 5-7-nerved at base, margins often crenulate to irregularly serrulate;<br>young shoots often rusty or yellow tomentose ..... | <i>C. arnhemicus</i>          |
| 3. | Leaf 3-5-nerved at base, margins finely crenulate; young shoots hoary or green.....  | 4                             |

**Antidesma**

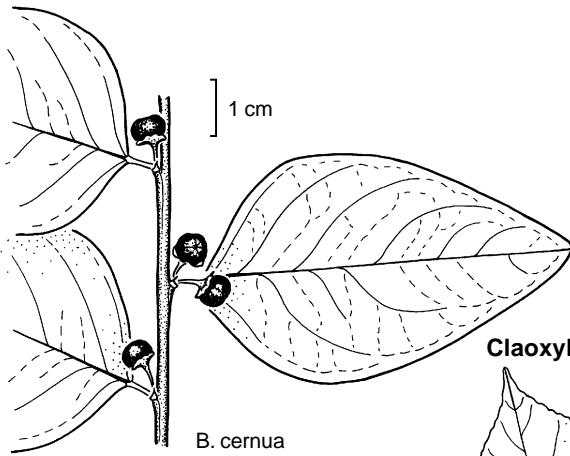


*A. ghesaembilla*

*A. parvifolium*

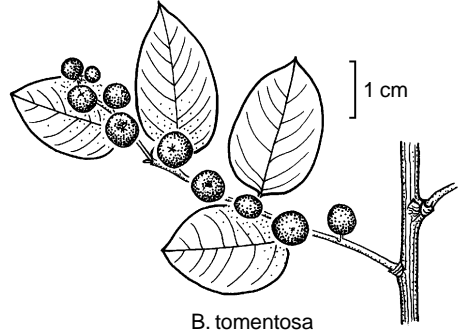


**Breynia**



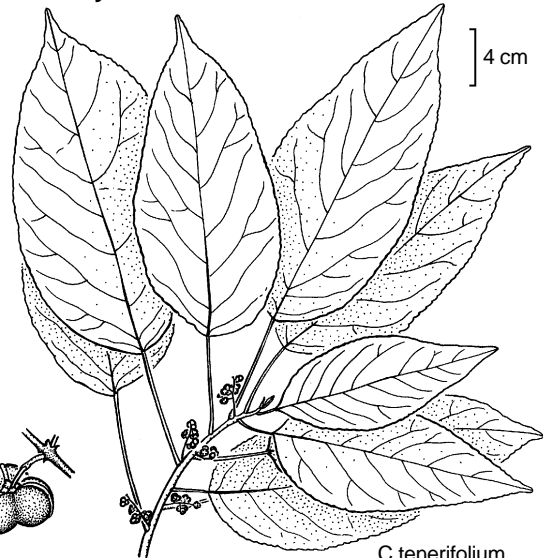
*B. cernua*

**Briedelia**



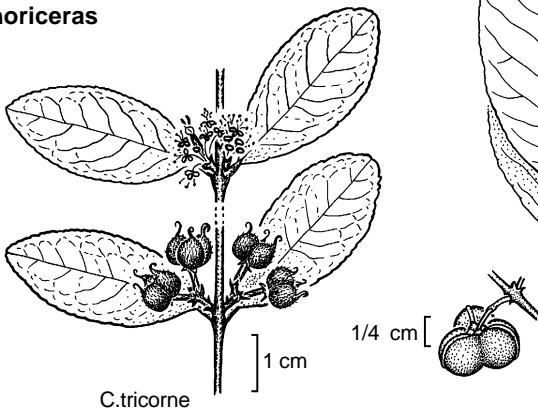
*B. tomentosa*

**Claoxylon**



*C. tenerifolium*

**Choriceras**



*C. tricornis*

- |    |   |                        |
|----|---|------------------------|
| 4. | Undersurface of expanded leaves and inflorescence tomentose; on rocky sites ..... | <i>C. tomentellus</i>  |
| 4. | Undersurface of expanded leaves and inflorescence sparsely stellate hairy .....   | <i>C. habrophyllus</i> |

### *C. argyratus* Blume

Shrub or small tree to 4 m, rarely 10 m. The whole plant covered to varying degrees in peltate scales. Branchlets ferruginous. Petioles 20-75 mm long, often ferruginous. Leaf blades, ovate or broadly lanceolate, 60-120 mm long, 50-92 mm wide, L/B 1-1.9, often glabrescent above, silvery-shiny, with fine translucent pellucid dots below, base truncate, rounded to cordate, 3-5-nerved, margins  $\pm$  entire. Inflorescence 20-45 mm long. Flowers monoecious; sepals c. 5 mm long, narrowly elliptic. Fruit  $\pm$  spherical, 6-7 mm long. Seeds mottled, c. 5 mm long. Flowering: Nov; fruiting: Feb - May. Fig. 71

In SE Asia as far east as the Moluccas and in Australia only known from the NT, from Darwin as far east as western Arnhem Land. Mainly in coastal deciduous vine thickets or on limestone outcrops in subcoastal situations.

### *C. arnhemicus* Muell.Arg.

A deciduous shrub or small tree to 5(12) m tall, with leaves turning red before falling; bark pale. Whole plant including fruit softly and densely stellate hairy, with plants from mesic habitats usually less hairy. Branchlets and young leaves often appearing rusty coloured or yellowish. Petioles 20-110 mm long. Leaf blades discolorous, ovate, lanceolate, broadly lanceolate, or suborbicular, 60-300 mm long, 40-280 mm wide, L/B 0.9-1.5, sparsely tomentose above, often hoary-tomentose beneath, strongly 5-7-nerved, base cordate or truncate, margin crenulate to irregularly serrulate, with small scattered  $\pm$  stipitate glands often present in the sinuses on the underside. Inflorescence 50-270 mm long. Flowers monoecious or dioecious. Fruit on a pedicel c. 5 mm long,  $\pm$  globular, 6-9 mm long, each of the persistent styles divided into 2 linear lobes; sepals persistent, triangular, c. 2 mm long. Seeds c. 5 mm long, with occasional stellate hairs. Flowering: Sept - Dec; fruiting: Oct - Mar. Fig. 71

Found in northern Australia from the Kimberley to Cape York. Common in the DR. In open forest and monsoon forest, on well drained soils. Medicinal uses have been reported (Russell-Smith, 1985; Smith & Wightman, 1990).

### *C. sp. aff. dockrillii* Airy Shaw

Small tree to 3.5 m tall. Young shoots, branchlets and petioles with adpressed stellate scales. Petioles 10-40 mm long. Leaf blades slightly discolorous,

elliptic-oblong to oblong, 49-150 mm long, 17-40 mm wide, L/B 2.2-4.5, glabrous above, glabrescent below, surface finely and densely pellucid punctate, base cuneate, 3-nerved, margin shallowly and regularly serrate with minute mucros on the teeth, apex acuminate to acute. Flowers and fruit not seen. Not illustrated.

In the DR, known only from the Mary R. in riparian vegetation, but also in central Arnhem Land.

### *C. habrophyllus* Airy Shaw

A small deciduous tree to 6 m tall; bark grey-brown, finely lenticelled, blaze cream with white streaks. Young shoots, branchlets and petioles with a dense stellate pubescence. Petioles 5-44 mm long. Leaf blades discolorous, broadly lanceolate, ovate or elliptic, 55-110 mm long, 35-60 mm wide, L/B 1.2-2.2, when fully expanded sparsely stellate hairy below and glabrous or glabrescent above, surface finely and densely pellucid punctate, base truncate or rounded, occasionally slightly cordate, 3- or indistinctly 5-nerved, margin serrate or crenulate, with a glandular umbo in the sinus of each serration, apex acuminate or acute. Inflorescence 40-205 mm long, sparsely stellate hairy. Flowers dioecious; sepals triangular to lanceolate, c. 2.5 mm long, with a tuft of hairs at the apex, persistent. Fruit on pedicel c. 3 mm long, depressed globular, 4-5 mm long, sparsely stellate hairy, 3(4)-locular. Seeds often mottled. Flowering: Sept - Dec; fruiting: Oct - Feb. Fig. 71

In north western Australia in coastal localities between Broome and the Gulf of Carpentaria. Common in the DR in coastal vine thickets or occasionally riparian vine thickets. Glabrous leaved forms of this species may be referred to *C. byrnesii* Airy Shaw and are found in subcoastal localities on sandstone.

### *C. tomentellus* F.Muell.

A small tree to 4 m tall. Bark smooth, grey. A soft, dense stellate indumentum persisting on all parts. Petioles 5-37 mm long. Leaf blades discolorous, 65-150 mm long, 37-90 mm wide, L/B 1.4-2.5, sparsely hairy above and hoary-tomentose below when fully expanded, base rounded, 3-5-nerved, margins shallowly and indistinctly dentate with a small mucro at the apex of each tooth, apex acuminate. Inflorescence 90-150 mm long, tomentose throughout. Flowers monoecious. Sepals persistent,

triangular, c. 1.5 mm long, with an apical tuft of hairs. Fruit on pedicel c. 3 mm long, depressed globular, c. 6 mm long, sparsely stellate-pubescent. Flowering: Oct - Dec; fruiting: Dec. Fig. 71

Endemic to Australia, from the Kimberley to western Arnhem Land on rocky sites. In the DR known only from monsoon thickets on granite outcrops at Mt. Bunday.

## DRYPETES Vahl

A genus of c. 200 species found throughout the tropics and also in subtropical parts of east Asia, southern Africa and eastern Australia. Two species occur in Australia, 1 of which is found in the NT and the DR.

*D. deplanchei* (Brong. & Gris) Merr.

*D. lasiogyne* (F.Muell.) Pax & Hoffm.

A deciduous tree to 8(15) m tall with smooth blotched grey and white bark; blaze creamy yellow. Young shoots, branchlets, petioles, and leaf bases tomentose. Stipules deciduous, triangular, <1 mm long. Juvenile leaves coarsely dentate with spinose teeth to 3 mm long. Adult leaves alternate, stiffly coriaceous; petioles 5-15 mm long; blades glossy above, ovate, occasionally elliptic or orbicular, 33-130 mm long, 18-62 mm wide, L/B 1.1-2.5, glabrescent, with fine reticulate venation, base rounded, cordate or attenuate, often unequal, margin entire, apex rounded, occasionally acute or emarginate. Inflorescence a short axillary or cauliflorous fascicle, tomentose throughout. Flowers dioecious; sepals 4(5), free, suborbicular, tomentose outside. Male flowers: c. 3.5 mm long; stamens c. 8,

filament c. 1 mm, arising with villous hairs from between the lobes of the sinuate-margined disk. Female flowers: sepals c. 3 mm long; disk annular, margin 4-lobed to sinuate; ovary 1-locular with 2 ovules, pubescent; styles very short; stigmas flabellate or occasionally bifid with linear lobes, reflexed and adpressed to the apex of the ovary. Fruit a yellow to red drupe, compressed ellipsoid or obovoid, 12-18 mm long, 8-11 mm diam., sparsely pubescent. Seed 1. Flowering: Sept - Nov; fruiting: Dec - Aug. Fig. 71

Found across northern Australia from the Kimberley to the east coast as far south as northern NSW; also in New Guinea. Common in the DR. Grows in monsoon forest in a variety of habitats, rarely in open forest. The fruit are edible and the timber is used by Aborigines for implements (Levitt, 1981; Russell-Smith, 1985).

## ENDOSPERMUM Benth.

A genus of 12 species from southern China through SE Asia, New Guinea to Polynesia and Fiji. Two species occur in Australia, with 1 in the NT and the DR. [Airy Shaw, 1980a,b; Schaeffer, 1971]

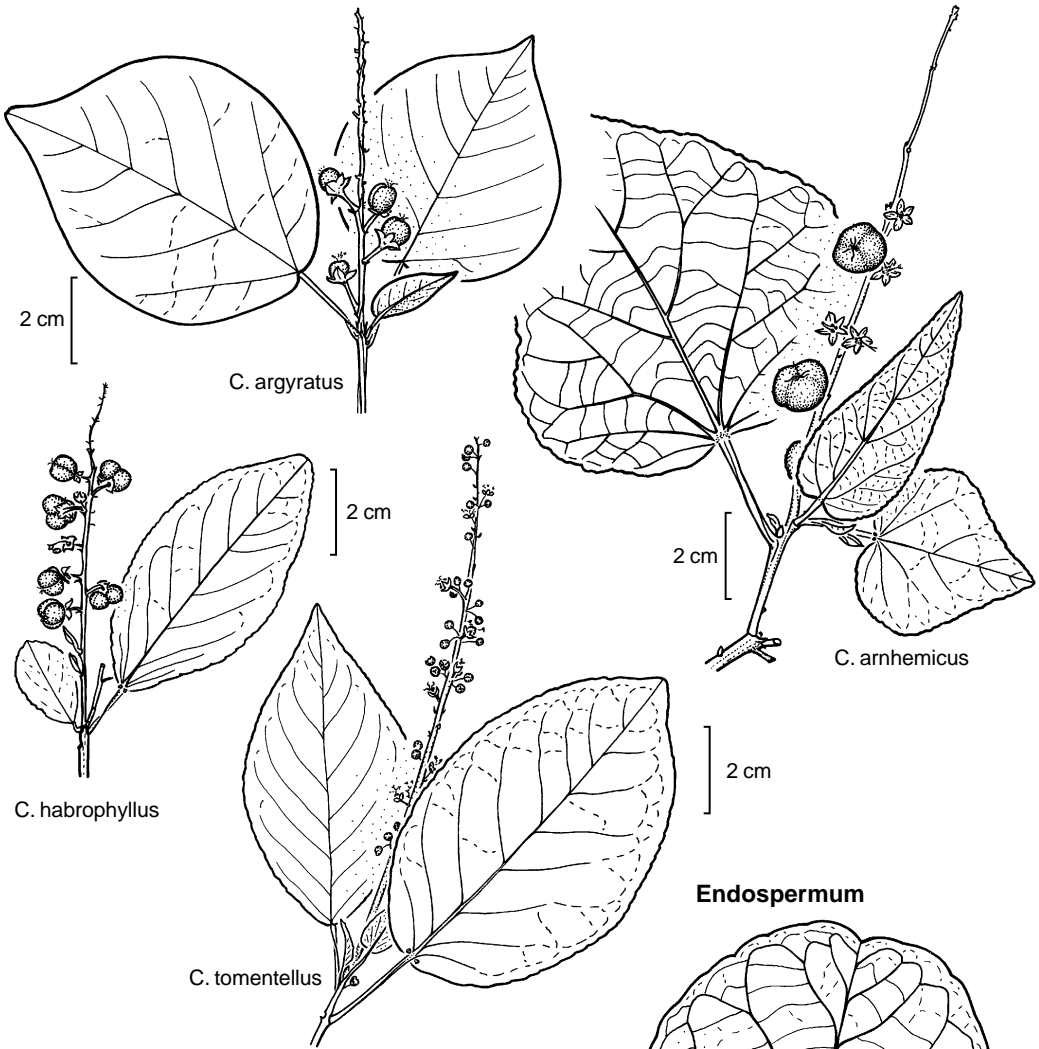
*E. medullosum* L.S.Sm.

Tree to 35 m, with pale yellow to white smooth bark. Branchlets stout. Young shoots, branchlets, petioles and leaf undersurface pubescent with short dense stellate hairs. Stipules caducous, c. 2.5 mm long, triangular. Leaves spirally arranged. Juvenile leaves peltate; petioles c. 315 mm long; blades c. 313 mm long, 257 mm wide, sparsely tomentose with simple hairs on both surfaces. Adult leaves with petioles to 150 mm long; blades usually non-peltate, occasionally peltate, discolorous, ovate to orbicular, 65-165 mm long, 60-146 mm wide, L/B c. 1, 5-7-nerved, with 2 yellow-brown flattened glands at junction with petiole, margin entire with several small glands, apex

rounded to shortly acuminate. Inflorescence of axillary panicles, 100-190 mm long, with racemose branches to 40 mm long, stellate tomentose throughout. Bracts and bracteoles 1.5-2 mm long, triangular. Flowers dioecious, bisexual flowers rarely present, calyx indistinctly 4-lobed, petals absent. Male flowers: calyx c. 1.5 mm long; stamens 5-7, spirally arranged on an androphore c. 1.7 mm long, anthers 4-valved. Female flowers: pedicels 3-4 mm long; calyx c. 1 mm long; ovary tomentose, 1-locular, stigma sessile, discoid, lobed, c. 1 mm wide. Bisexual flowers: stamens 5 on short filaments. Fruits drupaceous, white, thinly fleshy, ellipsoid, c. 9 mm long, 7 mm diam., stigma, calyx and (in bisexual



**Croton**



**Endospermum**

**Drypetes**

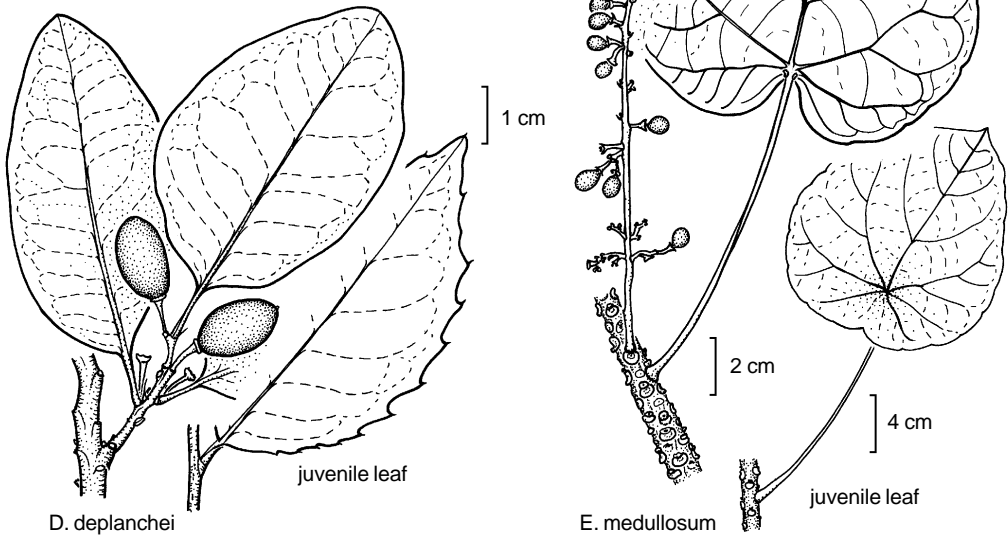


Fig. 71

flowers) anthers persisting. Seeds ovoid, c. 7 mm long.  
Flowering: not known; fruiting: Oct - Nov. Fig. 71

and in Cape York and the DR in northern Australia.  
Uncommon in the DR where known from Melville  
Is., Channel Point, Reynolds R. and Black Jungle  
where it grows in wet rainforests.

Found from New Guinea to the Solomon Islands,

## EUPHORBIA L.

B.G Thomson (partly)

Trees, shrubs or herbs with milky latex. Stipules minute or absent. Cauline leaves opposite, alternate or whorled, usually simple. Floral leaves opposite. Flowers much reduced, aggregated into a specialised inflorescence called a cyathium which consists of 1 female flower surrounded by several smaller male flowers, all enclosed in an involucre of connate bracts; nectary glands alternate with bracts and often with petaloid appendages. Male flowers: reduced to a single stamen. Female flowers: naked, pedicellate; ovary 3-locular, ovules 1 per locule; styles 3, shortly connate at base, each 2-lobed. Fruit a schizocarp, splitting into 3 mericarps. Seeds with or without a caruncle.

A genus of c. 2000 species worldwide; c. 57 species in Australia with c. 31 in the NT and 10 in the DR. The genus is treated here in the broad sense and includes species which may otherwise be included in *Chamaesyce* S.F.Gray and *Poinsettia* R.Grah.

### KEY BASED ON VEGETATIVE CHARACTERS

- |    |  |                         |
|----|--|-------------------------|
| 1. | Leaves alternate .....                               | 9                       |
| 1. | Leaves opposite .....                                | 2                       |
| 2. | Leaves mostly linear-oblong .....                    | <i>E. vachellii</i>     |
| 2. | Leaves otherwise .....                               | 3                       |
| 3. | Plants herbaceous, usually annual .....              | 4                       |
| 3. | Plants suffruticose, roots at least perennial .....  | 7                       |
| 4. | Leaves glabrous, blades pale below .....             | <i>E. armstrongiana</i> |
| 4. | Leaves puberulous to glabrescent .....               | 5                       |
| 5. | Leaf blades <8 mm long .....                         | <i>E. chamaesyce</i>    |
| 5. | Leaf blades >8 mm long .....                         | 6                       |
| 6. | Leaf blades 9-14 mm long .....                       | <i>E. schultzei</i>     |
| 6. | Leaf blades 13-35 mm long .....                      | <i>E. hirta</i>         |
| 7. | Plant glabrous .....                                 | 8                       |
| 7. | Plant hairy .....                                    | <i>E. schizolepis</i>   |
| 8. | Aerial stems annual, prostrate; open forest .....    | <i>E. muelleri</i>      |
| 8. | Aerial stems perennial, erect; beach dunes .....     | <i>E. atoto</i>         |
| 9. | Larger leaves lobed; floral leaves red at base ..... | <i>E. cyathophora</i>   |
| 9. | All leaves entire; floral leaves usually green ..... | <i>E. heterophylla</i>  |

### KEY BASED ON REPRODUCTIVE CHARACTERS

- |    |  |   |
|----|--|---|
| 1. | Leaves alternate or spirally arranged (occasionally absent), those subtending the inflorescence opposite; cyathial gland 1 ..... | 2 |
| 1. | Leaves all opposite; cyathial glands 4 .....   | 3 |

2.	Leaves subtending the inflorescence with pink or red basal centres .....	<i>E. cyathophora</i>
2.	Leaves subtending the inflorescence green .....	<i>E. heterophylla</i>
3.	Seed coat smooth .....	4
3.	Seed coat rugose, grooved or tuberculate .....	5
4.	Capsules 3-4 mm long, 4-4.5 mm diam.; seeds 1.7-2 mm long, 1.6-2 mm diam. ....	<i>E. atoto</i>
4.	Capsules 1.4-3 mm long, 1.8-3.6 mm diam.; seeds 1.1-1.8 mm long, 0.8-1.6 mm diam. ....	<i>E. muelleri</i>
5.	Seed facets with 3-5 deep transverse grooves .....	<i>E. armstrongiana</i>
5.	Seed facets rugose, tuberculate or shallowly transversely grooved .....	6
6.	Seeds 2.7-3.2 mm long, 1.8-2.3 mm diam; coat with large, flat-topped tubercles .....	<i>E. schizolepis</i>
6.	Seeds smaller than above; coat rugose .....	7
7.	Cyathia in dense, ±leafless clusters .....	8
7.	Cyathia in loose cymes or solitary in upper axils; subtending leaves not reduced .....	9
8.	Stems with long yellow hairs to 1.5 mm long; capsules 0.9-1.2 mm long, 1.2-1.5 mm diam. ....	<i>E. hirta</i>
8.	Stems without yellow hairs; capsules 1.6-2.2 mm long, 1.8-2.3 mm diam. ....	<i>E. vachellii</i>
9.	Gynophore glabrous .....	<i>E. vachellii</i>
9.	Gynophore hairy .....	10
10.	Capsules with short white hairs along the keels or glabrous, smooth, 1.3-1.6 mm long, 1.3-1.5 mm diam. ....	<i>E. chamaesyce</i>
10.	Capsules puberulous, often papillose, 2.3-2.8 mm long, 3-3.5 mm diam. ....	<i>E. schultzei</i>

### *E. armstrongiana* Boiss.

Decumbent or erect annual herb to 30 cm tall. Stems glabrous or thinly pilose with erect or spreading hairs to 0.7 mm long. Stipules triangular, 0.2-0.7 mm long, margins lacerate. Petioles 0.7-2 mm long. Leaf blades orbicular to elliptic, 7-18 mm long, 3-12 mm wide, glabrous, margins entire, apex obtuse, often with a small mucro, asymmetric at base. Cyathia in leafy, dichotomously branched cymes or small terminal clusters, 1.2-3 mm long, 1-1.4 mm wide, glabrous. Glands 4, orbicular to oblong, flat to concave, c. 0.6 mm long, 0.3 mm wide. Gland appendages creamy-white to faint pink, entire, c. 0.2 mm long, 0.7-0.9 mm wide. Gynophore 1.4-2.3 mm long, glabrous. Capsule 2.3-2.6 mm long, 2.3-3 mm wide, glabrous. Styles c. 0.4 mm long, glabrous. Seeds light brown or creamy brown, tetragonous, ovoid, 1.5-1.9 mm long, 0.9-1.2 mm wide, the facets with 3-5 deep transverse grooves. Flowering and fruiting: Mar - May. Fig. 72

Endemic to the NT. On Cobourg Peninsula, in Kakadu NP and the DR as far south as Pine Creek. Usually on sandy soil or rocks.

### *E. atoto* Forst.

Erect or decumbent perennial subshrub to 40 cm tall, glabrous, usually glaucous and reddish on foliage. Stipules broad triangular, 1-2.3 mm long, margins finely lacerate. Petioles 0.5-1.5 mm long. Leaf blades elliptic to ovate, 12-30 mm long, 7-15 mm wide, margins entire, apex obtuse or acute. Cyathia in leafy, dichotomously branched cymes or small, terminal or axillary clusters, 1.6-2.3 mm long, 1.5-2 mm wide. Glands 4, oblong, flat or concave, 0.5-0.8 mm long, 0.2-0.4 mm wide. Gland appendages white or pink, entire or dentate, 0.1-0.3 mm long, 0.8-1.2 mm wide. Gynophore 3.5-5 mm long. Capsule 3-4 mm long, 4-4.5 mm wide. Styles 0.6-1.1 mm long. Seeds light brown or cream, ± globular, 1.7-2 mm long, 1.6-2 mm wide, smooth. Flowering and fruiting: most months. Fig. 72

Tropics of the Old World from India to Polynesia including northern Australia. Widespread in the Top End on coastal dunes.

\**E. chamaesyce* L.  
*Euphorbia prostrata* Ait.

Prostrate annual herb. Indumentum of white hairs

to 0.2 mm long or glabrescent. Stipules narrow, subulate or divided into filiform segments, 0.3-0.5 mm long, often with white, acicular hairs. Petioles 0.5-0.9 mm long. Leaf blades elliptic, obovate or ovate, 3-7 mm long, 1.5-3.5 mm wide, margins entire or serrate in upper half or along adaxial edge, apex obtuse. Cyathia axillary and scattered or occasionally in the upper parts only, 0.5-0.8 mm long, 0.4-0.6 mm wide. Glands 4, orbicular to oblong, flat or concave, 0.1-0.2 mm long, c. 0.1 mm wide. Gland appendages red or purple, absent or occasionally vestigial, entire. Gynophore 0.7-1.5 mm long, pubescent. Capsule 1.3-1.6 mm long, 1.3-1.5 mm wide, glabrous or puberulous along the keels. Styles c. 0.2 mm long, glabrous. Seeds brown or creamy brown, tetraquetrous, narrow ovoid, 1.2-1.4 mm long, 0.6-0.9 mm wide, transversely rugose. Fig. 72

A weed in Qld and the NT; in the DR known only from Howard Springs.

\**E. cyathophora* J.A.Murray

Erect annual herb to 1 m tall. Stems with scattered hairs. Stipules minute or absent. Leaves alternate, those below the inflorescence opposite, usually pink or red with green tips. Petioles 5-55 mm long. Leaf blades elliptic to obovate or pandurate, 20-110 mm long, 10-60 mm wide, upper surface glabrous, lower surface glabrous or puberulous, margins entire or serrate, apex acute. Cyathia in terminal clusters, 2-3 mm long, 1.5-2 mm wide, glabrous. Gland 1, orbicular, c. 1 mm diam. Gland appendages absent. Gynophore c. 3 mm long. Capsules 3-4 mm long, 5-6 mm wide, glabrous or puberulous. Styles 1-1.4 mm long, glabrous. Seeds brown or grey, ovoid or narrow ovoid, 2-2.8 mm long, 2-2.6 mm wide, tuberculate. Flowering and fruiting: most months. Fig. 72 Dwarf Poinsettia

Native to central America. Widely cultivated in the tropics and often naturalized. In eastern Australia widespread in coastal parts of the tropics and subtropics. In the Top End known from Nhulunbuy, Alyangula and Darwin; on disturbed sites around towns. Rare in the DR.

\**E. heterophylla* L.

Erect annual herb to 1.5 m tall. Stems often with scattered hairs. Stipules minute or absent. Leaves alternate, those below the inflorescence opposite. Petioles 5-40 mm long. Leaf blades elliptic to obovate or pandurate, 25-120 mm long, 5-50 mm wide, upper surface glabrous, lower surface glabrous or puberulous, margins entire or slightly serrate, apex acute. Cyathia in terminal clusters, 2-2.5 mm long

1.5-2.2 mm wide, glabrous. Gland 1, orbicular, c. 1 mm diam. Gland appendages absent. Gynophore c. 3 mm long. Capsules 3.5-4 mm long, 5-6 mm wide, glabrous. Styles 0.9-1.5 mm long, glabrous. Seeds dark brown or grey, broad, tetragonous, c. 3 mm long, 2-2.5 mm wide, tuberculate. Flowering and fruiting: most months. Fig. 72

Native of tropical America but now widely naturalized. In north and eastern Australia, widespread in tropical and subtropical coastal regions. Common in the Top End and the DR on disturbed sites.

\**E. hirta* L.

*Chamaesyce hirta* (L.) Millsp.

Decumbent or erect annual herb to 35 cm tall. Stems puberulous and commonly hispid with yellow hairs to 1.5 mm long. Stipules narrow subulate, 1-2.5 mm long, often divided into filiform segments. Petioles 1.5-3 mm long. Leaf blades often reddish, elliptic to obovate, 13-35 mm long, 9-15 mm wide, upper surface glabrous or puberulous, lower surface puberulous, margins serrate in upper half and on adaxial edge, apex obtuse or acute. Cyathia in dense, leafless clusters on reduced lateral branchlets, 0.5-0.8 mm long; 0.5-0.7 mm wide, puberulous. Glands 4, orbicular or oblong, flat, c. 0.1 mm long, 0.1-0.2 mm wide. Gland appendages white to pink, absent or minute, entire or dentate, c. 0.1 mm long, 0.1 mm wide. Gynophore 0.5-0.9 mm long, glabrous. Capsule 0.9-1.2 mm long, 1.2-1.5 mm wide, puberulous or glabrescent. Styles 0.1-0.3 mm long, glabrous. Seeds brown or creamy brown, tetraquetrous, ovoid, 0.6-0.8 mm long, 0.4-0.5 mm wide, rugose. Flowering and fruiting: most months. Fig. 72 Asthma Plant

A native of central America, now naturalized throughout the tropics. Widespread in tropical and subtropical Australia in coastal and inland areas. Common in the DR on disturbed sites. The white latex is used by Aboriginal people for medicinal purposes (Wightman et al., 1992; Smith et al., 1993). At one time widely used in Australia for the relief of asthma and bronchitis (Everist, 1979).

*E. muelleri* Boiss.

Prostrate perennial herb, producing foliage annually from a perennial rootstock. Stems glabrous or puberulous. Stipules broad-triangular, 0.2-0.3 mm long, often thick with broad purplish margin. Petioles 0.4-1.5 mm long. Leaf blades broad obovate to orbicular, 4-24 mm long, 4-18 mm wide, glabrous or puberulous below, margins entire, apex obtuse, often retuse. Cyathia axillary, scattered or in upper

**Euphorbia**

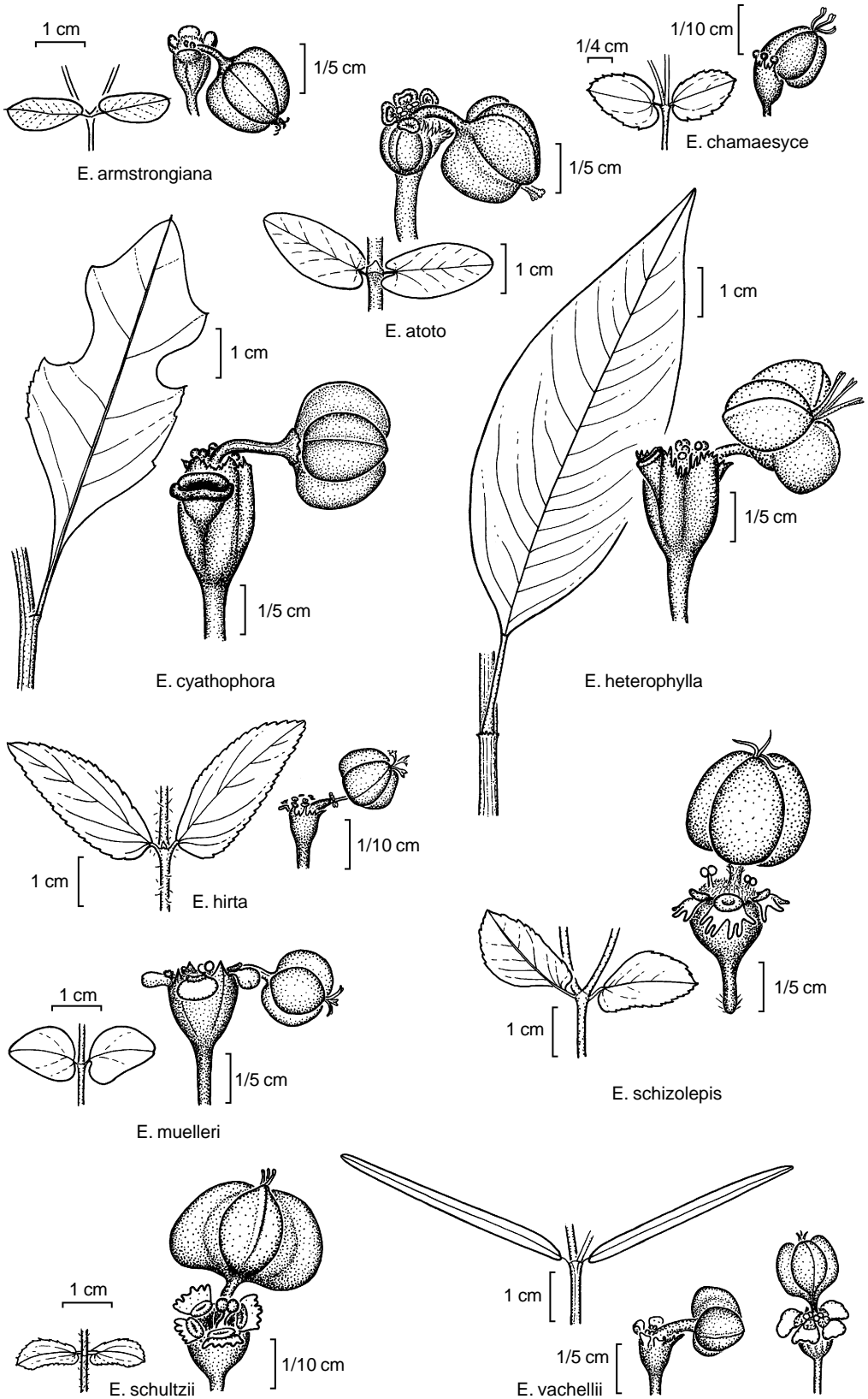


Fig. 72

parts only, 1.8-2.5 mm long, 1.5-2 mm wide, glabrous or puberulous. Glands 4, oblong, flat or concave, the inner rim often folded to the outer edge, 0.7-1.1 mm long, 0.2-0.4 mm wide. Gland appendages white, entire or dentate, 0.7-1.2 mm long, 1.5-2 mm wide. Gynophore 4-6 mm long, pubescent. Capsule 2-3 mm long, 3-3.6 mm wide, glabrous. Styles 0.3-0.5 mm long, glabrous. Seeds brown or creamy brown, trigonous to rounded, ovoid to orbicular, 1.3-1.8 mm long, 1.2-1.6 mm wide, smooth. Flowering: June - Nov; fruiting: Apr. Fig. 72

Apparently endemic to the Top End; in the DR, Kakadu and western Arnhem Land. Relatively common in the DR in Eucalypt savanna. Flowers in the late dry season, often on new growth after fire.

*E. schizolepis* F.Muell. ex Boiss.

Decumbent or erect perennial subshrub 0.6(1) m tall with hispid or pilose indumentum, occasionally glabrescent. Stipules narrow subulate or triangular, often divided into filiform segments, 0.5-1.5 mm long, margins lacinate. Petioles 1-3 mm long. Leaf blades elliptic to ovate, 11-20 mm long, 8-15 mm wide, margins entire or serrate in upper half and on the adaxial edge, apex acute or rarely obtuse. Cyathia axillary and scattered or occasionally in upper parts only, 2-3 mm long, 2-3 mm wide. Glands 4, oblong, flat or concave, 0.8-1.4 mm long, 0.4-0.6 mm wide. Gland appendages creamy white to faint pink, lacinate, 1-2.5 mm long, 1-3 mm wide, lower surface often pubescent. Gynophore pubescent. Capsule 4-6 mm long, 4.5-6.5 mm wide. Styles 1.5-2 mm long, puberulous or with minute, scattered hairs. Seeds dark to light brown, tetragonous, ovoid to rounded, 2.7-3.2 mm long, 1.8-2.3 mm wide, with large, flat-topped tubercles, mucilage coat often obscuring features. Flowering and fruiting: Jan - June. Fig. 72

Australian endemic; in the Kimberley, VRD and the Top End. Rare in the DR, growing in Eucalypt savanna.

*E. schultzi* Benth.

Erect, decumbent or prostrate annual herb to 30 cm tall, often suffused purple. Upper leaf surfaces often glabrous, otherwise whole plant with puberulous indumentum of short, curved or straight acicular hairs to 0.2 mm long. Stipules narrow subulate, often

divided, 0.4-0.8 mm long. Petioles 0.5-1 mm long. Leaf blades elliptic, or obovate, strongly oblique, 9-14 mm long, 4-7 mm wide, margins deeply serrate (often only in the upper half), apex obtuse to acute. Cyathia axillary, scattered or in upper parts only, 0.9-1.3 mm long and wide. Glands 4, oblong, concave, the inner rim often folded to the outer edge, 0.5-0.7 mm long, c. 0.3 mm wide. Gland appendages pink or red, denticulate, 0.3-0.5 mm long, 0.5-0.8 mm wide. Gynophore 1-1.5 mm long. Capsule 2.3-2.8 mm long, 3-3.5 mm wide, tuberculate, puberulous. Styles c. 0.3 mm long, glabrous. Seeds brown or creamy brown, tetragonous, ovoid, 1.1-1.4 mm long, 0.7-0.9 mm wide, rugose. Flowering and fruiting: Dec - June. Fig. 72

Australian endemic, widespread in northern Australia. Common in the DR in savanna and on disturbed sites.

*E. vachellii* Hook. & Arn.

*Chamaesyce vachellii* (Hook. & Arn.) Hara; *Euphorbia serrulata* Reimw.

Erect or decumbent annual herb or perennial to 60 cm tall. Stems glabrous or hispid to puberulous. Stipules narrow subulate, often divided in filiform segments, 0.4-1.3 mm long, margins lacerate and often with short hairs. Petioles 0.5-2.5 mm long. Leaf blades linear, linear-oblong to elliptic, 10-65 mm long, 1.5-16 mm wide, glabrous or hispid, margins entire or serrate, apex obtuse or acute. Cyathia in leafy or leafless clusters, lateral or terminal, 0.8-1.5 mm long, 0.7-1.5 mm wide, glabrous. Glands 4, orbicular or oblong, flat or slightly concave, 0.1-0.5 mm long, 0.1-0.6 mm wide. Gland appendages white, entire, 0.1-1.7 mm long, 0.1-2.5 mm wide. Gynophore 1-3 mm long, glabrous. Capsule 1.6-2.2 mm long, 1.8-2.5 mm wide, glabrous or puberulous. Styles 0.2-0.7 mm long, glabrous. Seeds dark brown or creamy brown, tetragonous, ovoid, 1.1-1.5 mm long, 0.7-1.3 mm wide, rugose. Flowering and fruiting: most months. Fig. 72

From south China through eastern Malesia to tropical Australia where it is widespread. In the NT as far south as Elliott. Occurs in savanna, coastal dunes and drier parts of coastal floodplains. Specimens from inland areas are mostly annual, those of coastal dunes perennial and rhizomatous. The taxon described here includes *E. mitchelliana* Boiss. The application of these names needs resolving.

## EXCOECARIA L.

Small trees or shrubs with milky sap. Glabrous. Stipules minute. Leaves alternate, often on short lateral shoots; petioles grooved above; blades slightly succulent, with a pair of glands toward the base. Inflorescence

terminal or axillary spikes or racemes. Flowers dioecious, 2-3-merous. Male flowers with minute perianth; stamens 2 or 3, anther 2-locular, the locules back to back; rudimentary female parts and disk lacking. Female flowers in shorter racemes, perianth more distinctly lobed than in male flowers; ovary 2-3-locular, with 1 ovule per locule; styles linear. Capsules dehiscent with 3 2-valved cocci. Seeds ecarunculate.

A genus of c. 40 species occurring in tropical Africa and Asia. Four species in Australia, with 3 in the NT. Two species are known from the DR but all 3 species are treated here. [Wightman, 1989] The caustic latex of all species is harmful, especially to the eyes. Some species have been referred to as "Blind Your Eyes" (Everist, 1979).

- |   |                      |
|---|----------------------|
| 1. Leaves usually < 20 mm wide.....                       | <i>E. parvifolia</i> |
| 1. Leaves usually > 20 mm wide.....                       | 2                    |
| 2. Leaf margins crenate, petiole usually >18 mm long..... | <i>E. agallocha</i>  |
| 2. Leaf margins entire, petiole usually <17 mm long.....  | <i>E. ovalis</i>     |

### *E. agallocha* L.

A small semideciduous tree to 8(15) m tall with 1 to several trunks. Bark pale, smooth, lenticelled. Petioles 15-40 mm long, grooved above. Leaf blades discolorous, ovate, obovate or elliptic, 44-115(157) mm long, 26-60(82) mm wide, L/B 1.4-2, base rounded to cuneate, margin crenate, apex acuminate or rounded, often emarginate. Male inflorescence 15-115 mm long. Capsules 5-8 mm long. Seeds mottled, globular, c. 5 mm diam. Flowering: Oct - Feb; fruiting: Dec - Mar. Fig. 73

Distributed through Asia as far as southern India, Taiwan and the Pacific. In Australia along the coast of Qld and NSW, and in the eastern NT. Not recorded in the DR. A mangrove species occurring on sandy substrates in areas receiving some freshwater seepage.

### *E. ovalis* Endl.

Deciduous tree with 1 to several stems growing to 5 m tall. Stipules caducous, triangular, c. 1 mm long. Petioles 10-22 mm long. Leaf blades discolorous, elliptic or obovate, 40-87 mm long, 20-51 mm wide, L/B 1.3-2, base cuneate or rounded, margin entire or obscurely crenulate, apex rounded, often emarginate.

Male inflorescence 16-40 mm long; female to 30 mm long. Capsules 5-10 mm long. Seeds brown, spherical, c. 4.5 mm long. Flowering: Oct - Dec; fruiting: Dec - Feb. Fig. 73

Endemic to northern Australia. Common in the DR. A mangrove, growing on the landward margins of communities, occasionally above high tide mark.

### *E. parvifolia* Muell.Arg.

A semideciduous tree to 7 m tall. Bark dark grey, fissured. Leaves clustered on short lateral shoots; petioles 1-8 mm long; blades oblanceolate, obovate or narrowly elliptical, 15-47 mm long, 4-22 mm wide, L/B (1.5)3-6.4, sometimes purplish above, base cuneate or attenuate, margin entire, apex obtuse, occasionally slightly emarginate. Male inflorescence c. 10 mm long. Capsules 6-7 mm long. Seeds pale brown, smooth, obovoid, c. 5 mm long. Flowering: early wet season; fruiting: Jan - Apr. Fig. 73 Gutta Percha

Endemic to northern Australia. In the DR known from the Daly River area. Usually growing on seasonally waterlogged flats with clay soil, occasionally on semi-saline areas. This species has medicinal uses (Smith et al., 1993) and the aromatic wood has potential for use as a veneer.

## FLUEGGIA Willd.

A genus of c. 14 tropical species occurring primarily in the Old World. Two species occur in Australia, with 1 in the NT and the DR. [Webster, 1984]

*F. virosa* (Roxb. ex Willd.) Voigt subsp. *melanthesoides* (F.Muell.) Webster  
*Securinea melanthesoides* (F.Muell.) Airy Shaw

Shrub to 4 m tall. Glabrous, occasionally slightly glaucous. Stipules persistent, triangular, c. 2 mm long. Leaves alternate; petioles 3.5-13 mm long; blades

discolorous, usually elliptic, ovate, obovate, or broadly elliptic, 26-125 mm long, 15-63 mm wide, L/B 1.4-2.2, with fine reticulate venation prominent below, base cuneate or attenuate, margin entire, apex acute, rounded or shortly acuminate. Inflorescence a many-flowered axillary fascicle. Flowers dioecious, white, scented; sepals 5, free, 1-1.2 mm long, suborbicular, the outer 2 shorter than the inner 3. Male flowers: pedicels filiform, to 3 mm long; stamens 5, filaments c. 2 mm long, alternating with 5 glands; pistillode present with style 2- or 3-fid, c. 1 mm long, lacking an ovary; anthers 2-celled, opening longitudinally by 2 valves. Female flowers: pedicels

to 3 mm long; disk flattened with an irregular margin; ovary with 3 locules each containing 2 ovules; styles 3, recurved bifid for c. half their length. Fruit fleshy, white, depressed globular, c. 3.5 mm long, c. 5 mm diam. Seeds 6, pale, shiny. Flowering: Nov - June; fruiting: Jan - July. Fig. 73

Distributed across northern Australia, Malasia, tropical Africa, China and Japan. Common in the DR. Often in monsoon forest, in riparian communities, floodplain margins, rocky slopes and beach dunes. Fruits are edible (Wightman et al., 1991; Wightman et al., 1992).

### GLOCHIDION J.R. & G.Forst.

Evergreen or semideciduous trees or shrubs. Stipules persistent. Leaves alternate, entire, discolorous. Flowers in short axillary or supra-axillary fascicles, monoecious. Perianth 6-merous, in two series, smaller in female flowers. Male flowers with filiform pedicels, perianth obovate, stamens 3, united in a central column. Female flowers pedunculate or epedunculate, styles 3, united, together forming a dome on the apex of the ovary. Fruit a thin walled capsule, depressed globose, 3-locular with 2 ovules per locule, 6-lobed. Seeds red, retained on placenta after capsule wall shed, in shape a segment of a sphere.

The genus contains c. 300 species distributed through tropical Asia, Madagascar, Australasia and Polynesia with a few species in tropical America. Fourteen species are recorded for Australia, 5 in the NT and 2 in the DR. [Airy Shaw, 1980a,b]

- 1. Large tree; inflorescence shortly pedunculate and inserted above the axils; stipules acute to obtuse ..... G. perakense
- 1. Small tree or shrub; inflorescence epedunculate, axillary; stipules subulate ..... G. xerocarpum

#### G. perakense Hook. f. var. supra-axillare (Benth.) Airy Shaw

A tree to 20 m tall. Bark brown, fibrous, inner bark red. Usually glabrous throughout, inflorescence and leaf undersurfaces rarely shortly tomentose. Stipules triangular, 1-1.5 mm long. Petioles c. 5 mm long. Leaf blades elliptic or ovate, less commonly oblong or lanceolate, 65-180 mm long, 25-75 mm wide, L/B (1.3)2-3(4), often unequal, base rounded to cuneate, apex acute to acuminate. Inflorescence supra-axillary fascicles on peduncles 1-7 mm long. Male flowers on filiform pedicels 3-15 mm long. Female flowers on pedicels 4-10 mm long. Fruit yellow-green, 5 mm long, 6-10 mm diam., usually tomentose, weakly lobed to entire, up to 6 per inflorescence. Seeds pale red, c. 3 mm long. Flowering and fruiting: Sept - Mar. Fig. 73

New Guinea, Solomon Is. and northern Australia in Qld and the NT. In the DR, common in its restricted habitat. Occurs in monsoon forest associated with permanent streams.

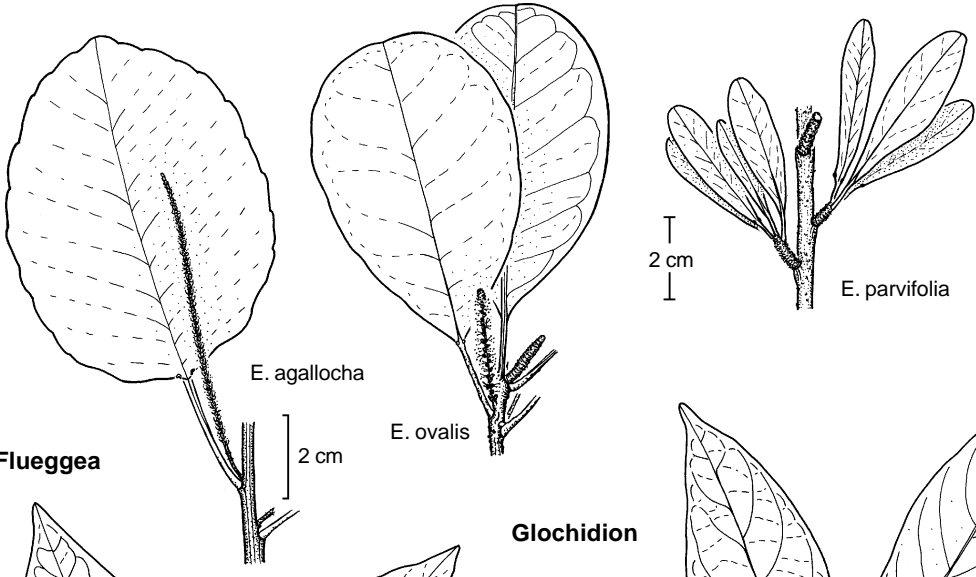
#### G. xerocarpum (O.Schwarz) Airy Shaw

A semideciduous small tree or shrub to 6 m tall. Bark dark grey, rough. All parts with a short whitish tomentellous indumentum, the upper surface of the leaves sparsely hairy to glabrescent. Stipules persistent, triangular, tapering to a fine point, 1.5-3 mm long. Petioles 2-4 mm long. Leaf blades oblong-elliptic, elliptic, ovate or obovate, 35-140 mm long, 10-55 mm wide, L/B 1.6-2.7, base rounded to cuneate, margin entire, apex obtuse to shortly acuminate or acute. Venation prominent or obscure below. Male flowers: pedicels 2.5-8 mm long. Female flowers: pedicels 4-5 mm long with up to 3 fruit per inflorescence. Fruit yellowish-green, depressed globular, 7-8 mm long, 8-15 mm diam., glabrescent, lobed. Seeds red, 5-6 mm long. Flowering: Sept - Dec; fruiting: Sept - Apr. Fig. 73

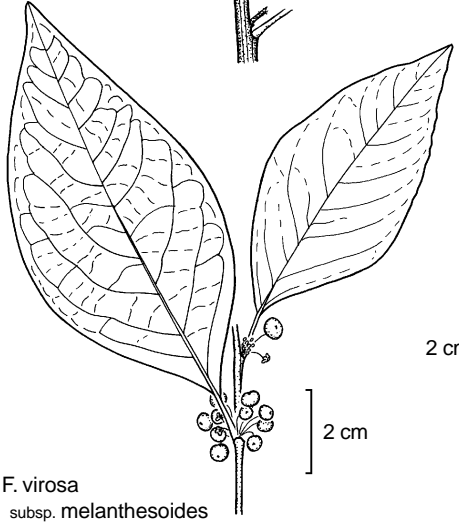
Found in Indonesia as far west as Java, in New Guinea, the Philippines and in northern Australia. Common in the DR. The habitat of this species is



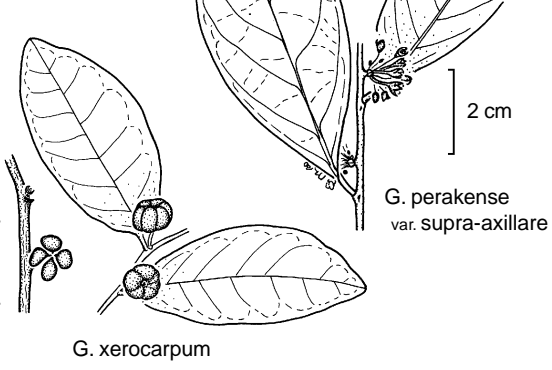
**Excoecaria**



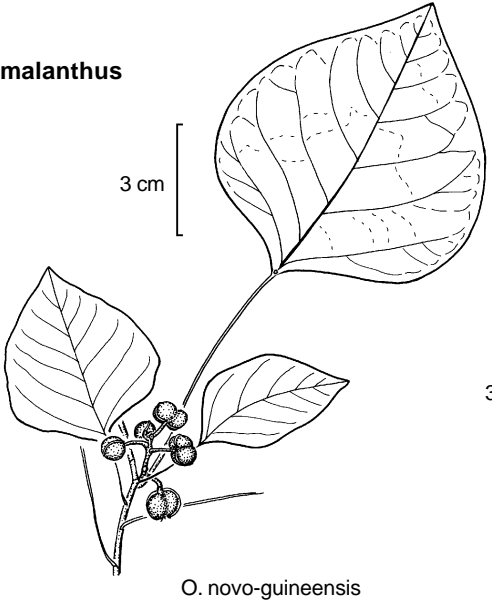
**Flueggea**



**Glochidion**



**Omalanthus**



**Jatropha**

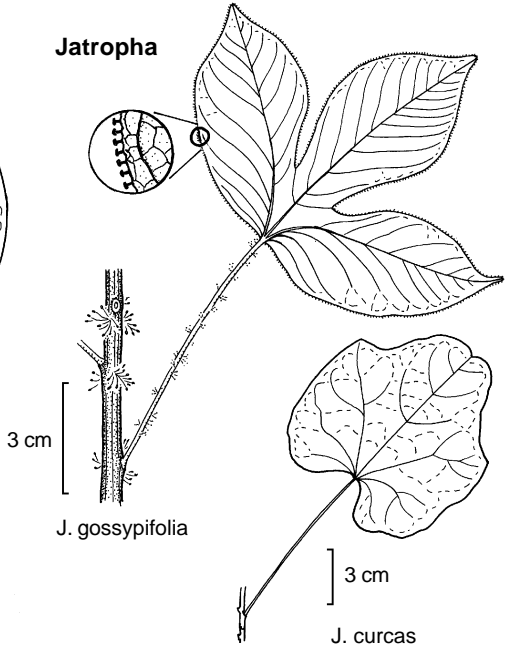


Fig. 73

drier monsoon forest on a variety of soils and occasionally eucalypt forest. The description here includes forms known as *G. apodogynum* Airy Shaw and *G. disparipes* Airy Shaw. *Glochidion xerocarpum* sens. str. occurs in coastal vine thickets and has glabrous leaves with obscure venation below and glabrous or tomentose branchlets. *Glochidion apodogynum* sens. str. is tomentose

on all parts and occurs in subcoastal habitats associated with sandstone while *G. disparipes* may be completely glabrous or have hairy branchlets and occurs in subcoastal monsoon thickets or eucalypt communities. The above characters intergrade between forms. However, all forms have similar leaves, stipules, inflorescences and fruit.

### JATROPHA L.

A genus of 125-150 tropical species occurring primarily in the New World, with many of the other species in Africa. Two species are naturalized in Australia and the NT. Both occur in the DR. *J. curcas* L. is rare in the region and is illustrated (Fig. 73), but not described here. [Everist, 1979; Wagner et al., 1990]. Two other species, *J. multifida* L. with deeply divided leaves and *J. podagrica* Hook. with a short swollen stem are cultivated.

- 1. Leaves and petioles with gland tipped hairs, blades deeply 3-5-lobed; petals red ..... *J. gossypifolia*
- 1. Leaves and petioles eglandular, blades entire or shallowly lobed; petals greenish to yellowish white ..... *J. curcas*

**\**J. gossypifolia* L.**

A herbaceous shrub, deciduous in dry habitats, to 1.5(3) m tall. Stems smooth, exuding a watery sap when broken, angles of branchlets with decurrent tissue. Stipules modified to form branched glandular hair-like structures, 4-5 mm long. Leaves alternate; petioles 46-115 mm long bearing conspicuous branched gland tipped hairs; blades deeply palmately 3-5-lobed, discolorous, 54-140 mm long, 75-125 mm wide, lobes 25-70 mm long, 15-42 mm wide, surfaces glabrous to densely tomentose, finely pellucid dotted, base cordate to truncate, margin ciliate with simple and capitate glandular hairs, apex of lobes acuminate. Inflorescence with a dense

covering of simple and glandular hairs, bracteate. Flowers monoecious, in terminal dichasia, 78-120 mm long; petals dark red. Fruit a capsule, 10-12 mm long, oblong, with 3 1-seeded locules. Seeds pale brown, faintly mottled, 6-8 mm long, c. 4.5 mm wide, flattened-oblong, caruncle finely lobed. Flowering: Feb; fruiting: Feb - Apr. Fig. 73

Native to the New World but now naturalized throughout the tropics. In Australia the species occurs in Qld, WA and NT. Scattered in the DR, often near past habitation. On a variety of soils, but most commonly on stream banks. In the past, this species was widely propagated for the seeds which contain a purgative oil. The seeds also contain a toxin.

### LEPTOPUS Decne

A genus of c. 15 species, mostly in northern and SE Asia extending to Australia. One species occurs in Australia, the NT and the DR.

***L. decaisnei* (Benth.) Pojarkova**

An annual herb or low shrub to 1 m tall. All parts villous. Stipules narrowly triangular, c. 1.5 mm long. Leaves alternate; petioles 1-16 mm long; blades

slightly discolorous, obovate to orbicular, 7-33 mm long, 6-21 mm wide, L/B 1.2-1.9, base cuneate to attenuate, margin entire, apex rounded to shortly acuminate. Inflorescence of short axillary fascicles

of 2-3 male and 1-2 female flowers. Flowers 5-merous, monoecious. Male flowers: pedicels c. 2 mm long; calyx lobes oblanceolate, c. 1 mm long; petals narrowly oblanceolate, minute; disk flat, membranous, 10-lobed; stamens c. 0.5 mm long; rudimentary ovary and 3 stigmas present. Female flowers: pedicels 2-8 mm long; calyx lobes ovate, c. 2 mm long; petals triangular, c. 0.5 mm long; ovary 3-locular with 2 ovules per locule; stigmas 3, each deeply bifid. Fruit a green dehiscent capsule, depressed globose, 2-2.5 mm long, 3.5-4.5

mm diam., each of the 3 cocci containing 2 seeds, calyx lobes persisting and enlarging to 4 mm long. Seeds ecarunculate, pale brown to black, transversely rugose, the shape of a spherical sector, ecarunculate. Flowering and fruiting: Feb - July. Fig. 74

In Indonesia (Java, Timor), New Guinea and northern Australia, from the Kimberley to Cape York. Uncommon in the DR where known from the south of the region, but more common further south. In a variety of habitats and soil types.

## MACARANGA Thou.

Evergreen shrubs or slender trees with whitish smooth, thin bark. Young shoots, branchlets, stipules and petioles shortly pubescent. Stipules triangular. Leaves alternate, undersurface of blades densely covered with sessile vesicular glands which darken with age, tertiary veins  $\pm$  parallel and forming a scalariform pattern, base 3-5 nerved, margin  $\pm$  entire, with obscure glands at the ends of the veins and blister-like intramarginal glands. Flowers dioecious, in axillary bracteate panicles, spatheate bracts tomentose and densely glandular, with lacinate margins. Fruit greenish, densely covered with granular scale-like glands and scattered filiform scales. Seeds black, shiny, spherical, c. 5 mm diam., ecarunculate.

A genus of c. 280 species distributed through tropical and subtropical Africa, Asia, Australia and western Pacific Islands. In Australia 8 species occur, with 2 in the NT and DR. The local species are fast growing, short lived colonizers of gaps and margins of monsoon forest, forming dense thickets. The straight stems have been used by Aboriginal people as spear shafts (Levitt, 1981; Smith & Wightman, 1990).

- |   |                |
|---|----------------|
| 1. Leaves peltate; stipules 8-19 mm long; filiform scales on fruit 6-7 mm long .....    | M. tanarius    |
| 1. Leaves not peltate; stipules <8 mm long; filiform scales on fruit c. 2 mm long ..... | M. involucrata |

*M. involucrata* (Roxb.) Ballion var. *mallotoides* (F.Muell.) Perry

clayey soils.

A slender tree to 12 m tall. Stipules caducous, c. 4 mm long. Petioles 26-120 mm long. Leaf blades deltoid to rhomboid, 75-220 mm long, 50-171 mm wide, L/B 0.9-1.3, undersurface pubescent, veins on upper surface pubescent otherwise glabrous to glabrescent, base shortly cordately lobed with two blister-like glands on the upper surface, apex long acuminate. Male inflorescence panicle with racemose branches, 75-210 mm long, pubescent throughout. Female inflorescence 60-115 mm long. Fruit spherical, c. 5 mm diam., filiform scales c. 2 mm long. Seeds persisting after the capsule wall has dehisced. Flowering: Mar - Sept; fruiting: Sept - Nov. Fig. 74

*M. tanarius* (L.) Muell.Arg.

A shrub or small tree to 9 m tall, usually with a single stem; a whitish bloom extending to the petioles and stipules. Stems marked with circular leaf scars and transverse linear stipule scars, and exuding a red viscous sap. Stipules persisting as long as the leaves, foliaceous, 8-19 mm long. Leaves peltate; petioles 50-330 mm long; blades ovate to orbicular, 80-500 mm long, 52-445 mm wide, L/B 1-1.4, glabrous to glabrescent, apex acute to long acuminate. Male inflorescence 100-240 mm long, pubescent throughout, spatheate bracts 7-9 mm long. Female inflorescence 35-120 mm long, spatheate bracts to 20 mm long. Fruit 1-4-locular, c. 6 mm long, 9 mm diam., glands yellow-green and filiform scales 6-7 mm long. Flowering: Sept - Oct (June and Dec); fruiting: mainly Oct - Nov. Fig. 74

Endemic to Qld and the northern NT. Common in the DR. In monsoon forest with a spring-fed watertable, often on floodplain margins and

Widespread, extending north from Australia to southern China. In Australia occurring from Darwin eastward to Cape York and south to

NSW. Occurs in coastal and subcoastal monsoon forest usually in damp swales or on perennial streams.

### MALLOTUS Lour.

Shrubs or slender trees. Branchlets, petioles, young shoots, leaf undersurfaces, and inflorescence with a persistent close tomentum of stellate or dendritic hairs. Undersurface of blades and fruit ± covered with sessile vesicular glands. Stipules obscure. Leaves alternate or opposite, discolorous, penniveined with lower pair of secondary veins prominent, and reaching above half way, tertiary veins ± parallel and forming a scalariform pattern, base often with a pair of glands, margin ± entire, sometimes with glands at the ends of the veins and blister-like intramarginal glands. Flowers dioecious, in axillary or terminal racemes. Fruit 2-3-locular. Seeds usually black, shiny, spherical, ecarunculate.

A genus of c. 140 species occurring widely through the Old World tropics. Eleven species occur in Australia, with 3 in the NT and 2 in the DR. All NT species are treated here. [Airy Shaw, 1980a]

- 1. Leaves opposite ..... *M. didymochryseus*
- 1. Leaves alternate ..... 2
- 2. Glands on underside of leaves and on fruit red; leaf L/B mostly 1.1-3 ..... *M. philippensis*
- 2. Glands on underside of leaves and on fruit yellow; leaf L/B mostly 0.9-1.2 ..... *M. nesophilus*

#### *M. didymochryseus* Airy Shaw

An ?evergreen tree or shrub to 10 m tall. Bark grey, blaze cream. Branchlets, inflorescence, petioles, shoots and fruit encrusted with a dense yellow indumentum of short-armed dendritic hairs. Leaves decussate; petioles 16-50 mm long; blades broadly ovate, 50-167 mm long, 35-140 mm wide, L/B 0.9-1.2, upper surface stellate pubescent, undersurface with a soft tomentose indumentum, glands obscure, hyaline, base rounded or cordate, margin entire to shallowly dentate, veins ending in glands covered with tufts of stellate hairs, apex acute to obtuse. Male inflorescence 20-80 mm long, female 80-100 mm long. Fruit 2-locular, apparently indehiscent, 10-17 mm long, 12-14 mm diam., drying with a coarsely wrinkled surface, glands sparse, hyaline. Seeds dark brown, c. 7 mm diam. Flowering: Feb; fruiting: Feb - July. Fig. 74

Occurring in New Guinea, and northern Australia in WA and E Arnhem Land. Not known from the DR. Usually occurring in coastal vine thickets.

#### *M. nesophilus* Muell.Arg.

A semideciduous tree to 8 m tall. Bark pale, grey, fissured. Branchlets, inflorescence, petioles, shoots and leaf undersurfaces with a short dense whitish or rusty tomentum of simple and stellate hairs. Leaves alternate; petioles 6-82 mm long; blades ovate or

orbicular, rarely deltoid, rhomboid or elliptic, 20-111 mm long, 15-95 mm wide, L/B 0.9-1.2(1.6), upper surface green, glabrescent with stellate and simple hairs, glands below numerous, yellow, base truncate or cuneate, margin entire, rarely sinuate, apex acute to rounded. Male inflorescence 35-150 mm long, female 25-30 mm long. Fruit 2-3-locular, apparently indehiscent, c. 5 mm long, 8 mm diam., cocci walls thin, glands yellow turning orange as the fruit ripens. Seeds c. 4 mm diam. Flowering and fruiting: most months. Fig. 74

Endemic to northern Australia, from WA to Qld. Common in the DR. A common species of coastal vine thickets; also in sandstone gorges. The fruit are edible (Levitt, 1981).

#### *M. philippensis* (Lam.) Muell.Arg.

An evergreen tree to 10 m tall, rarely more. Bark smooth, pale grey, mottled. Leaves alternate; petioles 11-75(124) mm long; blades mostly lanceolate, also ovate or broadly elliptic, 35-210 mm long, 25-100 mm wide, L/B 1.1-3(3.6), upper surface glabrous or with scattered stellate hairs, glands below red, base cuneate or rounded, margin entire, marginal glands obscure, intramarginal glands absent, apex acute to acuminate. Male inflorescence 35-65 mm long; female 35-85 mm long. Fruit 2-3-locular, 5-6 mm long, c. 7 mm diam., covered with a dense layer of red glands. Seeds c. 4 mm diam., adhering to the

placenta after the cocci walls fall. Flowering: June - Nov; fruiting: Nov - May. Fig. 74

Distributed through Asia from India to New Guinea. In Australia, from northern NSW, through

Qld to the NT. A plant of vine thickets on a variety of soils. The glands on the fruit yield a rich orange-red dye known in India as Kamala dye [Macmillan, 1956].

## MARGARITARIA L.f.

Deciduous shrubs or small trees, dioecious. Glabrous. Branchlets densely lenticellate. Stipules persistent or deciduous. Petioles winged. Leaves alternate, distichous, lateral veins parallel, 7-13 per side, tertiary venation irregular. Bracts and bracteoles present. Inflorescence axillary, fasciculate, sessile. Male flowers: sometimes clustered, pedicellate; sepals 4, free; disk present; stamens 2-4; pistillode absent. Female flowers: sometimes clustered, pedicellate; perianth persistent; sepals free, green, membranous or fleshy; disk present; ovary ovoid. Fruit a capsule, green,  $\pm$  globular, seeds remaining on dissepiment after outer wall of capsule has fallen. Seeds ecarunculate, iridescent blue or blue-green, hemispherical, furrowed on the flat side.

A genus of 14 tropical species of which 2 occur in Australia with both extending to the NT and the DR. [Webster, 1979; Airy Shaw, 1980a; J. Bruhl, pers comm.]

- |    |  |                   |
|----|--|-------------------|
| 1. | Leaves thinly chartaceous or submembranous, acute, blackish-green when dry, margin finely undulate; ovary and fruit 3-locular, 8-11 mm diam., pedicel 10-15 mm long; rainforest..... | M. indica         |
| 1. | Leaves coriaceous, obtuse to emarginate, yellow-veined when dry, margin not undulate; ovary and fruit 2-locular, 5-6 mm diam., pedicel 4-8 mm long; open forest.....                 | M. dubium-traceyi |

### M. dubium-traceyi Airy Shaw & Hyland

Shrub or slender tree to 5 m tall. Bark smooth and flakey. Stipules caducous, triangular, membranous, c. 2 mm long. Petioles 4-11 mm long. Leaf blades concolorous, elliptic to obovate, 45-134 mm long, 22-75 mm wide, L/B 1.6-2.3, venation pale in dried specimens, apex obtuse,  $\pm$  emarginate, minutely mucronate, margin entire, base attenuate. Fruit on pedicels 4-8 mm long; 5-6 mm diam., 2-locular. Seeds 4-5 mm diam. Flowering: Oct - Nov; fruiting: most months. Fig. 74

Distributed eastward from Melville Is., around the Gulf of Carpentaria to Cape York. Grows in sandstone and coastal monsoon forest in the DR and Top End, but around the Gulf growing

with Bulwaddy, Lancewood and Eucalypts. In the DR only known from Melville Is.

### M. indica (Dalzell) Airy Shaw

Small tree 5-20 m tall. Bark in trees peeling in patches to give a cream and grey mottled appearance, blaze green with pale pink inner bark. Stipules persistent or deciduous, lanceolate to triangular, membranous to chartaceous, 1.7-5.6 mm long. Petioles 4.6-12.5 mm long. Leaf blades discolorous, elliptic, ovate or obovate, 11-115 mm long, 23-58 mm wide, apex acute, margin finely undulate, base attenuate. Fruit on pedicels 9-14 mm long; 7-9 mm diam., 3-locular. Seeds c. 3 mm diam. Flowering: Nov - Dec; fruiting: Jan - Mar. Not illustrated.

SE Asia, New Guinea, Qld and the NT. In the DR only known from Gunn Point in vine thicket.

## MICROCOCCA Benth.

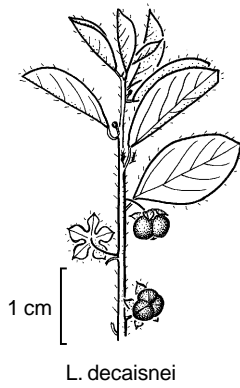
A genus of 12 species found in the Old World tropics. One introduced species occurs in the DR.

### \*M. mercurialis (L.) Benth.

An annual herb to 30 cm tall. Stems striate with

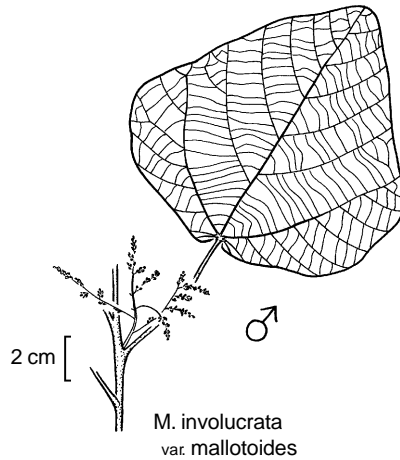
lines of raised tissue and with the petioles, inflorescence, and veins on the undersurfaces of

**Leptopus**

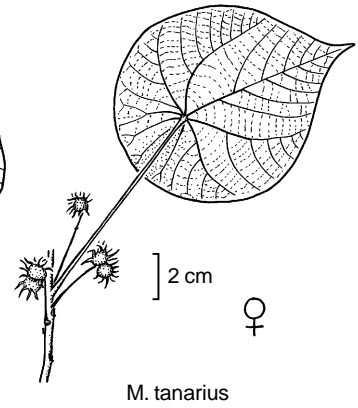


*L. decaisnei*

**Macaranga**

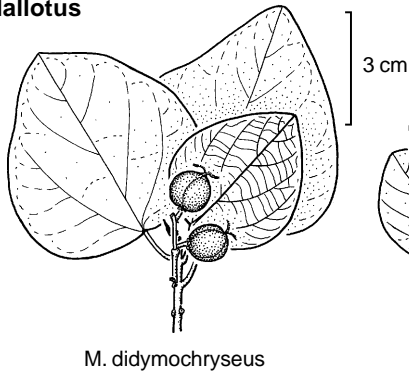


*M. involucrata*  
var. *mallotoides*

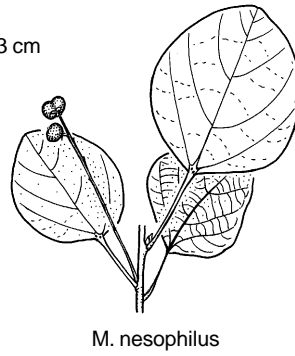


*M. tanarius*

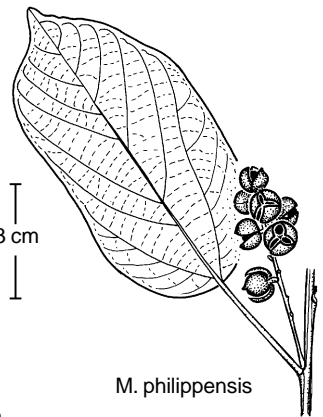
**Mallotus**



*M. didymochryseus*



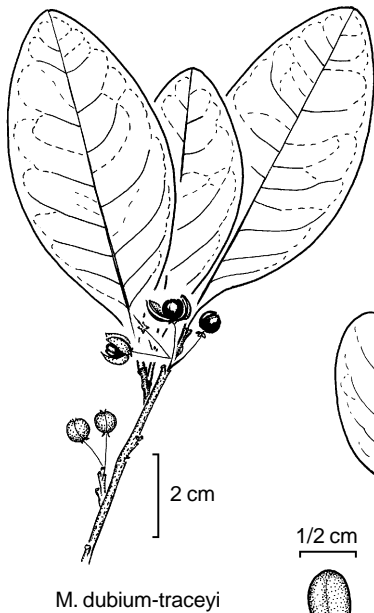
*M. nesophilus*



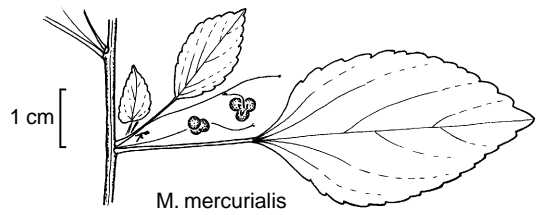
*M. philippensis*

**Micrococca**

**Margaritaria**

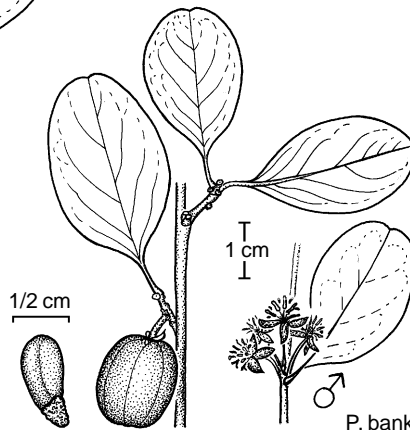


*M. dubium-traceyi*

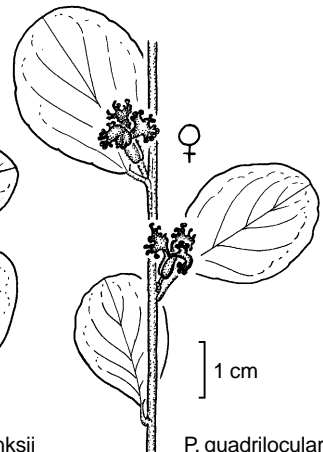


*M. mercurialis*

**Petalostigma**



*P. banksii*



*P. quadriloculare*

the leaves sparsely pilose with antrorsely curved stiff hairs. Stipules minute, gland tipped. Leaves alternate; petioles 10-18 mm long, grooved above, with minute, digitate glands at junction of blade; blade discolorous, ovate or elliptic, 24-35 mm long, 10-16 mm wide, L/B 1.6-2.4, lateral veins at an acute angle, surfaces finely pellucid dotted, base rounded to cuneate, margin regularly serrate, lobes incurved so that the minute apical glands are in

the sinuses, apex acute. Inflorescence axillary, racemose, to 60 mm long. Flowers monoecious. Fruit a reddish, dehiscent, 3-locular capsule with 1 seed per locule; 4 mm diam., sparsely pilose. Seeds red or grey, c. 2 mm diam., pitted, ecarunculate. Flowering and fruiting: Wet season. Fig. 74

Native to tropical Africa and India. An uncommon weed of gardens in Darwin.

**OMALANTHUS A.Juss.**

*Homalanthus* A.Juss., orth. variant

A genus of 35 species found in Indo-Malesia, Polynesia and northern Australia, where 3 species are known. In the NT and DR 1 species occurs.

*O. novo-guineensis* (Warb.) Lauterb. & K.Schum.

A shrub or small tree to 15 m with light brown bark bearing old leaf scars. Glabrous throughout. Stipules caducous, pale yellow, lanceolate, 13-22 mm long, 4-5 mm wide. Juvenile leaves cordate, to 265 mm long, 233 mm wide on petioles to 325 mm long. Leaves alternate; petioles 9-140 mm long; blades discolorous, ovate, broadly ovate or suborbicular, (43)73-176 mm long, (28)50-129 mm wide, L/B 1.0-1.7, with distinct sub-parallel secondary and tertiary veins, base rounded or truncate, 3-veined, ± with 2 flat elliptical glands on the blade below and 1 raised discoid gland at the junction of the petiole and blade above, margin entire, apex acuminate or acute. Inflorescence a terminal raceme, (20)50-180(275) mm long. Flowers in short fascicles of c. 3, subtended by a fan-like bract above a compound gland, monoecious.

Male flowers: peduncles to 2 mm long; sepals 2, fan-like, 1-2 mm long; petals 0; stamens usually 6-10, almost sessile, in two rows; disk absent. Female flowers: peduncles to 3 mm long; calyx and corolla as for male flowers; ovary bilocular; styles persistent, 2, connate at base, divaricate, recurved, c. 0.5 mm long. Fruit mauve, dehiscent, flattened ellipsoid-ovoid, bilocular, c. 9 mm long, 8-9 mm wide, surface mealy, the thin capsule containing two brown seeds enclosed in a thin bright yellow fleshy layer. Flowering: most months, peaking in Oct; fruiting: July - Jan. Fig. 73

In eastern Malesia including the Moluccas, Lesser Sunda Is., New Guinea, Solomon Is., and in northern Australia from the Kimberley to Cape York. Common in the DR within its very restricted habitat. Grows in monsoon forest with a high permanent watertable.

**PETALOSTIGMA F.Muell.**

Trees or shrubs with simple hairs, eglandular. Stipules caducous. Leaves alternate, mostly entire. Flowers dioecious, in short axillary fascicles. Fruit a globular capsule, orange-brown, thinly fleshy, explosively dehiscent, 3-4-locular with 1 seed per locule. Seeds pale brown, shiny, flattened-ellipsoid, carunculate, c. 8 mm long.

A genus of 6 species occurring in Australia and New Guinea. Four species in the NT, with 3 in the DR. [Airy Shaw, 1976] Several species have reported medicinal uses (Levitt, 1981; Smith & Wightman, 1990).

- |  |                          |
|--|--------------------------|
| 1. Multi-stemmed subshrub <1 m tall .....                          | <i>P. quadriloculare</i> |
| 1. Small trees, >1 m tall .....                                    | 2                        |
| 2. Leaves glabrous or glabrescent below, often oblanceolate .....  | <i>P. banksii</i>        |
| 2. Leaves sericeous below, ovate, narrowly ovate or elliptic ..... | <i>P. pubescens</i>      |

**P. banksii** Britten & S.Moore

A slender deciduous tree 2-4 m tall; bark rough. Young growth sericeous, hairs persisting on petioles and leaf veins, otherwise becoming glabrous. Stipules c. 2 mm long. Leaves often on short lateral shoots; petioles 2-9 mm long; blades glossy above, dull below, oblanceolate to elliptic, 19-50 mm long, 10-30 mm wide, L/B 1.3-2.4, base abruptly attenuate, apex obtuse or emarginate. Fruit 12-17 mm long, 13-15 mm wide, glabrous. Flowering: Sept - Nov; fruiting: Jan - July. Fig. 74

Endemic to Australia, in Qld and NT north of 20°S. More common in southern parts of the DR. In a variety of habitats, usually on texture contrast soils which become arid during the dry season.

**P. pubescens** Domin

A small evergreen tree to 6 m tall, taller south of the DR; bark rough. Young growth, branchlets, petioles and undersides of leaves densely sericeous, sometimes rusty. Stipules c. 1.5 mm long. Petioles 4-10 mm long; blades strongly discolorous, ovate, narrowly ovate or elliptic, 18-60 mm long, 9-40 mm wide, L/B 1.2-1.9(2.7), glabrous to glabrescent above, base abruptly attenuate, apex obtuse, often with a

minute mucro. Fruit globose to depressed globose, 16-25 mm long, 17-20 mm wide, glabrescent. Flowering: Sept - Dec; fruiting: Feb - Oct. Not illustrated. Quinine Tree

Found in northern Australia from the Kimberley to Cape York, in New Guinea, and as far south as northern NSW. Common in the DR. Occurs in open forest and woodland on a variety of soils.

**P. quadriloculare** F.Muell.

An evergreen erect, multi-stemmed subshrub to 1 m tall. Young growth and branchlets densely sericeous with a silvery sheen, upper surface of leaves becoming glabrous with age. Stipules narrowly triangular, c. 4 mm long. Petioles 4-8 mm long. Leaf blades discolorous, ovate, elliptic or orbicular, rarely narrowly elliptic, 22-70 mm long, 10-50 mm wide, L/B 1.1-2.6, base abruptly attenuate, margin entire or shallowly dentate, slightly inrolled, apex acute or obtuse, often with a minute mucro. Fruit globose, 14-18 mm long, glabrous. Flowering: May - Nov; fruiting: Mar - July. Fig. 74

Found in northern Australia from the Kimberley to Cape York. Common in the DR. Occurs in savanna usually on skeletal or shallow lateritic soils.

**PHYLLANTHUS L.**

Shrubs, subshrubs, annual or perennial herbs (also trees outside DR). Stems foliose throughout or foliage phyllanthoid (distichous on lateral branchlets, giving the appearance of pinnate leaves). Stipules persistent, often peltate. Leaves alternate, simple, entire. Flowers small, monoecious, rarely dioecious; tepals usually in two whorls, usually with a defined midrib and coloured hyaline margin; male flowers with disk glands often present; stamens 2-6, filaments free or connate; female flowers with tepals usually larger than males; disk glands often present, variously shaped; ovary usually 3-locular with 2 ovules per locule; styles 3, bifid. Fruit a depressed globular capsule with walls and seeds falling away from a persistent dissepiment, usually lobed, in one species a berry. Seeds trigonous, ecarunculate.

A genus of c. 600 species occurring in tropical and subtropical regions of both hemispheres. About 50 species occur in Australia with c. 20 species in the NT and 11 in the DR.

Three introduced species are commonly in cultivation in the DR. *Phyllanthus emblica* L. and *P. acidus* (L.) Skeels (syn. *P. distichus* Muell.Arg.) are small trees with edible, acid, fleshy fruit (Scholefield, 1984). Both species are illustrated by Hearne (1975) and their uses listed by Macmillan (1956). *P. emblica* has crowded leaves <5 mm wide while *P. acidus* has leaves >15 mm wide. A third species, known in the nursery trade as Waterfall Plant is a common low ornamental shrub.

- |   |                       |
|---|-----------------------|
| 1. Scandent shrub with fleshy fruit .....   | <i>P. reticulatus</i> |
| 1. Shrubs, subshrubs or herbs; fruit dry .....  | 2                     |
| 2. Fruit conspicuously tuberculate; annual herb on floodplains .....                                | <i>P. urinaria</i>    |
| 2. Fruit smooth or almost so .....  | 3                     |
| 3. Stems and leaves hispidulous; leaves broadly elliptic to orbicular;<br>white latex present ..... | <i>P. flagellaris</i> |



- |     |  |                             |
|-----|--|-----------------------------|
| 3.  | Plants glabrous; leaves not elliptic or orbicular; latex absent .....                  | 4                           |
| 4.  | Foliage on short lateral branchlets and having the appearance of compound leaves ..... | 5                           |
| 4.  | Foliage present on all stems, not having the appearance of compound leaves .....       | 7                           |
| 5.  | Leaves >4 times as long as wide; seeds muricate-striate .....                          | <i>P. maderaspatensis</i>   |
| 5.  | Leaves <3 times as long as wide; seeds not muricate-striate .....                      | 6                           |
| 6.  | Seeds with 5-7 raised longitudinal ridges .....  | <i>P. amarus</i>            |
| 6.  | Seeds transversely rugose .....  | <i>P. lei</i>               |
| 7.  | Mature capsules 1-2 mm diam.; tepals <0.5 mm long .....                                | <i>P. minutiflorus</i>      |
| 7.  | Mature capsules >2 mm diam.; tepals >0.5 mm long .....                                 | 8                           |
| 8.  | Capsule >5 mm diam. ....   | <i>P. 'Golden Sands'</i>    |
| 8.  | Capsule <5 mm diam. ....   | 9                           |
| 9.  | Shrub to 2 m tall; leaves 5-15 mm wide .....   | <i>P. grandisepalus</i>     |
| 9.  | Subshrubs mostly <0.5 m tall; leaves <6 mm wide .....                                  | 10                          |
| 10. | Seeds smooth, obscurely areolate .....   | <i>P. sp. aff. virgatus</i> |
| 10. | Seeds muricate or colliculate .....  | 11                          |
| 11. | Pedicels >3 mm long; perennial on well drained sites .....                             | <i>P. trachygyn</i>         |
| 11. | Pedicels <2.5 mm long; annual on heavy soils .....                                     | <i>P. maderaspatensis</i>   |

**\**P. amarus* Schum. & Thonn.**

An annual, glabrous herb to 60 cm tall. Stipules setaceous, c. 2 mm long. Leaves phyllanthoid, almost sessile on petioles to 1 mm long; blades discolorous, oblong, often broader towards the apex, 4-12 mm long, 1.6-5 mm wide, L/B 2.2-2.5, base obtuse, apex rounded. Flowers, usually 1 of each sex in the outer leaf axils; males on pedicels c. 1.8 mm long; females on pedicels 1-2.5 mm long; tepals oblanceolate with broad white margins, c. 1 mm long. Capsule green, smooth, 1-1.5 mm long, 1.5-2 mm diam. Seeds pale brown, c. 1 mm long, with 5-7 raised longitudinal ridges on the outer surface and with concentric ridges on the sides. Flowering and fruiting: most months. Fig. 75

A pantropic weed apparently native to the New World. A common weed in suburban Darwin and elsewhere.

***P. flagellaris* Benth.**

A prostrate hispid (rarely glabrous) herb shooting each year from a perennial rootstock. Stems reddish, foliose throughout, to 40 cm long. Stipules c. 1 mm long. Leaves exude milky latex when broken; petioles to 0.5 mm long; blades elliptic, obovate to orbicular, 5-13 mm long, 4-9 mm wide, L/B 0.8-1.6, base obtuse or cordate, apex obtuse with a minute mucro. Flowers dioecious in fascicles in the outer axils; males with conspicuous globular glands;

females solitary in the outer axils, on pedicels c. 5 mm long; tepals green with a narrow white or red margin, unequal, oblanceolate c. 4 mm long; disk prominent, irregularly lobed. Capsule pale brown, smooth, c. 3 mm long, 6 mm diam. Seeds brown, c. 2.5 mm long, surface smooth, minutely hairy, apical end shortly pointed. Flowering and fruiting: Nov - July. Fig. 75

Apparently endemic to the Top End of the NT. Relatively common in the DR on lateritic and red earth soils in open forest.

***P. grandisepalus* F.Muell. ex Muell.Arg.**

An erect, perennial shrub to 2 m tall, foliose throughout. Often glaucous with all parts excluding the capsule minutely white papillose, or smooth and glabrous. Stipules reddish, 1-1.5 mm long, triangular. Petioles to 1 mm long; leaf blades slightly discolorous, narrowly obovate, 7-25 mm long, 5-15 mm wide, L/B 1.4-2.8, base obtuse to cuneate, apex obtuse with a minute mucro. Flowers either solitary in the axils or with 2 males and 1 female together; tepals green with a narrow white; males almost sessile; margin, tepals c. 1 mm long; females on pedicels 3-4 mm long; tepals elliptic or narrowly obovate, 3-6 mm long, 1.5-4 mm wide. Capsule pale brown, smooth, c. 3 mm long, 4-4.6 mm diam. Seeds pale brown with white longitudinal striations and faint horizontal lamellae on sides and back,

c. 2 mm long. Flowering and fruiting: Dec - June, occasionally later. Fig. 75

Apparently endemic to the northern NT. Relatively common in the DR on sandy soils often associated with sandstone. This species is very close to *P. carpentariae*, F.Muell. ex Muell.Arg. with which it intergrades. In some specimens from drier parts of the Top End the papillae have developed into short hairs, leaves become smaller and the white striations on the seeds become obscure.

*P. lei* S.Moore

An erect annual, glabrous herb to 40 cm tall, often with reddish stems. Foliage phyllanthoid. Stipules c. 0.7 mm long, subulate. Leaves on petioles <0.5 mm long; blades oblong, obovate or oblanceolate, 2.5-14 mm long, 1-5 mm wide, L/B 2-3, base obtuse or cuneate, often unequal, apex obtuse often with a minute mucro. Flowers monoecious; male flowers few, 1 or 2 together in upper axils; female flowers one per axil, on pedicels 0.5-2 mm long; tepals greenish or hyaline, linear, c. 0.9 mm long, recurved after capsules dehisce. Capsule red, faintly warted especially when young, 1-1.5 mm long, 2-2.5 mm diam. Seeds pale brown, c. 1 mm long, the back transversely rugose with 8-10 ridges and the sides with a lunar cavity. Flowering and fruiting: Mar - June. Fig. 75

Apparently endemic to the northern NT between Darwin and the Gulf of Carpentaria. Comparatively common in the DR on seasonal soaks and seepage areas on sandy soils.

*P. maderaspatensis* L.

A blue-green, glabrous annual or biennial herb or subshrub to 70 cm tall. Branchlets angular, foliage phyllanthoid and on main stems. Stipules c. 1-2 mm long, membranous with a red midrib, patent. Petioles c. 1 mm long; leaf blades oblanceolate, spatulate or linear-oblong, 9-35 mm long, 2-6 mm wide, L/B 4-11.5, base obtuse or cuneate, apex obtuse or acute often with a minute mucro. Flowers monoecious with 2 male and 1 female flowers in axillary fascicles; male flowers on pedicels c. 1 mm long; female flowers on pedicels c. 2 mm long; tepals with broad white margins, obovate, 1.5-2 mm long. Capsule grey, smooth, c. 1.5 mm long, 3 mm diam. Seeds pale brown, c. 1.5 mm long, muricate-striate, the back with longitudinal rows of tubercles, the sides with concentric rows. Flowering and fruiting: mostly Jan - July, occasionally later. Fig. 75

Found throughout the Old World tropics and widespread in northern Australia. Rare in the DR although common in more inland areas, occurring on heavy clay soils.

*P. minutiflorus* F.Muell. ex Muell.Arg.

An erect or decumbent annual, glabrous herb to 30 cm tall. Stems foliose throughout. Stipules c. 0.5 mm long, membranous. Petioles c. 0.5 mm long; leaf blades elliptic, obovate, oblong, linear-oblong or rarely orbicular, 3-12 mm long, 1.2-5 mm wide, L/B 1.3-5, base obtuse, apex obtuse or acute occasionally with a minute mucro. Flowers monoecious with 1 or 2 male flowers together with 1 female flower in fascicles in upper axils; female flowers on filiform pedicels 1-3 mm long; tepals with hyaline margins and a dark midrib, elliptic, c. 0.4 mm long. Capsule green to pale brown, smooth, 0.8-1 mm long, 1-2 mm diam. Seeds brown, 0.6-0.8 mm long, regularly muricate to colliculate. Flowering and fruiting: Mar - July. Fig. 75

Found in northern Australia from the Kimberley to Cape York and in New Guinea. Comparatively common in the DR on seasonally damp sandy soils.

*P. reticulatus* Poir.

A deciduous, scandent perennial shrub with stems to 15 cm diam., glabrous or densely hispidulous, foliage not obviously phyllanthoid. Stipules 1-2 mm long, triangular. Leaves on petioles 1-5 mm long; blades discolorous, ovate or oblong orbicular, 13-64 mm long, 11-36 mm wide, L/B 1.1-2.3(2.6), base attenuate to truncate, apex acute or obtuse. Flowers monoecious males and females usually together in dense fascicles of up to 15 flowers, often racemose on slender leafless branchlets; males almost sessile or shortly pedicellate; females on pedicels to 0.6 mm long; tepals green with a broad hyaline margin, orbicular, 1-1.5 mm long. Fruit fleshy, maturing blue-black, 4-5 mm long, 4-8 mm diam, 6 or more locular. Seeds pale brown c. 2.5 mm long, finely reticulate. Flowering and fruiting: most months. Fig. 75

Found throughout the Old World tropics and widespread in northern Australia. Common in the DR, occurring in monsoon forest in a variety of situations, or in riparian habitats. Included here is *P. ciccoides* Muell.Arg. sensu Airy Shaw (1980b) including var. *puberulous* Airy Shaw. Webster & Airy Shaw (1971) distinguish *P. ciccoides* from *P. reticulatus* in having inter alia deciduous tepals. The species treated here has persistent tepals and appears to be equivalent to the species described by Backer & Bakhuizen van den Brink (1963) and Hooker (1885) as *P. reticulatus*.

*P. trachygyna* Benth.

An erect, glabrous, 1-4-stemmed subshrub to 60

Phyllanthus

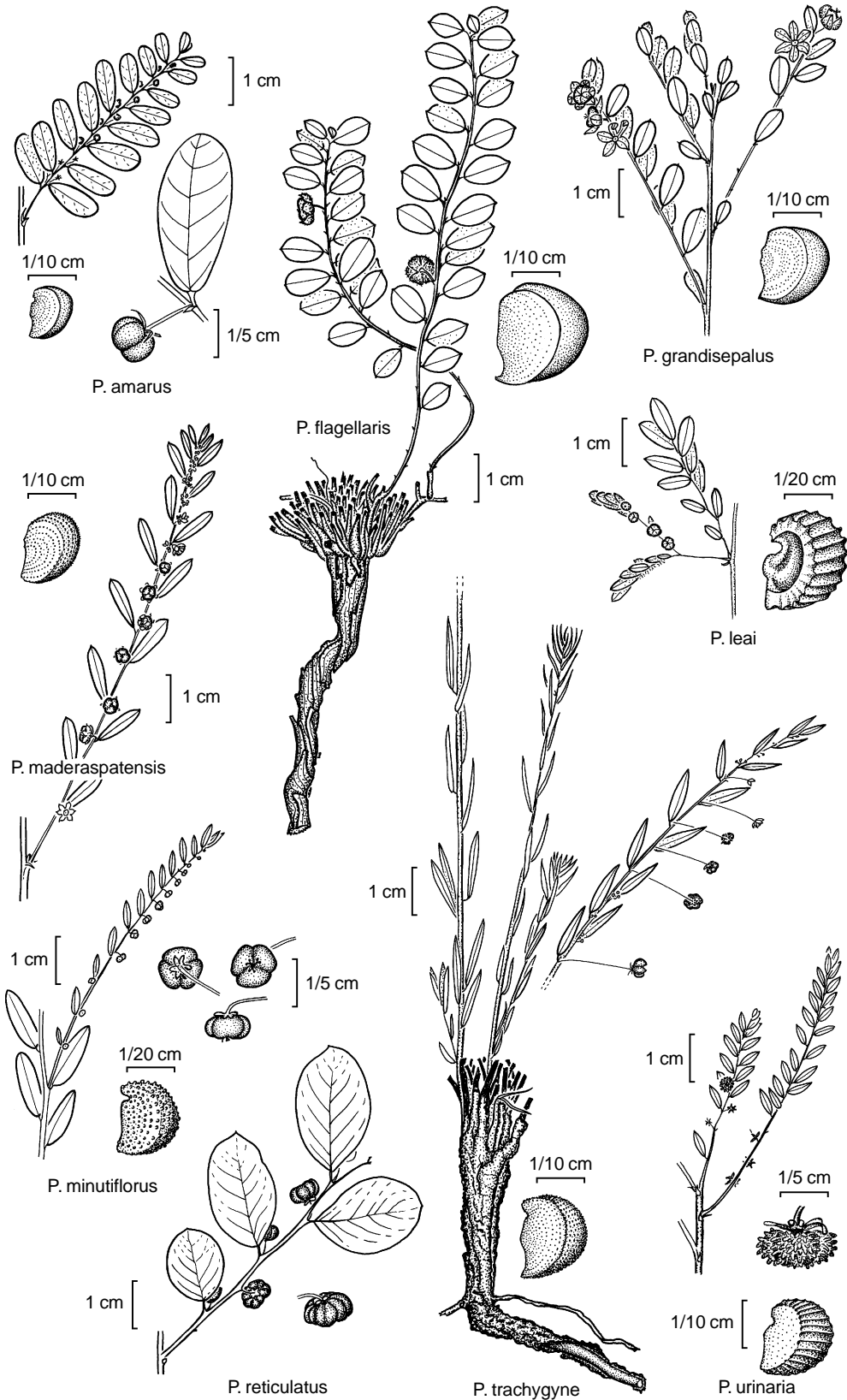


Fig. 75

cm tall, shooting each year from a perennial rootstock. Branchlets finely ribbed with decurrent tissue from the leaf bases, foliose throughout, largely unbranched. Stipules 1-2 mm long, broadly triangular. Petioles to 1 mm long; leaf blades discolorous, narrowly lanceolate, narrowly elliptic or oblong, 6-22 mm long, 2-5 mm wide, L/B 2.5-8.8, base rounded or cuneate, apex obtuse to acute. Flowers monoecious; 1 female and 1-2 males in axils; males on pedicels c. 4 mm long; females on filiform pedicels 3-16 mm long; tepals with red midrib and broad hyaline margins, linear-oblong, 1-1.5 mm long. Capsule grey-brown, smooth, c. 2 mm long, 3-4 mm diam. Seeds grey when mature, c. 2 mm long, regularly muricate to colliculate. Flowering and fruiting: Jan - May. Fig. 75

Occurs in northern Australia from the Kimberley to northern Qld. In the NT, the species occurs in near coastal areas including Melville Is. Relatively common in the DR, often on poorly drained soils.

#### *P. urinaria* L.

An erect, glabrous annual herb to 1 m tall with one main stem. Branchlets angular or narrowly winged, foliage phyllanthoid. Stipules c. 1 mm long, setaceous. Leaves almost sessile; blades narrowly lanceolate, linear-oblong, often obovate, 5-15 mm long, 3-5 mm wide, L/B 1.6-3.5, base obtuse, asymmetric, apex obtuse or acute often with a minute mucro. Flowers monoecious with 1-2 male and 1 female flower in axillary fascicles; male flowers falling early, on pedicels to 1; female flowers on pedicels to 1 mm long; tepals with a narrow green midrib and broad hyaline margins, narrowly lanceolate, c. 1 mm long. Capsule greenish, tuberculate, 2-2.5 mm long, 3-4 mm diam. Seeds brown, c. 2 mm long, the back with c. 20 rows of transverse ridges, the ridges and sides of the seed muricate. Flowering and fruiting: usually Feb - June. Fig. 75

A widespread species in the Old World tropics, also occurring in northern Qld. Common in the DR on heavy soils on floodplains.

#### *P.* 'Golden Sands'

An erect, glabrous few to many stemmed subshrub to 50 cm tall, shooting each year from a woody perennial rootstock. Stems reddish, angular, foliose throughout, unbranched. Stipules c. 1 mm long. Petioles 1-1.5 mm long; leaf blades held erect against the stems, slightly discolorous, narrowly elliptic-oblong to linear, 9-28 mm long, 1-9 mm wide, L/B 2.1-9, base obtuse, apex acute with a minute mucro. Flowers dioecious; tepals green with

a narrow hyaline margin; males in fascicles of up to 4 flowers on filiform pedicels 0.5-2 mm long; tepals c. 1 mm long, coriaceous; females solitary in the axils on pedicels 10-12 mm long; tepals lanceolate, 3-3.5 mm long. Capsule pale brown, smooth, 3-4 mm long, c. 6 mm diam. Seeds pale brown, c. 2 mm long, smooth, sharply angled. Flowering and fruiting: Aug - Feb. Fig. 76

Apparently endemic to the Top End of the NT. Common in the DR on well drained soils in open forest and woodland.

#### *P.* sp. aff. *virgatus* Forst.f.

An erect, glabrous, many stemmed, broom-like subshrub to 60 cm tall. Stems angular, foliose throughout. Stipules c. 1 mm long. Petioles to 1 mm long; leaf blades held erect against the stems, slightly discolorous, linear-oblong to linear, 4-15 mm long, 1-3.5 mm wide, L/B 2.5-6, base rounded, apex obtuse. Flowers 1 female and 2 males in fascicles in the axils; females on filiform pedicels 5-7 mm long; tepals with a red midrib and a broad hyaline margin, c. 1 mm long. Capsule pale brown, smooth to obscurely pustulate, c. 2 mm long, 3 mm diam. Seeds brown, c. 2 mm long, smooth, obscurely areolate, usually slightly shiny. Flowering and fruiting: Dec - July. Fig. 76

A common species in the drier areas south of the DR, with a few local records. Occurs in a variety of habitats. *Phyllanthus virgatus* sens. lat. is a widespread tropical species. The group is in need of revision and no doubt includes a number of taxa.

### Phyllanthus

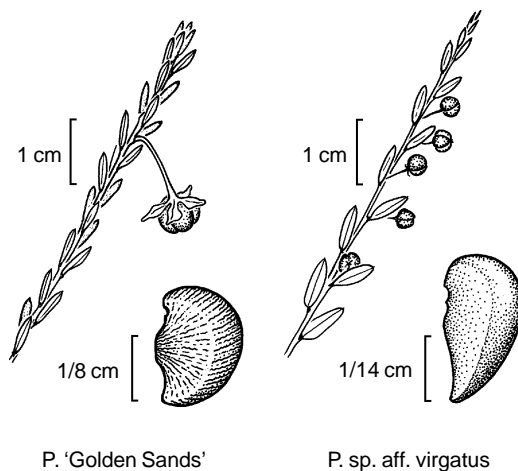


Fig. 76

## PORANTHERA Rudge

A genus of 10 species in Australia and New Zealand; 3 in the NT and 1 in the DR.

### *P. microphylla* Brongn.

Annual glabrous erect herb, to 7 cm high. Stipules membranous, subulate, c. 1.5 mm long, sometimes toothed. Leaves alternate, simple, entire, discolorous, spatulate, 12-20 mm long, 4-6 mm wide, midrib prominent below. Inflorescence a compact terminal bracteate head-like raceme to 10 mm long. Bracts foliaceous, 1.5-2 mm long. Pedicels 2.5-6 mm long. Flowers monoecious; sepals 5, ±free, linear to narrowly oblanceolate, white with pinkish markings; petals 5, ±free, much smaller than sepals or obscure. Male flowers: sepals 0.6-0.8 mm long; stamens 5, free; anthers 4-locular, opening by terminal pores.

Female flowers: ovary 3-celled, each cell with 2 ovules, 6-lobed; styles 3, divided almost to base into 2 linear branches. Fruit a thin-walled dehiscent capsule, depressed globular, c. 2 mm diam. Seeds 6, reddish, in shape a segment of a sphere, c. 0.6 mm long, alveolate; caruncle absent. Flowering and fruiting: Mar - July. Fig. 77

In all mainland states and New Zealand; widespread though uncommonly collected across the Top End; scattered records in the DR from Melville Is. to Litchfield NP. Found in open forest. A variable taxon over its range and as presently circumscribed almost certainly includes several taxa.

## SAUROPUS Blume

Subshrubs or perennial herbs, in the DR with annual aerial parts. Stems usually foliose throughout, rarely phyllanthoid. Stipules persistent. Leaf blades alternate, entire, coriaceous, almost sessile, with a strong central vein usually ending in a minute mucro, and with obscure secondary venation. Flowers dioecious or monoecious, axillary; perianth usually thick and coriaceous and lacking the hyaline margin seen in *Phyllanthus*. Male flowers with tepals in two whorls of 3, free or connate into a tube; stamens 3, usually connate into an androphore; disk absent. Female flowers with tepals in 2 whorls of 3, shortly connate, mostly larger than in the male; disk absent; ovary 3 locular with 2 ovules per locule; styles entire or bifid. Fruit a capsule (in DR), ovoid or ellipsoid. Seeds triquetrous, exarillate.

A genus of c. 40 species occurring from tropical Australia to India. About 25 species occur in Australia, with c. 15 species in the NT and 6 in the DR. This genus was treated in the Flora of Central Australia (Jessop, 1981) as *Synostemon*.

- |   |                             |
|---|-----------------------------|
| 1. Leaves cordate .....   | <i>S. ditassoides</i>       |
| 1. Leaves not cordate .....   | 2                           |
| 2. Flowering stems leafless or with 1-3 leaves .....                                | <i>S. 'Darwin'</i>          |
| 2. Flowering stems with numerous leaves .....                                       | 3                           |
| 3. Leaves broad, usually <3 times longer than wide .....                            | 4                           |
| 3. Leaves narrow, >3.5 times longer than wide .....                                 | 5                           |
| 4. Plants glabrous; leaves concolorous, margins flat .....                          | <i>S. ochrophyllus</i>      |
| 4. Plants pilose; leaves discolorous, margins recurved .....                        | <i>S. 'Melville Island'</i> |
| 5. Leaves linear, 0.5-0.6 mm wide; tepals in male flower c. 1.5 mm long .....       | <i>S. glaucus</i>           |
| 5. Leaves narrowly elliptic, 1.5-9 mm wide; tepals in male flowers >2 mm long ..... | <i>S. 'Tiwi'</i>            |

### *S. ditassoides* (Muell.Arg.) Airy Shaw

*Phyllanthus ditassoides* Muell.Arg.

A prostrate or erect several stemmed herb to 45 cm tall. Branchlets terete, usually foliose

throughout. Stems, leaf margins, veins and tepals hispidulous. Stipules c. 0.5 mm long. Leaf blades slightly discolorous, ovate, broadly ovate to orbicular, 4-35 mm long, 5-32 mm wide,

L/B 0.8-1.5, base cordate, apex obtuse to acute with a minute mucro. Flowers dioecious or monoecious; males in fascicles in the outer axils; females solitary in the axils on pedicels 2-3 mm long; tepals spatulate, 2-3 mm long. Capsule grey, smooth, ovoid-ellipsoid, 7-9 mm long, 7-8 mm diam. Seeds brown, c. 6 mm long, smooth, minutely areolate, sharply angled. Flowering and fruiting: Oct - July. Fig. 78

Apparently endemic to the central and western Top End of the NT. Relatively common in the DR on sandy or other well drained soils in open forest and woodland.

*S. glaucus* (F.Muell.) Airy Shaw

*Phyllanthus glaucus* (F.Muell.) Baillon

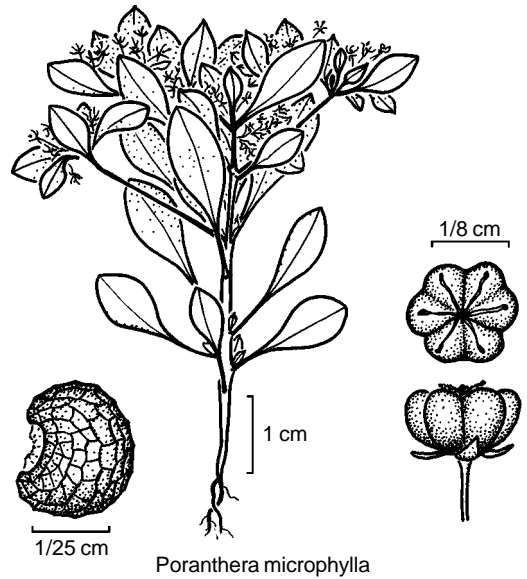
An erect, glabrous multistemmed subshrub to 50 cm tall. Stems striate with fine grooves, foliose throughout. Stipules c. 0.5 mm long, subulate. Leaves blades linear, 4-14 mm long, 0.5-0.6 mm wide, L/B 8-23. Flowers dioecious or monoecious; males 1-2 in axils, on pedicels c. 1 mm long; tepals spatulate, c. 1.5 mm long, connate for 1/2 their length; females solitary in axils, on pedicels c. 5 mm long; tepals spatulate, 6-12 mm long; styles spreading, almost entire. Capsule grey, smooth, ellipsoid, 10-12 mm long, c. 7 mm diam. Seeds grey when mature, c. 8 mm long, with a thin firm spongy, irregularly pitted surface, margins sharply angled with irregular scallops. Flowering and fruiting: Aug - May. Fig. 78

Probably an NT endemic; widespread in the Top End. In the DR this species is known from Litchfield NP where it occurs on fine sandy soils on sandstone and from south of Bynoe Harbour and east of the Bark Hut Inn.

*S. ochrophyllus* (Benth.) Airy Shaw

*Phyllanthus ochrophyllus* Benth.

An erect glabrous single-stemmed subshrub to 30 cm tall. Stems flattened, foliage phyllanthoid or plants foliose throughout. Stipules filiform, c. 0.5 mm long. Leaf blades concolorous, elliptic, obovate or ovate, 8-47 mm long, 4-30 mm wide, L/B 1.2-2.6, base broadly cuneate, apex acute or obtuse with a minute mucro. Flowers dioecious or monoecious, solitary in the axils, yellow-green, pendulous, on pedicels 2-3 mm long, tepals narrowly lanceolate, lacking a distinct midrib; males with tepals c. 3 mm long, apex slightly recurved; females with tepals c. 4 mm long, styles erect, c. 2 mm long, shortly connate at base, bifid. Capsule ovoid, c. 9 mm diam. Seeds not seen. Flowering and fruiting: Oct - Dec. Fig. 78



*Poranthera microphylla*

Fig. 77

Apparently endemic to the DR, but poorly collected. This species occurs on well drained soils in open forest and woodland.

*S. 'Darwin'*

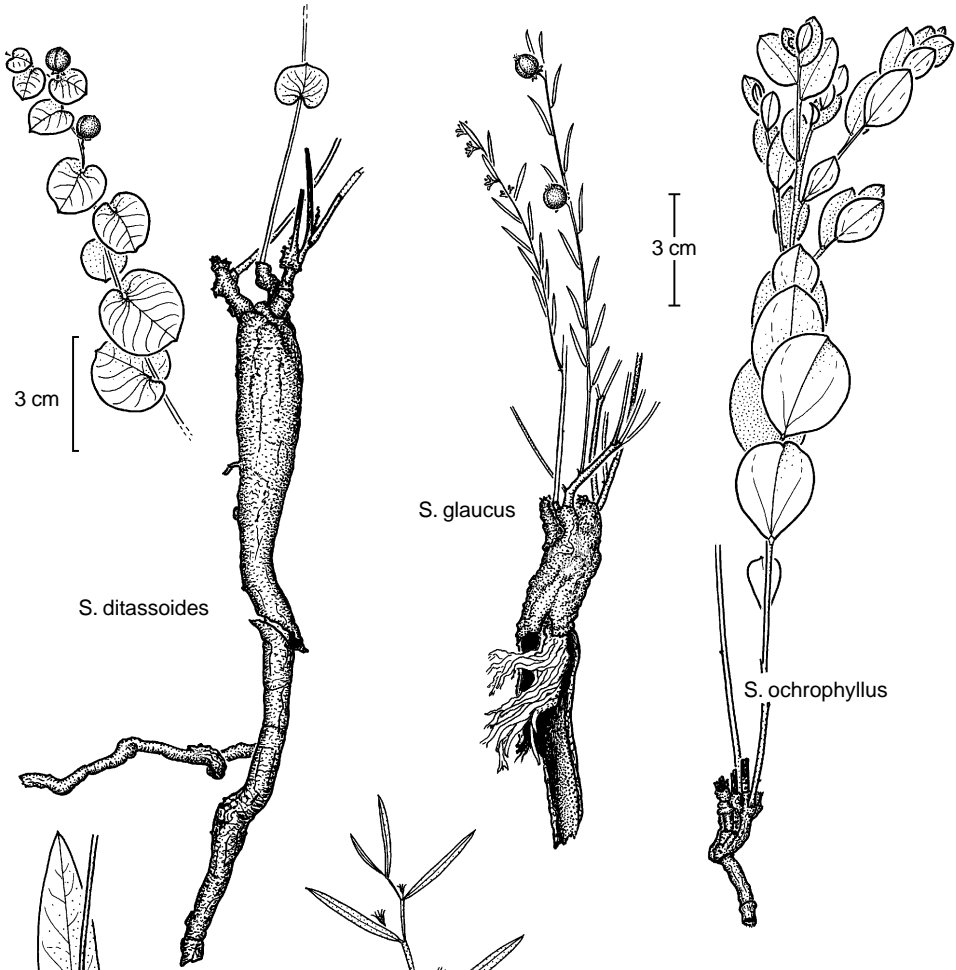
An erect glabrous single-stemmed subshrub to 50 cm tall. Stems striate, finely fluted, unbranched or occasionally branched at an acute angle, with 0-several leaves. Stipules 2-2.5 mm long. Leaves widely spaced, blades blue-green when fresh, variable in shape, lanceolate, linear, to elliptic or ovate, 30-55 mm long, 3-27 mm wide, L/B 1.3-13, base attenuate, obtuse or cuneate, apex acute to obtuse. Flowers dioecious, or monoecious on separate branches; males in fascicles of 1-several flowers in axils on leafless branches; tepals yellow-green, unequal, elliptic, 2-2.5 mm long; stamens 3, anthers fused to the angles of rhomboid structure on a short androphore, axis of androphore exceeding the anthers; females solitary in the axils, often on leafless branches; pedicels 5-9 mm long; tepals yellow-green, unequal, elliptic, 3-4 mm long. Capsule pale green, ellipsoid, indistinctly 3-lobed, c. 8 mm long, 10 mm diam. Seeds stramineous, c. 7 mm long. Flowering and fruiting: Oct - Jan. Fig. 78

Apparently endemic to the Top End, and common but poorly collected. This species occurs on a variety of soils in open forest and woodland.

*S. 'Melville Is.'*

An erect multistemmed subshrub to 50 cm tall. Stems angular, finely striate, foliose throughout.

**Sauropus**



**Sebastiania**

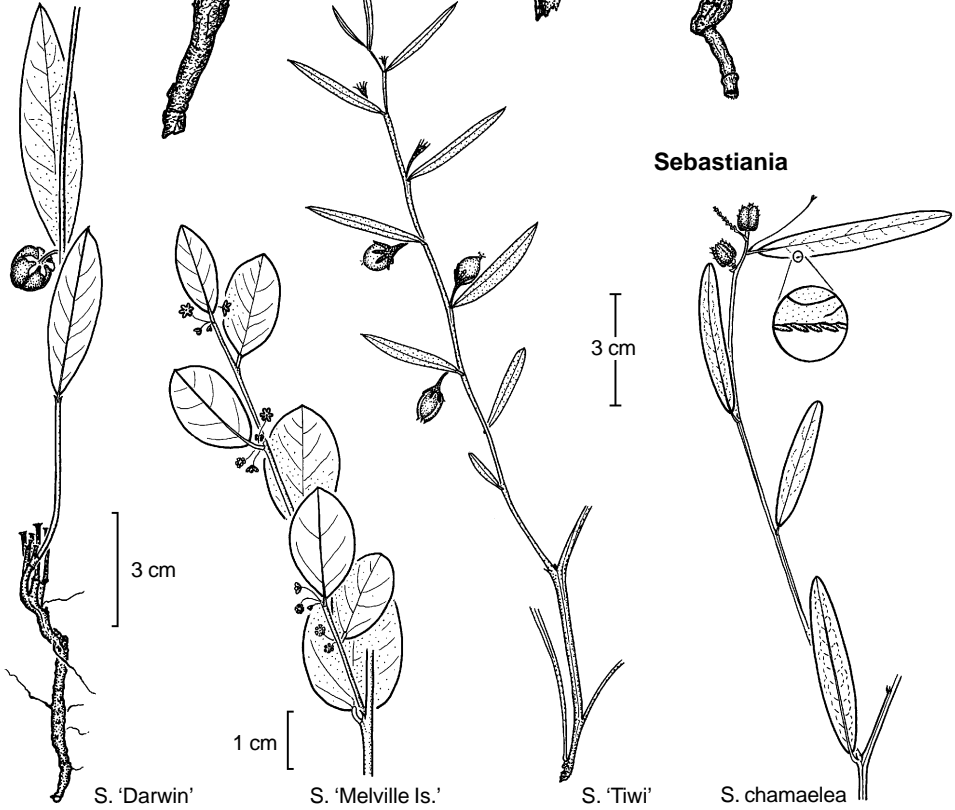


Fig. 78

Leaves and stems may be glabrous or pilose with coarse patent hairs. Stipules c. 3 mm long. Leaf blades slightly discolorous, elliptic, obovate or ovate, 14-40 mm long, 9-21 mm wide, L/B 1.4-2, base cuneate or obtuse, margin recurved. Flowers dioecious; males in fascicles in the axils, on pedicels 2-4 mm long; tepals c. 2.5 mm long; anthers almost sessile; females solitary in the axils, on pedicels 3-7 mm long; tepals obovate, 2-2.5 mm long; styles spreading, fused to the top of the ovary; stigmas erect. Capsule not seen. Seeds not seen. Flowering: Aug - Dec. Fig. 78

Probably endemic to the NT; recorded from Melville Is. and coastal Arnhem Land. This species occurs on deep sandy soils either in open forest or on treeless plains.

#### S. 'Tiwi'

An erect to procumbent, glabrous few-multistemmed subshrub to 30 cm tall. Stems

angular, foliose throughout. Stipules brown, c. 1 mm long. Leaf blades slightly discolorous, narrowly elliptic, lanceolate or occasionally linear, 11-40 mm long, 1.5-9 mm wide, L/B 4.2-10, base attenuate, apex acute. Flowers dioecious; males in fascicles in the axils, on pedicels 1-3.5 mm long; tepals 2.5-4 mm long, connate for 2/3 to 3/4 of their length, apex of androphore acute and exceeding the anthers; females solitary in the axils, on pedicels 1-6 mm long; tepals linear, 3-4 mm long; styles bifid. Capsule grey, smooth, ovoid, 7-10 mm long, 6-9 mm diam. Seeds white-brown, 6-9 mm long, with a thin firm spongy, irregularly pitted surface, margins sharply angled with irregular scallops. Flowering and fruiting: mainly Sept - May, but also at other times following fire. Fig. 78

Probably endemic to the western Top End of the NT. In the DR this species is common and occurs on well drained, often sandy soils in open forest and woodland.

## SEBASTIANIA Spreng.

A genus of c. 100 species occurring mainly in the New World. One species occurs in Australia.

#### S. chamaelea (L.) Muell.Arg.

An erect glabrous slender evergreen shrub to 1 m tall. Stems finely ribbed. Stipules c. 1 mm long, persistent, margins often fimbriate. Leaves simple, alternate, bifacial, on petioles 1-5 mm long; blades narrowly elliptic, oblong, oblanceolate, rarely linear-oblong or ovate, 12-70 mm long, 2-18 mm wide, L/B (2.2)3.5-9(16), base attenuate, margins sclerotic, regularly and finely serrulate with (1)2 depressed glands on each side c. 3 mm up from the base, apex acute, obtuse or emarginate. Flowers dioecious or occasionally monoecious; males in minute slender spikes 27-50 mm long; tepals 3, ovate to orbicular, <1 mm long, with fimbriate margins;

anthers 3, almost sessile, globular. Females solitary in the axils or at the base of the male inflorescence, subtended by fimbriate bracts with a pair of axillary stipitate glands, pedicels stout, c. 2 mm long, tepals similar to male, 1.5-2 mm long, sometimes with red filiform glands, styles 3, spreading. Capsule 3-locular with 1 seed per locule, greenish often with a tinge of red, oblong, 5-7 mm long, c. 6 mm diam., smooth or with 2-4 pairs of spines on each locule. Seeds flattened oblong, c. 5 mm long, mottled, carunculate. Flowering and fruiting: most months. Fig. 78

An Old World species distributed from India to northern Australia. In Australia common in savanna on well drained soils.