

AUSTRALIAN BIOLOGICAL RESOURCES STUDY



# FLOODPLAIN FLORA

A flora of the coastal floodplains  
of the Northern Territory, Australia

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*Extract: Malvaceae*

## MALVACEAE

*Herbs*, shrubs or trees, annual or perennial; stems and/or bark usually very fibrous. *Indumentum* usually of stellate hairs or lepidote, mostly with simple hairs, with glandular hairs sometimes present. *Stipules* present. *Leaves* alternate, spirally arranged, or in fascicles, simple, entire or lobed, mostly palmately nerved; extra-floral nectaries often present. *Inflorescences* solitary and axillary, or of terminal to axillary racemes or panicles. *Flowers* actinomorphic, bisexual, 5-merous. *Calyx* connate, valvate, usually lobed, often persistent, often subtended by a persistent epicalyx. *Disc* absent. *Corolla* contorted, adnate at base to staminal column and falling with it, often marcescent. *Stamens* numerous, monadelphous; anthers dorsifixed, bisporangiate and monotheical, opening by a longitudinal slit; pollen echinate. *Gynoecium* of (1) 5–many carpels united to form a compound, superior ovary; ovules 1–many per cell; placentation axile; styles as many as carpels or twice as many, often more or less united. *Fruit* a schizocarp or capsule, sometimes indehiscent; mericarps 1–many-seeded; capsule 3–many-seeded.

A family of about 50 genera and 1,000 species, most abundant in the tropics and subtropics. In Australia c. 24 genera and c. 200 species, in NT 14 genera and at least 100 species.

Taxonomic reference: Borssum Waalkes (1966).

## MALVACEAE

- |    |  |                    |
|----|--|--------------------|
| 1  | Style 1, 5-branched at apex; fruit a capsule.....  | 2                  |
| 1: | Styles 10, twice as many as carpels or mericarps; fruit a schizocarp breaking into mericarps at maturity .....                                   | 3                  |
| 2  | Calyx not splitting on one side during anthesis, 5-lobed, not adnate to corolla, persistent after flowering ( <i>1</i> ).....                    | <b>Hibiscus</b>    |
| 2: | Calyx splitting on one side during anthesis, apex minutely 5-toothed, adnate to corolla and falling with it after flowering .....                | <b>Abelmoschus</b> |
| 3  | Flowers mostly solitary, occasionally in axillary clusters; epicalyx present (exceeding calyx); mericarps with hooked bristles ( <i>1</i> )..... | <b>Urena</b>       |
| 3: | Flowers crowded in axillary, head-like inflorescences; epicalyx absent; mericarps glabrate .....   | <b>Malachra</b>    |

### ABELMOSCHUS Medicus

*Herbs* or subshrubs, often prickly-hairy. *Leaves* alternate, petiolate, 3–7-lobed, more or less palmately veined, often hastate to sagittate at base; basal nectary glands absent; margins entire or toothed. *Flowers* axillary, solitary or inflorescences racemose. *Epicalyx* segments mostly free, 4–16, usually persistent. *Calyx* spathaceous, 5-toothed, splitting on one side at anthesis, adnate to and falling with the corolla. *Corolla* usually yellow, or white or pink. *Ovary* 5-celled; style 1, 5-branched at apex; stigmas discoid. *Capsule* loculicidally dehiscent, 5-valved. *Seeds* many per cell, globose to reniform, glabrous or hairy.

A genus of six species native to southern and SE Asia and Australia, elsewhere introduced.

#### **A. ficulneus** (L.) Wight & Arn. ex Wight

Erect annual *shrubs* to 2 m tall. *Indumentum* of strigose, sparse simple and 2- or 3-armed, stellate hairs on vegetative parts; pedicel, calyx and capsule more or less viscid with short, closely spaced patent hairs and glandular hairs. *Stipules* linear to filiform, 5–12 mm long. *Petioles* 2–20 cm long. *Blade* orbicular in outline, palmately 5-lobed, with blade 5–16 cm long; base cordate; lobes obovate to spatulate, 1–11 cm long, 1.5–8 cm wide; margins serrate; apex rounded to obtuse. *Flowers* solitary in the upper axils, becoming racemose by loss of upper leaves. *Pedicels* 1–1.5 cm long, to 2.5 cm in fruit. *Epicalyx* segments 5 or 6, caducous, linear to lanceolate, 5–12 mm long. *Calyx* c. 15 mm long; lobes linear, c. 3 mm long. *Corolla* white ageing to pink; centre dark red to purple; petals obovate, 2.5–4 cm long, 1.2–2.5 cm wide; apex rounded. *Staminal column* c. 15 mm long. *Capsule* ovoid to oblong-ellipsoidal, 5-angled, 1.8–4.5 cm long, 1–2 cm diam. *Seeds* brown to black, globular, 3.2–3.7 mm diam., striate-rugose with concentric rings of papillae, with long, soft, simple hairs. *Flowering & fruiting*: Mar.–Aug. Fig. 15 (*McKean B637*).

In seasonally dry tropical regions from E Africa to N Australia (WA, NT, Qld). Occasionally on levees of the northern floodplains (the Adelaide River to the South Alligator River) but more common in the Victoria River region and on the Barkly Tableland, often associated with creek and river flats or poorly drained areas; almost invariably on heavy clay soils.

Another species, *A. moschatus*, may sometimes fringe swampy areas and can be distinguished by the persistent epicalyx which is 1–2 cm long, the usually hispid hairy vegetative parts and the usually acute leaf lobes.

*Abelmoschus ficulneus*

*Hibiscus panduriformis*

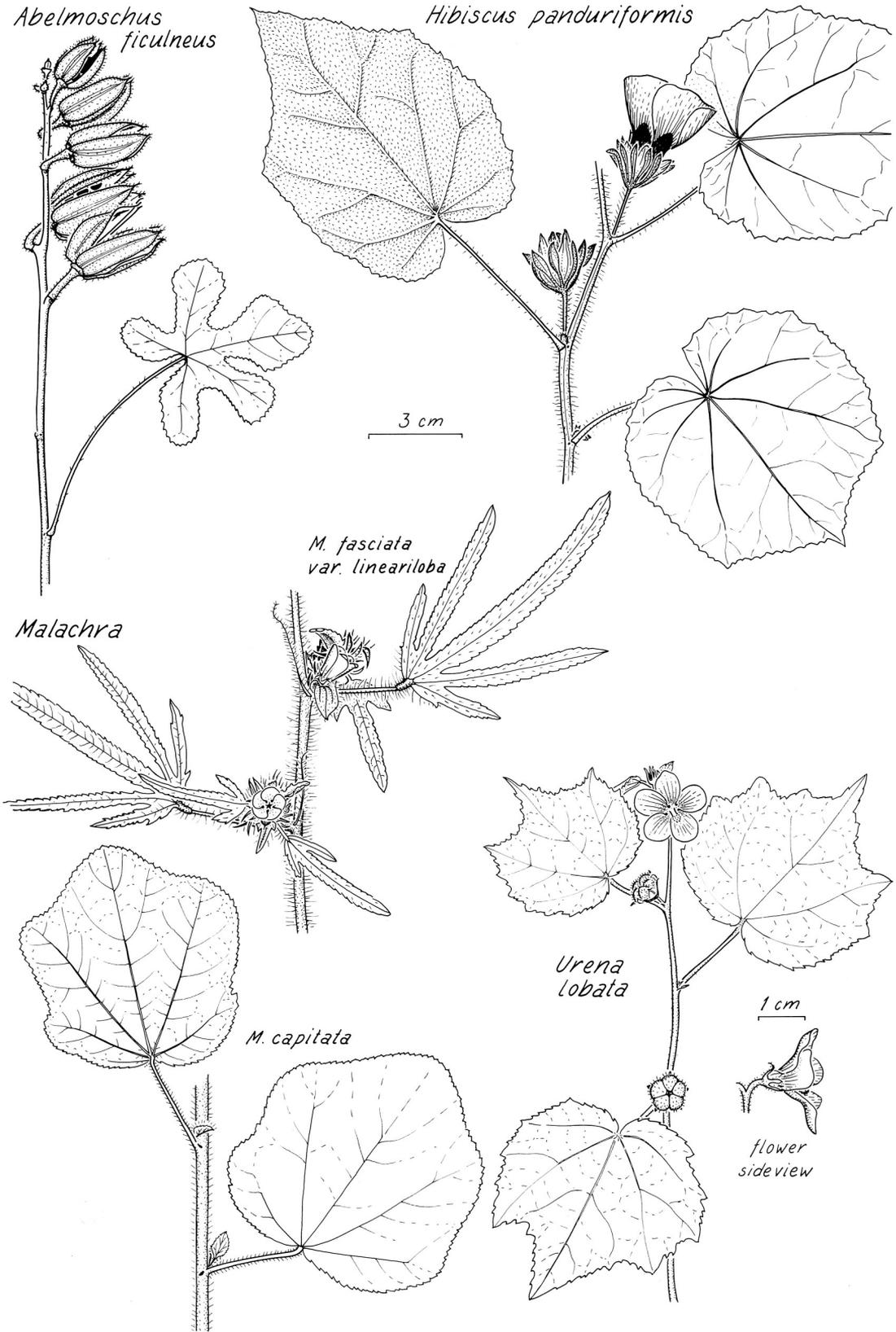


FIGURE 15

## MALVACEAE

### HIBISCUS L.

*Herbs* to trees, often prickly-hairy. *Leaves* alternate, petiolate, not divided; basal nectary glands often present; margins barely entire or toothed. *Flowers* axillary, solitary or inflorescences racemose by reduction or abortion of the upper leaves. *Epicalyx* segments mostly free or shortly connate, 3–many, usually persistent. *Calyx* usually campanulate, 5-lobed, rarely splitting on one side at anthesis, persistent. *Corolla* usually large and showy, mostly yellow, white or pink. *Staminal column* mostly as long as or shorter than petals. *Ovary* 5- or 10-celled; style 1, 5-branched at apex; stigmas usually discoid. *Capsule* loculicidally dehiscent, 5-valved. *Seeds* 3–many per cell, globose or reniform, glabrous or hairy.

A genus of *c.* 250 species mostly in the tropics. Only one species occurs on floodplains in the Top End.

#### **H. panduriformis** Burm.f.

*Shrubs* to 1.5 m tall; most parts with a short, soft, dense indumentum of stellate hairs; undersurfaces of leaves and especially stems also with scattered, long, patent prickly hairs *c.* 3 mm long. *Stipules* caducous, 5–10 mm long, with 2 or 3 filiform lobes. *Petioles* 1–7 cm long. *Leaves* variable, decreasing in size towards apex of stem; blade lanceolate to orbicular, 2.5–11 cm long, 1–10 cm wide, more or less 3–5-lobed; base deeply cordate to rounded, 5–9-nerved; margins coarsely serrate, dentate or crenate to almost entire; apex acute to acuminate. *Flowers* axillary, solitary; inflorescences tending to be racemose through reduction of upper leaves. *Pedicel* 4–18 mm long. *Epicalyx* segments 6–16, shortly connate at base, narrowly spathulate to spathulate, 6–22 mm long. *Calyx* campanulate, possibly enlarged with age, 12–22 mm long, 5-lobed; lobes triangular, 4–20 mm long, 2–9 mm wide, acute. *Corolla* yellow, dark red in centre; petals obovate, 2.5–8 cm long, 1–5 cm wide. *Staminal column* 1.5–3.5 cm long. *Ovary* 5-celled; style branches 3–5 mm long; stigmas hairy. *Capsule* ovoid, 1–1.6 cm long, *c.* 1 cm diam., acute to acuminate. *Seeds* numerous, brown, angular, reniform, *c.* 3 mm long, concentrically ribbed, usually shortly hairy. *Flowering*: Dec.–July. *Fruiting*: most months. Fig. 15 (*Bowman 94*).

Found in parts of tropical Africa, Asia and Australia (WA, NT, Qld), particularly in areas with a pronounced dry season. Occasionally occurs on drier parts of floodplains in the Top End where it is known from the Daly to the Mary rivers. More common south of Katherine, in the Victoria River region and towards Borroloola where it is often associated with floodouts or creek and river flats or levees; mostly on clay soils.

Three varieties have been recognised, two of which occur in Australia. Most specimens from the northern floodplains belong to var. *panduriformis* with the size of floral parts towards the small end of the ranges given above. Variety *australis* commonly grows further to the south and has longer pedicels, larger flowers, and is more densely hairy. Another form has similar features to var. *australis* but has 14–16 epicalyx lobes and larger flowers (towards the upper extreme of the measurements given above).

*Hibiscus tiliaceus* may grow along tidal sections of rivers. This small tree species can be distinguished by the cupular epicalyx with triangular lobes and the extra-floral nectaries towards the base of the main nerves on the undersurface of the leaves.

## MALVACEAE

### MALACHRA L.

Annual *shrubs*; stems and leaves with prickly hairs. *Leaves* undivided to deeply palmately lobed; extrafloral nectaries absent. *Flowers* in subcapitate condensed racemes, borne in the axils of foliaceous bracts. *Pedicels* short. *Epicalyx* usually absent. *Calyx* cupular, 5-lobed; lobes often aristate. *Corolla* relatively small, red, yellow or white, adnate to stamens. *Staminal* column equal to or shorter than petals, bearing anthers in upper third. *Carpels* 5, uniovulate; style 10-armed; stigmas capitate, papillose. *Fruit* a schizocarp, globular; mericarps indehiscent, more or less isodiametric to ovoid, trigonous, reticulately veined; dorsal side convex.

A genus of about ten species native to tropical America, with three introduced to the Old World. Two species in NT.

Leaves deeply lobed; lobes linear to narrowly oblong, acute; corolla white..... **M. fasciata**  
Leaves slightly lobed; lobes rounded, obtuse; corolla yellow..... **M. capitata**

#### \***M. capitata** (L.) L.

Erect, annual *shrubs* to 2.5 m tall; most parts with short, scattered, stellate hairs and stiff, prickly, simple and stellate hairs *c.* 2 mm long. *Stipules* 3-lobed; lobes filiform, 1–1.5 cm long. *Petioles* 1.5–8 cm long. *Blades* orbicular to ovate, 3.5–13 cm long, 2.5–14 cm wide, angular to slightly lobed, 5-nerved; lobes rounded or obtuse; base cordate; margins crenate to serrate; apex obtuse or rounded. *Inflorescences* 3–7 per axil; peduncle 2–15 mm long, 2–5-flowered; bracts broadly ovate to orbicular, 5–20 mm long, 5–20 mm wide, with base cordate to rounded, with apex acute. *Calyx* *c.* 6 mm long; lobes ovate, acuminate, 3.5–4 mm long, 3-nerved. *Corolla* yellow; petals obovate, *c.* 10 mm long. *Staminal column* *c.* 6 mm long. *Schizocarp* obpyriform, 5–6 mm diam. *Mericarps* brown, trigonous, obovoid, 2.6–3.1 mm long, 1.5–2 mm wide; base acute; faces veined, glabrate; apex rounded. *Flowering*: June. *Fruiting*: Apr.–July. Fig. 15 (Cowie 588).

Native to South America and introduced to SE Asia, occurring at Bogor on Java, on Timor and in the Philippines. In Australia, known only from the Top End of NT. Occurs on floodplains of the Wildman, West Alligator and South Alligator rivers. Grows on drier parts of floodplains, floodplain margins and in riparian areas, on clayey soils. First observed in the early 1980s at Kapalga bordering the West and South Alligator rivers. It is not known how the species arrived in Australia.

#### \***M. fasciata** Jacq. var. **lineariloba** (Turcz.) Gurke

Erect, annual *shrubs* to 1.5 m tall; stems, leaves and floral bracts with stiff, prickly, simple hairs 1–5 mm long. *Stipules* not lobed, filiform, 2–3 cm long. *Petioles* 1–10 cm long. *Blades* obovate, orbicular or ovate in outline, 2.5–20 cm long, 2–23 cm wide, deeply 3–7-lobed, 5–7-nerved; base rounded to shallowly cordate; lobes linear to narrowly oblong, 2.5–19 cm long, 0.5–2.5 cm wide; margins serrate; apex acute. *Inflorescences* 2–5 per axil; peduncle 2–15 mm long, 6–9-flowered; bracts ovate to broadly ovate, 1–2.5 cm long, 0.5–2 cm wide, with base cordate to rounded, with apex acute to acuminate. *Calyx* *c.* 4.5 mm long; lobes ovate, *c.* 3 mm long, acute, 3-nerved. *Corolla* white fading to pink; petals obovate, *c.* 1 cm long. *Staminal* column *c.* 6 mm long. *Schizocarp* obpyriform, 5–6 mm diam. *Mericarps* brown, trigonous, obovoid, 2.8–3.4 mm long, 2–2.3 mm wide; base acute; faces veined, glabrate; apex rounded. *Flowering*: Apr.–July. *Fruiting*: May–Aug. Plate 20, Fig. 15 (Dunlop 9192).

Native to South America and probably introduced to SE Asia, commonly occurring in the Philippines, rare in West Java, on Timor, Madura Is. and in New Guinea. In Australia, known only from the Top End of NT. Occurs on floodplains from the Finnis River to Murgarella Creek and at Milingimbi. Grows on drier parts of floodplains, on floodplain margins and in disturbed areas, usually on clayey soils.

## MALVACEAE

### URENA L.

Erect annual or perennial *shrubs*, with stellate hairs. *Leaves* alternate, petiolate, simple or palmately lobed, often twice-divided, or undivided, palmately nerved; basal nectary glands present on nerves on leaf undersurface; margins entire or toothed. *Flowers* axillary, solitary or in clusters. *Epicalyx* campanulate to tubular, 5-lobed, persistent, adnate to calyx at base. *Calyx* campanulate to tubular, 5-lobed, persistent. *Corolla* rotate, relatively small, pink. *Staminal column* about as long as the petals, anther-bearing in upper half. *Carpels* 5, uniovulate; style 1, 10-branched above middle; stigmas capitate. *Fruit* a schizocarp, more or less globular. *Mericarps* 5, indehiscent, more or less isodiametric, trigonous; dorsal surface convex, often with barbed spines.

A pantropical genus of *c.* six species, with three in NT.

#### **U. lobata** L.

Erect, annual *shrubs* to 2 m tall; most parts with a more or less dense indumentum of minute, stellate, hairs and scattered, simple hairs. *Stipules* linear, 2–4 mm long. *Petioles* 0.7–8 cm long. *Blades* discolorous, lanceolate or ovate to broadly ovate, 1.5–9.5 cm long, 1–10 cm wide, entire to shallowly 3-lobed, 3–7-nerved; lobes triangular, to 2 cm long; base cuneate to cordate; margins serrate; apex acute to acuminate. *Flowers* axillary, mostly solitary; inflorescences sometimes appearing racemose due to reduction of the upper leaves. *Pedice*l 1–4 mm long, accrescent. *Epicalyx* 5–8.5 mm long, longer than calyx; lobes narrowly oblong to triangular, 4–7 mm long. *Calyx* campanulate, 3.5–5.5 mm long; lobes triangular to ovate, 2.5–4.5 mm long; midrib distinct. *Corolla* mauve-pink, purple in centre; petals obovate, *c.* 15 mm long. *Staminal column* *c.* 14 mm long. *Mericarps* 5–6 mm long, *c.* 3.5 mm wide, with barbed prickles. *Seeds* brown, more or less reniform, 3.5–4 mm long, finely striate, minutely hairy to glabrous. *Flowering & fruiting*: mostly Feb.–May. Fig. 15.

Pantropical in distribution (Australia: WA, NT, Qld). Widespread in northern NT. A weedy species growing on the margins of floodplains and swamps, on the edges of monsoon forest, in riparian habitats and disturbed areas; usually on clayey or silty soils.