REVISION OF THE CASSIINAE IN AUSTRALIA.
3. SENNA MILLER SECT. SENNA*

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Abstract

In Australia, sect. Senna comprises 7 species, 5 native and 2 introduced, all previously treated within Cassia L. These are divided between two series, ser. Pictae having erect spike-like racemes, and ser. Floridae here transferred from sect. Chamaefistula. New combinations are provided for the four endemic species, S. venusta (F. Muell.) Randell, S. notabilis (F. Muell.) Randell, S. magnifolia (F. Muell.) Randell, and S. pleurocarpa (F. Muell.) Randell, and its two varieties var. angustifolia (Symon) Randell and var. longifolia (Symon) Randell.

Introduction

This is the third in a series of papers which will revise all members of the Cassiinae in Australia. The earlier paper dealing with Senna sect. Psilorhegma (Randell 1989) presented the results of many years analysis of known problems in cytology, breeding systems, hybrid swarms, morphological variability and taxonomy. However, in the rest of the Cassiinae, few such problems have been obvious, studies have been more restricted in time and financial resources, and as a consequence, revisions are less exhaustive in character. This is very obvious in the current publication, where field observations have been restricted, cytological records are few, and no studies of breeding systems have been attempted. Thus the current study applies classical morphological species concepts, and supports decisions of earlier workers (eg. Symon 1966) while making the new nomenclatural combinations required, following the recognition of Senna Miller as a separate genus.

Senna sect. Senna


Type species: S. alexandrina Miller, syn. Cassia senna L., the only species cited by Miller.

Synonyms


Type species: as above.


Type species: C. reticulata Willd. fide Irwin and Barneby, l.c. p. 456.

Description

Foliar glands usually 0. Corolla zygomorphic along its vertical axis; often several of the upper whorl of androecium filaments elongate, 2 latero-abaxial usually much longer, usually elevated sideways into a plane almost perpendicular to that of corolla symmetry; anthers all truncate or sometimes some produced into beaks, three adaxial reduced to staminodes, four

*Other papers in this series will be found in J. Adelaide Bot. Gard. 11(1): 19-49; and 12(2): 165-272.
median fertile or sterile, two latero-abaxial fertile, central abaxial often sterile and reduced; pods cylindrical, flat or winged (in one species), with coriaceous valves.

Two series are represented in Australia.

**Key to the Australian series of sect. Senna**

- Stipules amplexicaul or cordate, subpersistent; inflorescence a long axillary spike-like raceme, often apparently terminal; floral bracts often large subpersistent, imbricate, forming a cone-like inflorescence ............................................................... 1. ser. Pictae

- Stipules linear to setiform, caducous; inflorescence thyrsiform-paniculate, axillary or (by fusion with the stem) displaced shortly above the axil; floral bracts not large, persistent or imbricate; inflorescence not cone-like .............................. 2. ser. Floridae

1. *Ser. Pictae*


*Lectotype species:* *Cassia picta* G. Don, *Gen. hist.* 2: 444 (1832), syn. *Senna pistaciifolia* (G. Don) Irwin and Barneby var. *picta* (G. Don) Irwin and Barneby, fide Irwin and Barneby l.c.

**Synonyms:**
   *Lectotype species:* *C. reticulata* Willd., *Enum. pl.* 1: 443 (1809), syn. *Senna reticulata* (Willd.) Irwin and Barneby, fide Irwin and Barneby l.c.

   *Lectotype species:* *C. picta* G. Don, fide Irwin and Barneby l.c., as above.


   *Type species:* *Cassia alata* L. syn. *Senna alata* (L.) Roxb., l.c. p. 349, fide Raf., l.c., as above.


**Description**

As for the section with the following additional characters (Irwin and Barneby 1982) — stipules amplexicaul or caudate; inflorescences racemose, sometimes spike-like, 10-70 flowered, the buds often subtended by enlarged, imbricate, coloured bracts; seeds oblong to obovate; seed testa smooth or rugulose.

**Distribution**

A group with 8 species in the Americas, 4 in Australia, and several in Africa. It thus contrasts with sect. *Psilorhegma*, which is restricted to Australia and the Pacific region, but parallels the distribution of species within sect. *Chamaecrista* (Irwin and Barneby 1982).
At least one African and one American species are now widely cultivated and/or weedy in both the Americas and Australia.

Key to the species of ser. Pictae in Australia

1. Floral bracts dark brown or black ................................................. 5. S. didymobotrya
   1. Floral bracts yellow or green:
      2. Pod 10-12 cm long, dark, with lateral wings .................................................. 6. S. alata
      2. Pod 2.5-10 cm long, without lateral wings:
         3. Leaves obviously hairy:
            4. Floral bracts pubescent, acuminate, foliose, caducous, green .......................... 2. S. notabilis
            4. Floral bracts glabrous, obtuse, stramineous, persistent, yellow ..................... 3. S. venusta
         3. Leaves not obviously hairy:
            5. Leaflets emarginate, broad-oblong, 2.5-5 cm wide ........................................ 4. S. magnifolia
            5. Leaflets obtuse to emarginate, linear to elliptic, never more than 2 cm wide .................. 1. S. pleurocarpa

1. S. pleurocarpa (F. Muell.) Randell, comb. nov.


   Lectotype: In thickets towards the mouth of the River Murchison, Western Australia, A. Oldfield s.n., s.d., MEL (photo)!, lectotype here designated; isolecto.: K (photo ), PERTH (not seen, cited Symon 1966).

Description

Spreading shrubs 50-75 cm tall; leaves 8-12 cm long; leaflets 5-12 pairs, linear to elliptic, 15-20 mm apart on the rachis, the largest 3-6 cm x 5-15 mm, all even in size, apex obtuse or emarginate, base acute and equal-sided, glabrous, veins impressed above and conspicuous below, dull olive; stipules acicular, glabrous, caducous; petiole 2-4 cm long; inflorescence 11-25 cm long, bearing 20-60 flowers in a cone-like head; peduncle 2-8 cm long; pedicel 10-25 mm long; bracts oval, 12-15 mm long, subpersistent; sepals lanceolate, c. 10 mm long; petals obovate, 15 mm long, venation conspicuous, yellow; androecium of 10 anthers, 3 adaxial reduced and sterile, 4 median fertile and 5 mm long, 2 latero-abaxial fertile and 10 mm long, 1 central abaxial fertile and 3 mm long; filaments subequal, c. 1 mm long; ovary glabrous; fruiting pedicel 10-25 mm long; pod 3.5-7 cm x 8-12 mm, flat, the valves with a median lateral ridge over the seeds; seeds oblong, c. 7 mm long, rugose, with very short areole, dark brown. Plate 1 a-h.

Notes

In this and all future descriptions, the character peduncle refers to the length of the axis below the lowest flower.

3 varieties are recognised.

Key to the varieties of S. pleurocarpa

1. Leaflets 5-9 pairs:
   2. Bracts oval, obtuse, to 12 mm long, caducous; leaflets 5-7 pairs ........................................ 1. var. pleurocarpa
   2. Bracts oval to acute, acuminate, to 15 mm long, subpersistent; leaflets 8-9 pairs ............... 2. var. angustifolia
1. Leaflets 11-12 pairs .................................................. 3. var. longifolia
Plate I. S. pleurocarpa. a-b, var. longifolia; a, leaf; b, bract, both from Bumbiens s.n. (AD); c-d, var. angustifolia; c, leaf; d, bract, both from Phillips 012101 (AD); e-h, var. pleurocarpa; e, habit, Symon 23497 (AD); f, habit, Chippendale 1626; g, anthers; h, bract, both from Symon 2155 (AD).
1.1 var. *pleurocarpa*.

*Basionym and lectotype:* as for the species.

**Description**

Leaflets 5-7 pairs, the largest 3-6 cm x 5-12 mm; *bracts* oval, 12 mm long; *pods* 3.5-7 cm x 8-12 mm wide. Plate 1e-h.

**Distribution and ecology**

Widespread especially in disturbed habitats, over semi-arid areas of all mainland states except Victoria. Purgative to stock (Symon 1966). Map 1.

**Selection of specimens examined** (c. 100 seen)

WESTERN AUSTRALIA: Mt Squires, Barrow Ra., Helms s.n., 27.viii.1891 (AD); 40 miles E Meekatharra, Speck 782, 10.i.x.1957 (CANB); 10 miles S of W end Hopkins Lake, Symon 2358, 2.vii.1962 (AD); 38.4 miles E Meekatharra on Wiluna rd, Ashby 4783, 28.viii.1973 (PERTH).

NORTHERN TERRITORY: Andado Bore, 240 km SSE Alice Springs, Crocker s.n., 6.vi.1939 (AD); summit, Ayres Rock, Schodde 403, 30.vii.1957 (AD); Chambers Pillar, c. 130 km S Alice Springs, Lothian 4569, 23.vii.1968 (AD); 16 km ESE Mulga Park Hstd, Manfr 5100, 21.viii.1973 (AD).

QUEENSLAND: 20 km SE Arrabury Hstd, Lothian 673, 29.vii.1960 (AD); Tambar, SW Windorah, Browning s.n., -.ix.1966 (AD).

NEW SOUTH WALES: nr Fort Grey, MacGillivray s.n., -.vii.1921 (AD).

SOUTH AUSTRALIA: Cariewerloo Stn, 35 miles W Pt Augusta, Higginson s.n., 3.ix.1955 (AD); 3 miles S Maralinga, Forde 628, 10.x.1956 (AD, CANB); 40 miles S Ernabella, Turvey s.n., 5.vii.1964 (AD); Great Victoria Desert, c. 40 km W Vokes Hill, Symon 12505A, 23.viii.1980 (AD).

1.2 var. *angustifolia* (Symon) Randell, comb. nov.


*Holotype:* Coolgardie, Western Australia, E. Kelso s.n., Oct. 1900, PERTH (photo); *iso:* K not seen.

**Description**

Leaflets 8-10 pairs, the largest 5-7 cm x 5-8 mm wide; *bracts* 15 mm long, acuminate; *pods* to 7 cm long x 15 mm wide. Plate 1c,d.

**Distribution**

Restricted to subtropical semi-arid areas of Western Australia. Map 2.

**Selection of specimens examined** (15 seen)

WESTERN AUSTRALIA: c. 72 km W from Knutsford, c. 120 km NW Southern Cross, Helms s.n., 10.xi.1891 (AD); Hayden Rock, Dirk Hartog Is., Eardley s.n., 7.x.1934 (AD); 74 miles N Norseman towards Coolgardie, Phillips s.n., 11.v.1962 (AD, CANB); Hamersley Ra. Natl Pk, Jackson 2934, 19.vii.1977 (AD); 50 km from Leonora towards Menzies, Hos 48A/8, 20.x.1977 (PERTH).

1.3 var. *longifolia* (Symon) Randell, comb. nov.


*Holotype:* Mungalalla, Queensland, C.E. Hubbard 6076 and C.W. Winders, 1.i.1931, BRI (photo); *iso:* K (not seen).
3. Senna sect. Senna

Description

Leaflets 10-12 pairs, the largest to 5 cm long x 8 mm wide; bracts oval, 15 mm long, obtuse to acute; pods as for var. angustifolia. Plate 1a,b.

Distribution

Known only from the central west of Queensland. Map 2.

Specimens examined
QUEENSLAND: Charleville, MacGillivray s.n., 26.viii.1923 (AD); Charleville, Smith s.n., 17.iv.1932 (AD); cult., Adelaide (seed ex. Smith s.n.), Bumbiens s.n., 8.x.1963; and Symon s.n., 25.v.1965 (both AD).

2. S. notabilis (F. Muell.) Randell, comb. nov.


Holotype: between the Bonney River and Mt Morphett, Northern Territory, J. McD. Stuart s.n., March 1862, MEL (photo).

Description

Annual subshrub to tall shrub, 0.3-1.5 m tall, hairy in all parts; leaves 10-20 cm long, including petiole; leaflets 6-12 pairs, lanceolate, 10-15 mm apart on the rachis, the largest 15-30 x 8-12 mm, all even in size or the terminals slightly longer, apex acute to aristate, base obtuse unequal, hairs short and dense on both sides, only lower midveins conspicuous, concolourous; stipules ovate, long aristate, 2 mm wide, persistent, green; petiole 15-20 mm long; inflorescence 10-20 cm long, bearing 20-30 flowers in a cone-like head; peduncle 2.5-6 cm long; pedicel 5 mm long; bracts leafy, pubescent, acuminate to aristate, imbricate, caducous by anthesis, green; sepals subequal, c. 6 mm long, pubescent, yellow; petals obovate, subequal, c. 7 mm long, with distinct veins, yellow; androecium of 10 anthers, 3 adaxial fertile and c. 3 mm long, 1 central abaxial fertile and reduced to 2 mm long; ovary glabrous, fruiting pedicel 8-10 mm long; pod 2.5-4.0 cm x 10-15 mm, golden brown, darker over seeds; seeds oblong, c. 4 mm long. Chromosome number n=14, (Randell 1970). Plate 2a-e.

Distribution and ecology

Grows in sand, clay or on rocky hillsides, often with Triodia species. Widespread in northern arid areas of Western Australia, Northern Territory, Queensland, New South Wales and South Australia. Map 3.

Notes

Shares with S. venusta the distinction of having small foliar glands.

Selection of specimens examined (c. 100 seen)
WESTERN AUSTRALIA: from Eva Downs to Ashburton Ra., Dürich s.n., -ix.1886 (AD); 8 miles N Liveringa Stn, Kimberleys, Lazarides 6465, 1.viii.1959 (AD); 20 km SE Balfour Downs Hstd, Wilson 10367, 10.viii.1971 (PERTH); Peedamulla, Pfeiffer 12, 19.vii.1977 (PERTH); 146 km from Derby, Conrick 1044, 17.vii.1982 (AD).
NORTHERN TERRITORY: Fraser Ck near MacDonald Downs, Cleland s.n., 30.viii.1930 (AD); between Barrow Ck and Wauchope, Hill and Caulfield s.n., -vii.1953 (AD); 5.1 miles W Anitowa Hstd, Chippendale s.n., 23.x.1956 (AD); 11 miles SE Yuendumu, Barlow 1140/6, 18.v.1967 (AD); 9 miles W Baines River East, Symon 5233, 18.vi.1967 (AD).
Plate 2. a-e, *S. notabilis*: a, habit; b, bract; c, largest anther; d, median anther; e, staminode, all from *Ashby 2937* (AD), pod from *Jackson 2905* (AD); f-k, *S. venustara*: f, habit; g, bract; h, largest anther; i, median anther; k, staminode, all from *Jackson 3005* (AD).
QUEENSLAND: between Boulia and Dajarra, MacGillivray s.n., -viii.1928 (AD); 100 miles S Normanton, Barlow 299, 11.viii.1961 (AD); Tanbar, SW of Windorah, Browning s.n., -x.1966 (AD); Mt Isa, Coveny 471, 14.viii.1968 (AD).


SOUTH AUSTRALIA: 55 km S Cordillo Downs Hstd, Warnes 56, 7.viii.1973 (AD); Innaminka, Lewis s.n., 29.x.1976 (AD).

3. S. venusta (F. Muell.) Randell, comb. nov.


_Lectotype:_ 'in terra Arnhem's Land et circum sinum Carpentariae ad ripas aridiores, rupes et scopulos', Northern Territory, F. Mueller s.n., 22.vii.1856, K (photo), lectotype here designated; _iso: MEL!._

_Description_

Shrubs to 2 m tall; _leaves_ 10-35 cm long, including petiole; _leaflet_ 6-15 pairs, oblong to ovate, 15-30 mm apart on the rachis, the largest 3-8 cm x 10-35 mm, almost all equal in size but the central leaflets slightly larger, apex obtuse with a mucro 2 mm long, base slightly cordate, hairs moderately dense to absent on both surfaces, veins impressed above and conspicuous below, olive green; _stipules_ cordate, glabrous, persistent; _petiole_ 10-30 mm long, grooved above; _inflorescence_ 15-40 cm long, bearing 15-40 flowers in a cone-like head; _peduncle_ 4-8 cm long; _pedicel_ 12-15 mm long; _bracts_ obovate, obtuse, scarious, glabrous, persistent, yellow; _sepals_ lanceolate, 12 mm long; _petals_ obovate, 15 mm long, emarginate, yellow; _androecium_ of 10 anthers, 3 adaxial reduced and sterile, 4 median fertile 5 mm long, 2 latero-abaxial fertile 12 mm long, 1 central abaxial fertilise and reduced to 5 mm long; _filaments_ 4 median 2 mm long, 2 latero-abaxials 3 mm long; _ovary_ glabrous; _fruiting pedicel_ 15-20 mm long; _pod_ 4-8 cm x 9-14 mm, golden brown, with c. 8 seeds; _seeds_ obovate, c. 6 mm long, rugose, areole small, dark brown. Plate 2f-k.

_Distribution and ecology_

Grows in sand on gravel or in lateritic soils, often with _Triodia_ species. Widespread in arid areas of northern Western Australia and Northern Territory, few collections in north-western Queensland. Map 4.

_Notes_

Shares with _S. notabilis_ the distinction of having foliar glands.

_Selection of specimens examined_ (c. 40 seen)

WESTERN AUSTRALIA: Kimberley Research Stn, _Langfield_ 196, 14.i.1950 (PERTH); 82 miles SE Pt Hedland towards Marble Bar, _Beauglehole s.n.,_ 11.viii.1965 (AD); New York Jump-ups, c. 90 km SW Wyndham, _Jackson_ 885, 20.v.1967 (AD); head of Breadon valley, Southesk Tablelands, _George_ 15501, 29.iv.1979 (PERTH).

NORTHERN TERRITORY: 3.5 miles S Elliot, _Chippendale s.n.,_ 11.ix.1957 (AD); 56 km N Tennant Ck, _Orchard_ 890, 19.vii.1968 (AD); 41.2 km from Hermansburg Mission, _Williams_ 12120, 6.x.1981 (AD); Wauchope, c. 340 km N Alice Springs, _Caulfield and Hill s.n.,_- vii.1983 (AD).

QUEENSLAND: 1 mile E Wernadinga Sto, _Symon_ 4994, 31.v.1967 (AD).

4. _S. magnifolia_ (F. Muell.) Randell, comb. nov.

Plate 3. a. *S. timoriensis*, habit, *Dunlop 4262* (AD); b-c, *S. magnifolia*: b, habit; c, pod, both from *Symon 12115* (AD).
Lectotype: ‘rocky ridges, upper Gilbert River, northern Queensland, altitude 1000 ft.’, F. Mueller s.n., s.d. There are in K, 2 sheets (both seen in photos), one of a single leaf with 3 dissociated pods, the other of a leafy terminal shoot and a dissociated flowering stalk bearing one pod. The leafy terminal shoot is here designated as the lectotype, with the single leaf as an isotype.

Description

Low shrubs 1-1.5 m tall; leaves to 30 cm long including the petiole; leaflets 4-6 pairs, broad-oblong to orbicular, 25-45 mm apart on the rachis, the largest 5-8 x 3-5 cm, slightly increasing in size from the base of the rachis, apex emarginate, base unequal and slightly attenuate, glabrous on both sides, veins impressed above and conspicuous below, olive green; stipules cordate, acute to acuminate, subpersistent; petiole 8-10 cm long; inflorescence 30-60 cm long, bearing 20-60 flowers in a cone-like head; peduncle 10-15 cm long; pedicel 12-15 mm long; bracts oblong, obtuse but apiculate, yellow-brown; sepals narrow to broad lanceolate, unequal, 10-12 mm long; petals obovate, emarginate, unequal, 10-17 mm long, yellow; androecium of 10 stamens, 3 adaxial sterile and reduced, 4 median fertile 3-4 mm long, 2 latero-abaxial fertile 8-10 mm long, 1 central abaxial fertile 3-4 mm long; filaments 1-2 mm long; ovary glabrous; fruiting pedicel 20 mm long, robust; pod 8-10 cm x 3-4 cm, flat, dark, with 8-10 seeds; seeds obovate, c. 8 mm long, rugose, with small areole, dark brown. Plate 3b,c.

Distribution and ecology

Grows on stony hillsides. Disjunct distribution in Victoria River area of Western Australia/Northern Territory and highlands on north Queensland. Map 5.

Specimens examined

WESTERN AUSTRALIA: 4 miles NNE Margaret R. Stn, Lazarides 6335, 14.vii.1959 (AD, MEL); 40 km NW Louisa Downs Stn, Shaw 839, 30.v.1967 (AD); c. 110 km E Halls Ck on Wave Hill rd, Beauglehole 51250, 23.v.76 (AD, MEL).

NORTHERN TERRITORY: Newcastle Ra., Armit 271, 1876 (MEL).

QUEENSLAND: Tait R., Weld Birch s.n., 1892 (MEL); 19 miles E Georgetown, Symon 4903, 27.v.1967 (AD).


Type: The type collection was made by Ruppel in Abyssinia. No material survives in the herbarium FR (Irwin and Barneby, 1.c.) but apparently there has been no attempt to designate a lectotype or neotype. A neotype is definitely needed, preferably chosen from material annotated by Oliver or Bentham. The concept described in detail by Oliver (1871) has been used by all later workers, and is followed here.

Description

In cultivation a tall vigorous shrub to 2.5 m tall, with stems and petioles densely pale hairy; leaves 10-25 cm long, including petiole; leaflets 8-10 pairs, oblong, 10-20 mm apart on the rachis, the largest 2-6 cm x 10-20 mm, subequal in size but the terminals slightly larger, apex acute to obtuse and mucronate, base acute to obtuse, hairs sparse on the lower surface but denser over the veins, veins obscure or impressed above and prominent below, olive green;
Plate 4. a-c, *S. didymobotrya*: a, leaf from *Symon 21872* (AD); b, inflorescence; c, pod, both from *Wright 5782* (AD); d-g, *S. alata*: d, leaf from *Cilento s.n.* (AD); e, inflorescence; f, pod; g, tranverse section of pod, all from *Symon 5151* (AD).
stipules cordate, stem-clasping, long acuminate, ciliolate, subpersistent; petiole 15-40 mm long; inflorescence 20-40 cm long, bearing 15-30 flowers in a cone-like head; peduncle 5-7 cm long; pedicel 6-8 mm long; bracts obtuse, pointed, imbricate caducous, dark-brown or black; sepals subequal, oblong, 10-12 mm long; petals obovate, to 20 mm long, clawed, with conspicuous veins, yellow; androecium of 10 anthers, 7 adaxial reduced and sterile, only the 2 latero-abaxial fertile and c. 10 mm long, central abaxial sterile; filaments subequal 1-2 mm long; ovary densely golden pubescent; fruiting pedicel 6-8 mm long, robust; pod to 7 cm long, to 18 mm wide, with about 15 ovules; seeds not seen, described by Brenan (1967) as oblong, c. 8 mm long, and by De Wit (1955) and Irwin and Barneby (1982) as smooth or obscurely pitted. Plate 4a-b.

Distribution and ecology

Native to northern Africa, widely cultivated in tropical areas around the world. In Australia, I have seen it sparsely naturalised in Queensland and New South Wales in disturbed areas such as roadsides.

Notes

The distinctive dark colour of the bracts noted by Symon (1966), Isley (1975), and Irwin and Barneby (1982), was not described by earlier workers, and may be a feature which has become obvious since the plant was taken into cultivation.

Specimens examined

SOUTH AUSTRALIA: cult. Waite Institute Arboretum, Wright s.n., 19.iv.1940 (AD).


Type: Herbarium Cliffortensis 158, Cassia no. 33, BM. This plant was considered as a syntype by Brenan (1967), and as the holotype by Irwin and Barneby (1982), but its status is now being reassessed (Reveal, pers. comm.).

Selected synonyms and references [for full listing see Irwin and Barneby, Mem. New York Bot. Gard. 35: 460 (1982)].


Description

Low spreading shrub, usually less than 1 m tall, stem hairy; leaves 15-40 cm long including petiole; leaflets 8-12 pairs, oblong, 10-20 mm apart on the rachis, the largest 8-11 x 3-5.5 cm, increasing in size from the base of the rachis but the subterminals the longest, apex obtuse to emarginate and mucronate, base unequal and larger on rachis side, hairs sparse on the lower midrib, veins impressed above and prominent below, olive green; stipules cordate, stem-clasping, subpersistent; petiole 20-40 mm long; inflorescence 30-60 cm long, bearing 20-40 flowers in a cone-like head; peduncle 15-30 cm long; pedicel 5-8 mm long; bracts boatshaped, acute, imbricate, caducous, orange; sepals subequal, glabrous; petals to 20 mm long, clawed, with conspicuous veins, yellow; androecium of 10 anthers, 7 adaxial reduced and sterile, only 2 latero-abaxial fertile and 4 mm long, central abaxial sterile; filaments unequal, 4 median 2 mm long, 3 abaxial 4 mm long; ovary sparsely hairy; fruiting pedicel 6-8 mm long, robust; pod to 7 cm long, to 18 mm wide, with about 15 ovules; seeds to 20 mm long, clawed, with conspicuous veins, yellow; androecium of 10 anthers, 7 adaxial reduced and sterile, only 2 latero-abaxial fertile and 4 mm long, central abaxial sterile; filaments unequal, 4 median 2 mm long, 3 abaxial 4 mm long; ovary sparsely hairy; fruiting pedicel 15 mm long, robust; pod 12-16 cm x 10-15 mm, each valve with a median wing c. 6 mm wide and projecting horizontally, seeds in 2 rows; seeds trapzoid, c. 6 mm long. Plate 4c-e.
Distribution and ecology

Native to the Orinoco and Amazon basins of South America, but now widely naturalised throughout the world tropics (Irwin and Barneby, l.c.). In Australia, restricted to far north of Queensland and Northern Territory. Map 5.

Specimens examined

NORTHERN TERRITORY: Darwin, Cilento s.n., -ix.1923 (AD); 10 miles SW Jim Jim crossing, Symon 5151, 11.vi.1967 (AD).

QUEENSLAND: Buchan Pt, Morris 6427, 4.xi.1939 (AD); Quintel Ck Beach, Lloyd Bay, Robertson s.n., 19.viii.1986 (AD).

2. Ser. Floridae


Synonyms


Lectotype species: as above.


Lectotype species: Sciacassia siamea (Lam.) Britton and Rose, syn. Senna siamea (Lam.) Irwin and Barneby.


Description

As for the section with additional characters (Irwin and Barneby 1982) — stipules linear setiform and subulate, caducous; inflorescences thyrsiform-paniculate, 10-100 flowered; bracts elliptic; seeds subdiscoid; seed testa smooth and lustrous.

Distribution

A series of only three species, the type species S. siamea reportedly native to Burma and Thailand, S. garrettiana in Indochina (Irwin and Barneby 1982), and S. timoriensis occurring in SE Asia generally, Malesia and Australia (de Wit 1955). The distribution of the series is thus similar to that of sect. Psilorhegma (Randell 1989).


Holotype: Timor, s. coll., Musee de Paris 1821, seen in microfiche (exposure 33459, Prodrromi Herbarium, IDC microedition).

Synonyms (partly after de Wit 1955):


Holotype: as above.

2. Cassia exaltata Reinw. ex Blume, Catalogus 68 (1823); Spanoghe, Linnaea 15: 201 (1841); nomen nudum.
3. *Senna* sect. *Senna*

3. *Senna* glauca Roxb., *Fl. ind. edn* 2: 351 (1832) equated with *S. timoriensis* by Irwin and Barneby l.c. 78; non *Cassia* glauca Lam. *Encycl.* 1: 647 (1785).

*Type:* not located.


*Type:* not designated.


*Lectotype:* Arnhem North Bay [Melville Bay, N.T.], R. Brown 4255, 14.ii.1803, BM (photo), (bearing a Type label, but not clear by whom identified as such), lectotype here designated; syntypes BRI!, K (2 sheets, photos), MEL (2 sheets!, photos), E, NSW, P, (cited by Symon 1966) not seen.


*Type:* not designated.

**Description**

Shrub to 2 m tall, stems with short appressed hairs, and longer erect hairs; *leaves* 15-17 cm long, including petioles; *leaflets* 15-18 pairs, lanceolate, 5-7 mm apart on the rachis, the largest 3.5-4.5 cm x 6-8 mm wide, largest in the centre of the rachis and decreasing towards both base and apex of rachis, apex obtuse mucronate, base obtuse, hairs pale on lower midrib and margins, veins obscure above and conspicuous below, olive green above and paler below; *petiole* 10-15 mm long; *stipules* acicular, caducous; *peduncle* 10-20 mm long, bearing 8-10 flowers; *pedicel* 15-20 mm long; *bracts* elliptic, pubescent, subpersistent; *sepal* elliptic, 4-5 mm long, pubescent, green; *petals* to 8 mm long, yellow; *androecium* of 10 stamens, 3 adaxial very reduced and sterile, 4 median fertile and c. 6 mm long, one central abaxial fertile and 4 mm long; *filaments* all short; *ovary* short, pubescent, with 15-20 ovules; *fructing pedicel* 15-20 mm long; *pod* 7-9 cm x 7-10 mm, apiculate, with 12-15 seeds, rich brown; *seeds* squarish, c. 5 mm long, smooth, with linear areole, dark olive green. Plate 3a.

**Distribution and ecology**

Scattered in sclerophyll woodland of northern Western Australia, Northern Territory and Queensland. Rarely recorded as flowering in the first year after germination. Map 6.

**Specimens examined**

WESTERN AUSTRALIA: 14 miles SW Argyle Downs Stn, Perry 2668, 2.viii.1949 (CANB); Old Lake Argyle Rd, c. 7.9 km SE Kununurra, Beaugal Bole 5431, 6.v.1976 (MEL); Emerian Pt, Dampierland Peninsula, Martin 63, 9.iii.1986 (PERTH); 6 km E Mt Talboi, Keighery 10621, 4.iii.1989 (PERTH).

NORTHERN TERRITORY: Mt Bundey, Dunlop 4262, 19.v.1976 (AD).

QUEENSLAND: Camooweal, DeLeserang s.n., -xii.1938 (BRI); 30 miles SE Riversleigh Stn, Perry 1435, 11.vi.1948 (CANB); Collinsville, Smith 4563, 14.x.1950 (BRI); Riversleigh Holding, Gillins 801, -vi.1963 (BRI); Lawn Hill Hstd, Webb & Tracey 10647, -v.1979 (CANB).

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References