



# FLORA OF AUSTRALIA

## *Volume 29* *Solanaceae*



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# FLORA OF AUSTRALIA

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In this volume all 206 species of the family Solanaceae known to be indigenous or naturalised in Australia are described. The family includes important toxic plants, weeds and drug plants.

The family Solanaceae in Australia contains 140 indigenous species such as boxthorn, wild tobacco, wild tomato, Pituri and tailflower. The 66 naturalised members include nightshade, tomato, thornapple, petunia, henbane, capsicum and Cape Gooseberry.

There are keys for the identification of all genera and species. References are given for accepted names and synonyms. Maps are provided showing the distribution of nearly all species. Many are illustrated by line drawings or colour plates. Notes on habitat, variation and relationships are included.

The volume is based on the most recent taxonomic research on the Solanaceae in Australia.

**Cover:** *Solanum semiarmatum* F. Muell.  
Painting by Margaret Stones. Reproduced by  
courtesy of David Symon.

**Contents of volumes in the Flora of Australia, the families arranged according to the system of A.J. Cronquist (1981).**

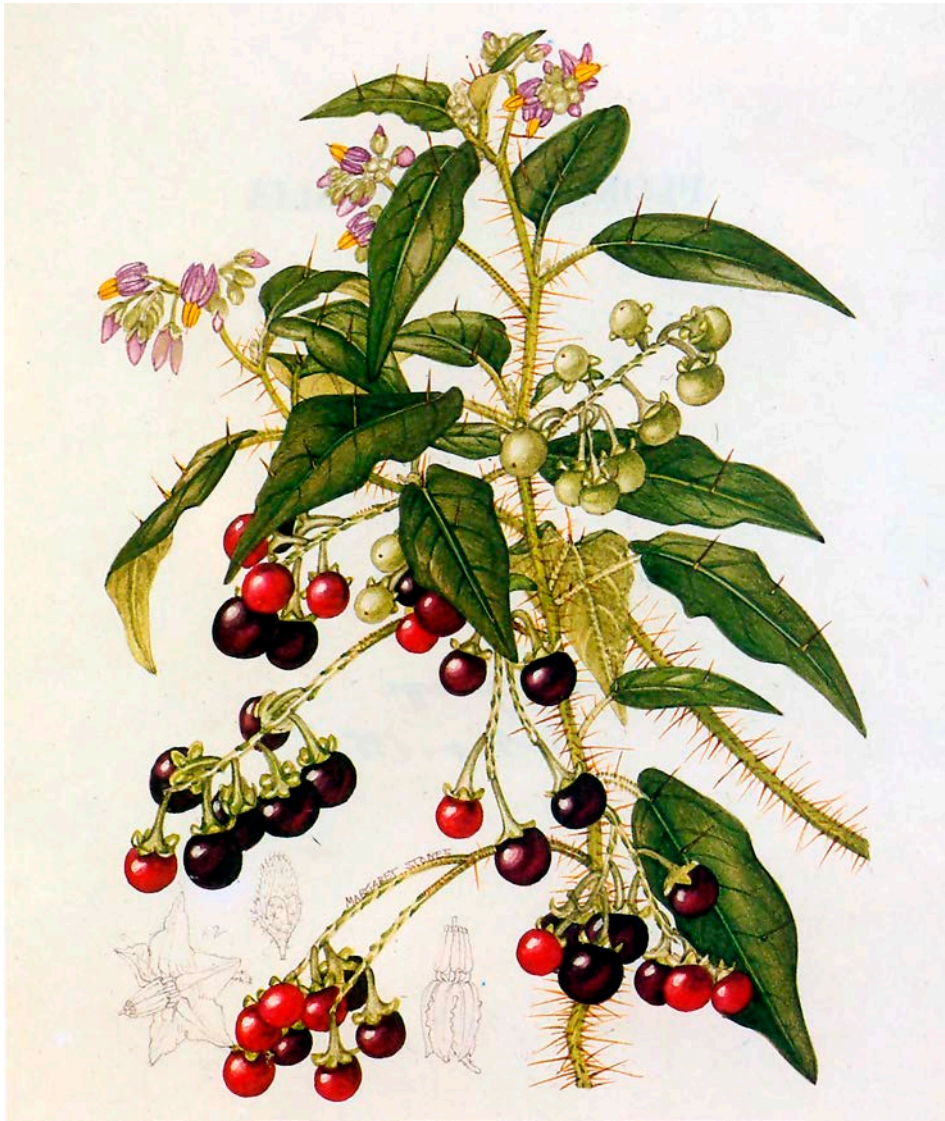
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# FLORA OF AUSTRALIA



*Solanum semiarmatum* F. Muell. Painting by Margaret Stones. Reproduced by courtesy of David Symon.

BUREAU OF FLORA AND FAUNA, CANBERRA

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*Solanaceae*

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# INTRODUCTION

This is the first of the descriptive volumes in the *Flora of Australia* to be published. The Solanaceae was chosen because taxonomic studies in most genera were due for completion by the anticipated date of publication of the volume. Revisions by Laurie Haegi, Philippa Horton and David Symon, botanists based or trained at the Waite Agricultural Research Institute, University of Adelaide, have provided the basis for the present treatment which has been substantially prepared by Rosemary Purdie.

Descriptions and discussion are concise but are supplemented by important references, synonymy, and information on type collections, cytology, distribution, habitat and illustrations published elsewhere. Descriptions are based on Australian material except in the case of some naturalised taxa for which the collections in Australian herbaria are inadequate. Likewise, synonymy is restricted to names based on Australian types or widely used in Australian literature. Misapplied names are given in square brackets together with an example of the misapplication. Alien taxa which are established in one or more localities, but not under cultivation, are considered naturalised and are included in the *Flora*; they are marked with an asterisk.

Genera and species are arranged to show natural relationships as currently interpreted. Although relationships cannot be shown adequately in a linear sequence, such an arrangement in a *Flora* usually assists comparison of closely related taxa. Intraspecific taxa are keyed out under the relevant species. Up to five collections are cited for each species and infraspecific taxon. Distribution maps are arranged in the same sequence as the text, grouped 15 on a page, and placed such that the last taxon on the page closely follows its position in the text. Thus, for any taxon, the reader will always find the map on a later page. The volume contains no new names or combinations.

As noted in Volume 1, the recommended abbreviation for this work is '*Fl. Australia*'.

## Acknowledgments

The format for the *Flora* has evolved through much consultation not only among the Editorial Committee but also with the Australian Government Publishing Service, members of the botanical community in Australia and the staff of the Bureau of Flora and Fauna. The assistance of all those involved is gratefully acknowledged.

David Symon kindly made available the painting of *Solanum semiarmatum* by Margaret Stones, for the cover and the frontispiece. Those who have provided colour slides are also thanked; they are cited in the captions to the colour figures.

Within the Bureau of Flora and Fauna, assistance in editing the volume was received from Alison McCusker, Arthur Chapman and Helen Hewson. The volume was typeset by John Busby, with the assistance of Geetha Sriprakash. Wendy Riley and Geetha Sriprakash typed the manuscript.







# SOLANACEAE

*R. W. Purdie, D. E. Symon and L. Haegi*

Herbs, shrubs or small trees, rarely (not in Australia) woody vines, glabrous or pubescent; prickles present or absent. Leaves alternate, sometimes almost opposite, simple to pinnate, exstipulate. Inflorescence terminal, lateral, axillary or leaf-opposed, appearing cymose, racemose, paniculate or sub-umbellate, or flowers solitary. Flowers actinomorphic or zygomorphic, bisexual or rarely unisexual. Calyx tubular to campanulate, with 5 (3–9) lobes, persistent. Corolla campanulate, tubular, funnel-shaped, urn-shaped or salver-shaped; limb rotate to stellate, with 5 (3–9) lobes, the lobes valvate, plicate, induplicate or imbricate in bud. Stamens usually 5 or 4, rarely 1, 2, 3 or 8, equal or unequal in length, inserted in corolla-tube and alternate with lobes; anthers bilocular or unilocular, sometimes cohering, dehiscing by longitudinal slits or terminal pores. Ovary superior, 2–5-locular, often on a hypogynous disc; style simple; stigma capitate. Ovules numerous, rarely few; placentation axile. Fruit a capsule or berry, usually bilocular. Seeds usually numerous, often flattened; embryo curved, spiral or straight; endosperm present.

A family of about 90 genera and over 2600 species, widely distributed in tropical and temperate regions but mostly native to Central and South America and, to a less extent, Australia. Represented in Australia by 23 genera and about 200 species of which 6 genera and 132 species are endemic and 65 species naturalised. The family contains important food plants such as potato (*Solanum tuberosum* L.), eggplant (*S. melongena* L.), tomato (*Lycopersicon lycopersicum* Karsten ex Farwell), chili, peppers and capsicum (*Capsicum* spp.), and Cape Gooseberry (*Physalis peruviana* L.). Species of *Browallia*, *Brunfelsia*, *Cestrum*, *Datura*, *Lycium*, *Nicotiana*, *Nierembergia*, *Petunia*, *Physalis*, *Salpiglossis*, *Schizanthus*, *Solanum*, *Solandra* and *Streptosolen* are often cultivated as ornamentals. Some species have a high alkaloid content and are poisonous, or are drug plants used medicinally or as narcotics, e.g. tobacco (*Nicotiana* spp.), Deadly Nightshade (*Atropa belladonna* L.), thornapple (*Datura* spp.) and Black Henbane (*Hyoscyamus niger* L.).

The inflorescence of the Solanaceae is almost always terminal or modified from a terminal arrangement. In many cases the entire terminal portion of the plant may be given over to the inflorescence— all branches ending in a flower or aggregation of flowers (e.g. *Duboisia*). In a few instances the flowering region is confined to spur shoots (e.g. *Lycium*). The branching of the plant in the flowering region is sympodial, with the following season's vegetative growth arising from axils immediately below the flowering portion of the current season. Although the phyllotaxy is always spiral in the vegetative region, it is often opposite in the upper flowering parts, with a dichasial cymose arrangement. The transition may be abrupt or gradual. The cymes are sometimes not fully developed and some sections may appear monochasial through the lack of development of one of the axillary buds of a triad. In other cases, cymes are reduced to single flowers subtended by a pair of 'bracteoles'. Frequently, apparent adnation of various axes to the next highest node or partly along an internode results in extra-axillary, pseudo-axillary and leaf-opposed arrangements of flowers (e.g. *Cyphanthera microphylla* Miers). The pedicels of such flowers bear no 'bracteoles', and various patterns may be observed on a single plant. In *Solanum*, leaves and bracts are usually absent within inflorescences, which are frequently extra-axillary through concaulescence.

## SOLANACEAE

In order to avoid complicated terminology and descriptions, inflorescences in this treatment have, where necessary, been described by comparison with a commonly recognised arrangement to which they are most similar e.g. 'raceme-like'. Throughout the treatment of the family, filament lengths refer to the free portion of the filaments.

R. Brown, Solaneae, Prodr. 443–449 (1810); F. Dunal, Solaneae, in A. P. de Candolle (ed.), Prodr. 13(1): 1–690 (1852); G. Bentham, Solaneae, Fl. Austral. 4: 442–470 (1868); G. Bentham, Solanaceae, in G. Bentham & J. D. Hooker, Genera Plantarum 2(1): 882–913 (1873); K. Domin, Beiträge zur Flora und Pflanzengeographie Australiens, Solanaceae, Biblioth. Bot. 89: 571–595 (1928–29); H. Melchior, Solanaceae, in A. Engler's Syllabus der Pflanzenfamilien, 12th edn, 2: 444–447 (1964); C. B. Heiser, Nightshades: The Paradoxical Plants (1969); S. L. Everist, Poisonous Plants of Australia 441–484 (1974); J. G. Hawkes, R. N. Lester & A. D. Skelding (eds), The biology and taxonomy of the Solanaceae, Linn. Soc. Symp. Ser. 7 (1979); N. Peterson, Aboriginal uses of Australian Solanaceae, in Hawkes et al., op. cit. 171–190.

### KEY TO SUBFAMILIES AND TRIBES

Key adapted from A. T. Hunziker in J. G. Hawkes et al., op. cit. 49–51.

- |  |                                  |
|--|----------------------------------|
| <p><b>1</b> Seeds prismatic, reniform, or subglobose, or of a different form but never discoidal-compressed; embryo straight or bent, but then with incumbent or oblique cotyledons</p>  | Subfam. <b>I. CESTROIDEAE</b>    |
| <p><b>2</b> Pedicels articulated; corolla actinomorphic; shrubs or trees (<i>Cestrum</i>)</p>  | Trib. <b>II. CESTREAE</b>        |
| <p><b>2:</b> Pedicels not articulated; corolla actinomorphic or zygomorphic; herbs or shrubs</p>   |                                  |
| <p><b>3</b> Aestivation volutive; corolla regular, 5-lobed, streaked; stamens 4 or 5, anthers dehiscent extrorsely by long slits, thecae confluent in 5/7 genera; shrubs (<i>Anthocercis</i>, <i>Anthotroche</i>, <i>Crenidium</i>, <i>Cyphanthera</i>, <i>Duboisia</i>, <i>Grammosolen</i>, <i>Symonanthus</i>)</p> | Trib. <b>I. ANTHOCERCIDEAE</b>   |
| <p><b>3:</b> Aestivation contorted-conduplicate, imbricate-conduplicate, imbricate or cochlear; corolla actinomorphic or sub-zygomorphic</p>   |                                  |
| <p><b>4</b> Stamens 5, 1 usually inserted at a different level (in Australian species); corolla actinomorphic or slightly zygomorphic; herbs, rarely shrubs (<i>Nicotiana</i>, <i>Petunia</i>, <i>Nierembergia</i>)</p>  | Trib. <b>III. NICOTIANEAE</b>    |
| <p><b>4:</b> Stamens 4, usually didynamous; corolla zygomorphic; herbs (<i>Browallia</i>)</p>  | Trib. <b>IV. SALPIGLOSSIDEAE</b> |
| <p><b>1:</b> Seeds discoidal or more or less kidney-shaped, flat, compressed; embryo circinnate or curved</p>  | Subfam. <b>II. SOLANOIDEAE</b>   |
| <p><b>5</b> Aestivation valvate, induplicate, plicate or conduplicate (i.e., corolla-lobes never overlapping)</p>  |                                  |
| <p><b>6</b> Filaments inserted generally near centre of anthers on dorsal face; climber (<i>Salpichroa</i>)</p>  | Trib. <b>VI. JABOROSEAE</b>      |
| <p><b>6:</b> Filaments inserted at or near base of anthers</p>   |                                  |
| <p><b>7</b> Aestivation conduplicate-contorted; herbs or shrubs (<i>Datura</i>)</p>  | Trib. <b>IX. DATUREAE</b>        |
| <p><b>7:</b> Aestivation valvate, induplicate or plicate, never conduplicate-contorted; herbs or shrubs (<i>Capsicum</i>, <i>Cyphomandra</i>, <i>Lycianthes</i>, <i>Lycopersicon</i>, <i>Physalis</i>, <i>Solanum</i>, <i>Withania</i>)</p>  | Trib. <b>VII. SOLANEAE</b>       |

- 5: Aestivation imbricate, cochlear or quincuncial
- 8 Fruit a berry; corolla regular
- 9 Calyx scarcely enlarged; gynoecium 2–carpellary; shrubs (*Lycium*) Trib. V. LYCIEAE
- 9: Calyx scarious, enclosing berry; gynoecium 2–5–carpellary; herbs (*Nicandra*) Trib. VIII. NICANDREAE
- 8: Fruit capsular, dehiscent by an operculum; calyx indurated, reticulate-costate; herbs (*Hyoscyamus*) Trib. X. HYOSCYAMEAE

## KEY TO GENERA

- 1 Anthers dehiscing by terminal pores or short slits
- 2 Connective large, conspicuous at back of anther 15. CYPHOMANDRA
- 2: Connective small, inconspicuous at back of anther
- 3 Flowers in pedunculate inflorescences; calyx distinctly 5–lobed (rarely shortly so); leaves often lobed or dentate 16. SOLANUM
- 3: Flowers in axillary clusters or solitary; calyx truncate or minutely 5–10–dentate; leaves always entire LYCIANTHES †
- 1: Anthers dehiscing by slits running the entire length of the loculi
- 4 Flowers unisexual (rudimentary ovary or stamens sometimes present) 2. SYMONANTHUS
- 4: Flowers bisexual
- 5 Stamens 4
- 6 Fruit a berry
- 7 Shrubs or trees without spines; flowers in panicles; anthers unilocular 3. DUBOISIA
- 7: Spinescent shrubs, intricately branched; flowers in axillary clusters; anthers bilocular 13. LYCIUM
- 6: Fruit a capsule
- 8 Annual herbs; stamens inserted high on corolla-tube, their filaments short; corolla blue 12. BROWALLIA
- 8: Shrubs; stamens inserted at base of corolla-tube; corolla white, cream or yellow, often striated in throat
- 9 Anthers bilocular 1. ANTHOCERCIS
- 9: Anthers unilocular
- 10 Leafless, spinescent shrubs; stamens and style exserted 7. CRENIDIUM
- 10: Shrubs with (sometimes small) leaves; stamens and style not exserted 4. CYPHANTHERA
- 5: Stamens 5
- 11 Fruit a capsule
- 12 Capsule more than 20 mm long, spiny or tuberculate 22. DATURA
- 12: Capsule less than 15 mm long, smooth or nearly so
- 13 Calyx enlarged after flowering, the teeth becoming spiny; capsule circumscissile 23. HYOSCYAMUS
- 13: Calyx not or scarcely enlarged after flowering, the teeth not becoming spiny; capsule not circumscissile

- 14** Herbs
- 15** Corolla-tube about 1 mm wide for about 3/4 of its length, abruptly dilated at the top into a broad, shallow cup **11. NIEREMBERGIA**
- 15:** Corolla-tube more than 1 mm wide near the base, widening gradually
- 16** Calyx segments fused for about half their length; valves of capsule 4 (rarely 2) **9. NICOTIANA**
- 16:** Calyx segments free almost to base; valves of capsule 2, entire or bifid **10. PETUNIA**
- 14:** Shrubs
- 17** Plants single-stemmed or sparingly branched, glabrous; corolla-tube at least 25 mm long **9. NICOTIANA**
- 17:** Much-branched shrubs with a dense tomentum at least on immature parts; corolla-tube up to 15 mm long
- 18** Plants leafless, spinescent; corolla yellow, the tube narrow; stamens and style much exerted **7. CRENIDIUM**
- 18:** Plants leafy; corolla deep violet or white, the tube broad, expanded into a limb at the top or, if narrow, the stamens and style not exerted
- 19** Bracts present within inflorescence; corolla white with purple striations, the lobes glabrous on upper (inner) face, free and erect in bud **5. GRAMMOLEN**
- 19:** Bracts absent from inflorescence; corolla deep violet (rarely white), the lobes densely pubescent on upper (inner) face, cohering and with incurved apices in bud **6. ANTHOTROCHE**
- 11:** Fruit a berry, sometimes firm or dryish
- 20** Leaves pinnatisect; anthers with terminal appendages **17. LYCOPERSICON**
- 20:** Leaves entire or lobed; anthers without appendages
- 21** Calyx enlarged in fruit, becoming longer than berry and often enclosing it
- 22** Mature berry bright red or black
- 23** Corolla more than 15 mm long, purple-brown; berry shining black **ATROPA †**
- 23:** Corolla less than 10 mm long, greenish-yellow; berry bright red **20. WITHANIA**
- 22:** Mature berry various shades of yellow or green, rarely purple, red or orange
- 24** Calyx-lobes at fruiting stage much longer than tube, sagittate at base; corolla blue **21. NICANDRA**
- 24:** Calyx-lobes at fruiting stage much shorter than tube, not sagittate; corolla purple or yellowish
- 25** Flowers in lateral cymes; corolla purple; calyx at fruiting stage more or less globular, never ribbed **16. SOLANUM**
- 25:** Inflorescence solitary; corolla yellow, sometimes with dark markings; calyx at fruiting stage not globular, often ribbed **19. PHYSALIS**

- 21:** Calyx not or scarcely enlarged in fruit, always shorter than berry
- 26** Corolla stellate, the lobes as long as tube **18. CAPSICUM**
- 26:** Corolla-tube narrow, funnel-shaped or urn-shaped, the lobes much shorter than tube
- 27** Spinescent shrubs; leaves somewhat fleshy; corolla funnel-shaped **13. LYCIUM**
- 27:** Non-spinescent shrubs or herbs; leaves not fleshy; corolla urn-shaped or tubular
- 28** Scrambling or climbing herbs; flowers solitary in axils; corolla urn-shaped **14. SALPICHROA**
- 28:** Erect shrubs or small trees; flowers in panicles or racemes; corolla narrow **8. CESTRUM**

The genera marked with a dagger (†) are keyed out here but will not be treated further in this work. *Lycianthes* has been recently collected from offshore islands in north Queensland but is inadequately recorded. *Atropa* (Deadly Nightshade) has sometimes been incorrectly recorded as naturalised in Australia.

### Subfam. I. CESTROIDEAE

Solanaceae subfam. *Cestroideae* Reiche, *Fl. Chile* 5: 310 (1910) (as *Cestreae*).

Type genus: *Cestrum* L.

Seeds prismatic, reniform or subglobose or otherwise, but not discoidal and compressed; embryo straight, or bent (not strongly curved) and then with incumbent or oblique cotyledons; endosperm copious.

In Australia contains the tribes Anthocercideae, Cestreae, Nicotianeae and Salpi-glossideae.

### Trib. I. ANTHOCERCIDEAE Don

Trib. *Anthocercideae* Don, *Gen. Hist.* 4: 479 (1837) (as *Anthocerceae*).

Type genus: *Anthocercis* Labill.

*Duboisieae* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 3: 165 (1849)

Woody shrubs. Calyx scarcely enlarged in fruit. Corolla regular or nearly so, 5-lobed, the tube shortly funnel-shaped and striated; aestivation volutive, margins of each lobe inrolled, one overlapping the other. Stamens 5, or 4 with a staminode, inserted near base of corolla-tube; anthers with extrorse dehiscence. Fruit a berry or capsule. Seeds sub-reniform with reticulate testa; embryo slightly curved.

Seven genera, all species endemic in Australia except *Duboisia myoporoides* R. Br. which extends to New Caledonia.

## 1. ANTHOCERCIS

*Anthocercis* Labill., *Nov. Holl. Pl.* 2: 19 (1806); from the Greek *anthos* (a flower) and *kerkis* (a ray), in reference to the narrow corolla-lobes.

Type species: *A. littorea* Labill.

Shrubs, glabrous, or pubescent with glandular or non-glandular hairs. Leaves alternate or rarely clustered, simple. Inflorescence cyme-, raceme- or panicle-like, terminal and axillary; flowers rarely solitary. Flowers bisexual, slightly zygomorphic, each subtended by a pair of opposite bracts. Calyx campanulate to cupular, 5-lobed. Corolla regular or almost so, narrowly tubular with spreading limb, white, cream or yellow, with dark striations in tube; limb 5-lobed, the lobes volute in bud. Stamens 4, didynamous or subequal, inserted at base of corolla-tube; a staminode sometimes present; anthers bilocular, not cohering, dorsifixed, dehiscent by longitudinal slits. Ovary bilocular; stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening from apex by two bifid valves, the lower part enclosed by persistent calyx. Seeds sub-reniform.  $n=36$ ; L. Haegi, *Telopea* 2: 176 (1981).

A genus of 9 species endemic in southern temperate Australia, with its centre of distribution in the South West Botanical Province of W.A. All species contain tropane alkaloids; some have occasionally caused poisoning in children or have been suspected of poisoning stock.

G. Bentham, *Anthocercis* (in Scrophulariaceae), in A. de Candolle (ed.), *Prodr.* 10: 191–192 (1846); J. Miers, On the genera of the tribe Duboisieae, *Ann. Mag. Nat. Hist.* ser. 2, 11: 370–375 (1853); G. Bentham, *Anthocercis* p.p. (in Scrophularineae), *Fl. Austral.* 4: 474–481 (1868); L. Haegi, Australian genera of the Solanaceae, in J. G. Hawkes et al., *Linn. Soc. Symp. Ser.* 7: 121–124 (1979); L. Haegi, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

- |    |   |                           |
|----|---|---------------------------|
| 1  | Branchlets spinescent   |                           |
| 2  | Branches and leaves conspicuously pubescent   | 8. <i>A. anisantha</i>    |
| 2: | Branches and leaves glabrous or sparsely pubescent  |                           |
| 3  | Inflorescence usually branched; pedicels pubescent; most leaves at least 3 mm wide  | 6. <i>A. intricata</i>    |
| 3: | Inflorescence not branched; pedicels glabrous or sparsely pubescent; most leaves 0.5–2.5 mm wide  |                           |
| 4  | Corolla-lobes with tuft of hairs at apex  | 7. <i>A. genistoides</i>  |
| 4: | Corolla-lobes glabrous at apex  | 8. <i>A. anisantha</i>    |
| 1: | Branchlets not spinescent   |                           |
| 5  | Plant glandular-pubescent, rarely almost glabrous   |                           |
| 6  | Leaves 10–30 mm wide  | 1. <i>A. viscosa</i>      |
| 6: | Leaves 0.5–10 mm wide   |                           |
| 7  | Corolla 9–16 mm long, the lobes 4–9 mm long   | 2. <i>A. fasciculata</i>  |
| 7: | Corolla 15–28 mm long, the lobes 10–20 mm long  |                           |
| 8  | Leaves, pedicels and calyces pubescent with conspicuous glandular hairs; corolla-tube narrowly funnel-shaped                              | 3. <i>A. angustifolia</i> |
| 8: | Leaves, pedicels and calyces glabrous or sparsely pubescent with inconspicuous hairs; corolla-tube inflated, slightly constricted at apex | 9. <i>A. gracilis</i>     |



- 5: Plant glabrous, rarely pubescent, the branches sometimes with prickles
- 9 Leaves 1–2 mm wide, few at flowering; flowers in small groups **9. *A. gracilis***
- 9: Leaves 4–35 mm wide; branches leafy; inflorescence raceme- or panicle-like
- 10 Plant much-branched from base; inflorescence a leafy raceme; corolla-tube not more than one-third of corolla length, the lobes narrow **4. *A. littorea***
- 10: Plant with 1 or 2 main stems; inflorescence a pyramidal panicle leafless except at base; corolla-tube one-third to one-half of corolla length, the lobes broad **5. *A. ilicifolia***

## 1. *Anthocercis viscosa* R. Br., *Prodr.* 448 (1810)

T: King George Sound, W.A., *R. Brown s.n.*; syn: BM.

Erect, sometimes spreading or straggling viscid shrub to 3 m, pubescent with glandular hairs. Leaves obovate to ovate, almost sessile, 20–60 mm long, usually 10–30 mm wide, minutely serrulate-crenulate. Inflorescence a cyme, 1–3-flowered, pedunculate; pedicels 5–15 mm long. Calyx 3–15 mm long. Corolla 20–48 mm long, white to creamy-white, the striations green or purplish; lobes ovate-triangular to linear, 12–25 mm long, sometimes with pale purple streaks. Stamens 4.5–12.5 mm long. Capsule ovoid to ellipsoid, acute or apiculate, 8–19 mm long. Seeds 1.8–3 mm long. *Sticky Tailflower*.

Endemic in W.A. along the southern coastline westwards from Cape Arid. Always associated with granite outcrops. Suspected of poisoning stock. There are two subspecies.

Corolla-lobes 1.5–2.5 times longer than wide and less than 1.5 times as long as corolla-tube

**1a. subsp. *viscosa***

Corolla-lobes 3–5 times longer than wide and usually twice as long as corolla-tube

**1b. subsp. *caudata***

### 1a. *Anthocercis viscosa* R. Br. subsp. *viscosa*

*A. viscosa* var. *baueriana* Benth. in DC., *Prodr.* 10: 191 (1846).

T: based on Endl., *Iconogr. Gen. Pl.* t. 68 (1839).

Calyx usually 8–13 mm long. Corolla usually 30–40 mm long; tube about half length of corolla; lobes 7–15 mm wide. Stamens 8–13 mm long.

Occurs from Bremer Bay to Albany, and near Denmark, W.A. Map 1.

W.A.: Albany, *A. M. Ashby* 1993 (AD); Two Peoples Bay, *N. T. Burbidge* 8140 (ADW, CANB); Frenchman Bay, *R. Garraty* 43 (PERTH); Bremer Bay area, *L. Haegi* 1858 (BRI, CORD, F, MEL, NSW, PERTH).

### 1b. *Anthocercis viscosa* subsp. *caudata* Haegi, *Telopea* 2: 175 (1981)

T: Condingup Peak, c. 62 km ENE of Esperance, W.A., 6 Oct. 1976, *L. Haegi* 1225; holo: PERTH; iso: AD, CANB, K, L, MO, NSW.

Calyx 3–6.5 mm long. Corolla 20–30 mm long; tube about one-quarter to one-third length of corolla; lobes 3.5–6.5 mm wide. Stamens 4–8 mm long. Fig. 1.

Occurs between Esperance and Mt Ragged, and in the Walpole-Nornalup National Park W.A. Map 2.

W.A.: c. 10 km ESE of Howick Hill, *N. N. Donner* 2638 (AD, CANB, PERTH); c. 117 km E of Esperance, *L. Haegi* 1237 (AD, BIRM, BRI, F, NSW, PERTH); Sandy Hook Is., 10 Nov. 1950, *J. H. Willis* (MEL).

## 2. *Anthocercis fasciculata* F. Muell., *Fragm. Phytogr. Austral.* 1: 122 (1859)

T: Phillips River, south-western W.A., *Maxwell s.n.*; syn: BM, K, MEL.

Erect shrub to 3.5 m, sparsely to moderately pubescent with simple, glandular hairs. Leaves narrowly elliptic to narrowly obovate, sessile, the upper ones linear, 11–45 mm long, 3–10 mm wide, (the juvenile leaves larger), entire. Inflorescence a cyme; pedicels 4–16 mm long. Calyx 3–5 mm long. Corolla 9–16 mm long, white; lobes ovate, elliptic or oblong, obtuse, 4–9 mm long. Stamens 4–6 mm long. Capsule ellipsoid to ovoid, often slightly apiculate, 6–9 mm long. Seeds 1.4–2 mm long.

A rare species, endemic to the Fitzgerald River National Park, south-western W.A. Grows in sandy soil on rocky quartzitic ranges. Map 3.

W.A.: East Mt Barren, *C. A. Gardner* 2949 (PERTH); Whoogarup Range, *A. S. George* 7200 (PERTH); East Mt Barren, 14 Oct. 1961, *J. H. Willis* (MEL).

## 3. *Anthocercis angustifolia* F. Muell., *Trans. Philos. Soc. Victoria* 1: 21 (1855)

T: near Mt Lofty, S.A., *Mueller s.n.*; syn: K, MEL.

Illustration: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1065 E, F (1957).

Erect shrub to 2.5 m, moderately to densely pubescent with glandular hairs; scattered non-glandular hairs sometimes present. Leaves linear, rarely narrowly elliptic to obovate, sessile, 2–50 mm long, 0.5–6 mm wide, (the juvenile leaves larger), entire, pubescent, the lower leaves glabrescent. Flowers solitary; pedicels 2–6 mm long. Calyx 4–7 mm long. Corolla 19–28 mm long, white to creamy-yellow; lobes linear, 12–20 mm long. Stamens 3–6 mm long. Capsule broadly ovoid-ellipsoid to pear-shaped, 4–9 mm long. Seeds 1.7–2.2 mm long.

Endemic to S.A., with scattered populations in the Adelaide Hills and the Flinders Ranges. Grows in clay-loam in rocky habitats. Map 4.

S.A.: Telowie Gorge, *L. Haegi* 1257 (AD, MO, NSW, PERTH); c. 10 km E of Adelaide, *D. J. E. Whibley* 1577 (AD, ADW).

Leaves often smaller in plants from the Flinders Ranges.

## 4. *Anthocercis littorea* Labill., *Nov. Holl. Pl.* 2: 19, t. 158 (1806)

T: 'Habitat in terrâ Van-Leuwin' (south-western W.A.), *Labillardière s.n.*; syn: FI, G, P.

*A. glabella* Miers, *Ann. Mag. Nat. Hist.*, ser. 2, 11: 373 (1853).

T: Fremantle, W.A., *Gilbert s.n.*; n.v.

Illustrations: *C. A. Gardner & H. W. Bennetts*, *Toxic Pl. W. Austral.* 175 (1956); *B. J. Grieve & W. E. Blackall*, *How to Know W. Austral. Wildfl.* 4: 608 & t. I (1975).

Erect, rarely sprawling, shrub to 3 m, much-branched from base, the branches and leaves glabrous; seedlings with scattered prickles on stem. Leaves obovate to narrowly obovate, sometimes spatulate, sessile or almost so, 18–65 mm long, 4–31 mm wide,

usually thick and fleshy, entire, or juvenile leaves dentate. Inflorescence raceme-like, leafy; pedicels 2.5–7.5 mm long. Calyx 4–7.5 mm long. Corolla 14–32 mm long, yellow or pale yellow, the striations brown, purple-brown or maroon; lobes linear, 10–25 mm long, 2–4 mm wide. Stamens 3–8 mm long. Capsule narrowly ovoid to narrowly ovoid-ellipsoid, acute to acuminate or apiculate, 9–19 mm long. Seeds 1.5–1.9 mm long. *Yellow Tailflower*. Figs 4, 5A–B.

Endemic in south-western W.A. along the southern and western coasts, extending north to Geraldton. Grows in calcareous sand; a colonising species common after fire or disturbance. Map 5.

W.A.: Geraldton, *R. Coveny* 3041 (NSW, PERTH); c. 3 km NE of Esperance, *L. Haegi* 1245 (AD, BRI, CANB, F, PERTH); c. 13 km W of Denmark, 13 Sept. 1963, *J. H. Willis* (MEL).

Easily confused with *A. ilicifolia* Hook. with which it is sympatric on the west coast; distinguished by the much-branched habit, leafy inflorescence, and corolla size and shape. Fruit often malformed due to galling. Suspected of poisoning stock; rarely known to have poisoned children.

## 5. *Anthocercis ilicifolia* Hook., *Bot. Mag.* 57: sub t. 2961 (1830)

T: Swan River, W.A., *Fraser s.n.*; holotype: K; isotype: BM, K.

Erect shrub to 2.7 m with 1 or 2 stems, branches often tinged with purple, branches and leaves glabrous, rarely with scattered glandular hairs; seedlings with prickles on stems. Leaves obovate to narrowly obovate-elliptic, occasionally spatulate or elliptic, sessile or almost so, 15–80 mm long, 7–35 mm wide, thick and fleshy, entire, or the juvenile leaves dentate. Inflorescence panicle-like, leafless except at base; pedicels 3–8 mm long. Calyx 4–8 mm long. Corolla 12–27 mm long, bright yellow, the striations purple to maroon; tube often tinged with purple outside; lobes linear, 6–18 mm long, 3–6 mm wide. Stamens 4–10 mm long. Capsule narrowly ovoid-ellipsoid, acute to apiculate, 11–21 mm long. Seeds 1.4–1.9 mm long.

Endemic to the south-western coast of W.A. from Kalbarri to Perth. Grows in calcareous sand; a colonising species common after fire or disturbance. Easily confused with *A. littorea* Labill., with which it is sympatric; distinguished by the large, pyramidal, leafless inflorescence, brighter yellow flowers, larger corolla tube and broader corolla lobes. Fruit often malformed due to galling.

Calyx-tube funnel-shaped, thin-textured

**5a. subsp. *ilicifolia***

Calyx-tube bulbous, thick-textured

**5b. subsp. *caldarifolia***

### 5a. *Anthocercis ilicifolia* Hook. subsp. *ilicifolia*

Calyx-tube funnel-shaped, widest immediately below lobes, maximum diam. 2.5–3.5 mm, thin-textured. Upper stamens 6–7.5 mm long. Fig. 2.

Occurs throughout range of species except in the Kalbarri area. Map 6.

W.A.: c. 10 km NE of Jurien Bay, *L. Haegi* 1906 (AD, CANB, NSW, PERTH); Perth, *F.C. Vasek* 681005–6 (PERTH).



**Figure 1.** *Anthocercis viscosa* subsp. *caudata*. Photograph — A. S. George.

**Figure 2.** *Anthocercis ilicifolia* subsp. *ilicifolia*. Photograph — F. W. Humphreys.

**Figure 3.** *Anthocercis anisantha* subsp. *anisantha*. Photograph — A. S. George.

**Figure 4.** *Anthocercis littorea*. Photograph — L. Haegi.

**5b. *Anthocercis ilicifolia* subsp. *caldariola* Haegi, *Telopea* 2: 174 (1981)**

T: c. 10 km SSW of Kalbarri, W.A., 5 Sept. 1979, *L. Haegi* 1966; holo: PERTH; iso: CANB, K, NSW.

Calyx-tube markedly bulbous, contracted immediately below lobes and widest at middle, maximum diam. 4–5 mm, thick-textured. Upper stamens 7.5–10 mm long.

Endemic to the Kalbarri area, W.A. Common along roadsides and in disturbed areas. Map 7.

W.A.: Kalbarri, *K. M. Allan* 201 (AD, MEL, PERTH); 2 km E of Kalbarri, *L. Haegi* 1148 (AD, BIRM, BRI, F, MEL, MO, NSW, PERTH); 4 km S of Kalbarri, *P. G. Wilson* 6555 (PERTH).

**6. *Anthocercis intricata* F. Muell., *Fragm. Phytogr. Austral.* 1: 211 (1859)**

T: near Culla, between Murchison River and Port Gregory, W.A., *A. Oldfield* s.n.; syn: K, MEL.

*A. arborea* F. Muell., *Fragm. Phytogr. Austral.* 1: 212 (1859).

T: near Minanooka, between Port Gregory and Murchison River, W.A., *A. Oldfield* s.n.; syn: K, MEL.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 609 (1975).

Dense, rounded, spinescent shrub to 3 m tall, moderately to sparsely pubescent with glandular hairs and scattered non-glandular hairs; stems glabrescent. Leaves narrowly elliptic to obovate, almost sessile (or with petiole to 3 mm long), 10–30 mm long, 1.5–5.5 mm wide, (the juvenile leaves larger), entire. Inflorescence a cyme, 3–7-flowered, pedunculate; pedicels 5–12 mm long. Calyx 3–4 mm long. Corolla 15–21 mm long, creamy-white, the striations purple; lobes linear, 10–15 mm long. Stamens 2.5–4 mm long. Capsule narrowly oblong-ellipsoid, often apiculate, 5–17 mm long. Seeds 1.6–2 mm long.

Endemic in coastal south-western W.A. from Shark Bay to Geraldton. Usually grows in small, scattered populations on consolidated dunes. Map 8.

W.A.: c. 5 km S of Geraldton, *A. M. Ashby* 2870 (AD); c. 5 km from Geraldton, *A. C. Burns* 7 (PERTH); c. 5 km SE of Geraldton, *L. Haegi* 1941 (ADW, BRI, CANB, MEL, NSW, PERTH).

**7. *Anthocercis genistoides* Miers, *Ann. Mag. Nat. Hist.*, ser. 2, 11: 375 (1853)**

T: south-western W.A., *Drummond* 86; syn: BM, K.

*A. spinescens* F. Muell., *Fragm. Phytogr. Austral.* 1: 122 (1859).

T: West Mt Barren, W.A. [*Maxwell*]; n.v.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 609 (1975).

Erect, spinescent shrub to 3 m, leafy to almost leafless, mostly glabrous. Leaves narrowly elliptic to linear or obovate, sessile, usually 5–30 mm long, up to 2 mm wide, entire, pubescent when young with mainly glandular hairs. Flowers in axillary or terminal cyme; pedicels 2–6 mm long. Calyx 1.5–3.5 mm long, pubescent inside. Corolla 8–25 mm long, pubescent inside, white to creamy-white, rarely pale yellow, the striations maroon, purple, brown or green; lobes narrowly triangular to linear, 4–20 mm long, glandular at apices. Stamens 2.5–4 mm long. Capsule ellipsoid, 6–8 mm long. Seeds 2 mm long. Fig. 5C.

Endemic in south-western W.A. Grows in scattered populations commonly associated with granite rock outcrops in sandy to sandy-loam soils. Map 9.

W.A.: North Irwin, A. M. Ashby 3268 (AD, PERTH); c. 15 km SW of Ravensthorpe, L. Haegi 1036 (AD, CBG, NSW, PERTH); Moorine Rock, Mt Caroline, L. Haegi 1782 (BRI, CBG, MEL, NSW, PERTH).

A variable species; glabrescent forms in the Wongan Hills area approach *A. anisantha* Endl. Sometimes confused with *A. gracilis* Benth., but distinguished by the spinescent habit, the shorter pedicels and calyx and the white corolla.

## 8. *Anthocercis anisantha* Endl., *Stirp. Herb. Hügel*. 13 (1838)

T: interior of south-western New Holland (south-western W.A.), *Roe s.n.*; holo: W.

Spinescent shrub to 3 m, leafy to almost leafless, pubescent with glandular or non-glandular hairs, rarely glabrous. Leaves narrowly elliptic, ovate, obovate, sessile or almost so, mostly 3–14 mm long, 1–3 mm wide, entire, often thick and fleshy or leathery. Flowers in cyme-like, compact, terminal clusters; pedicels 2–6 mm long. Calyx 2–4.5 mm long. Corolla 7–20 mm long, white to yellowish, the striations purple-brown or maroon; lobes linear to narrowly ovate, 2.5–15 mm long. Stamens 2–6 mm long. Capsule ovoid to ovoid-ellipsoid, acute, acuminate or apiculate, 4.5–9 mm long. Seeds 1.3–2 mm long.

Occurs in temperate and arid areas of south-western W.A. and on Eyre Peninsula, S.A. Usually in open, disturbed areas, in clay soils.

Branches with long, spreading, glandular hairs; clustered leaves less than 5 times as long as wide

**8a. subsp. *anisantha***

Branches usually with antrorse, appressed, non-glandular hairs; clustered leaves 6 or more times as long as wide

**8b. subsp. *collina***

## 8a. *Anthocercis anisantha* Endl. subsp. *anisantha*

Illustration: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1087 (1957).

Hairs on branches and, to a less extent, leaves predominantly glandular especially on young shoots. Fig. 3.

Occurs in south-western W.A. and on the mainland and offshore islands in the Port Lincoln area, S.A. Usually grows in woodland or shrubland on undulating plains. Map 10.

W.A.: near Nukarni, A. M. Ashby 2501 (AD, PERTH); SE of Yuna, A. S. George 2381 (MEL, PERTH). S.A.: c. 10 km E of Port Lincoln, L. Haegi 1303 (AD, MO, NSW, PERTH).

## 8b. *Anthocercis anisantha* subsp. *collina* Haegi, *Telopea* 2: 174 (1981)

T: Yandinga Gorge, c. 50 km N of Minnipa, S.A., 15 Aug. 1969, A. E. Orchard 2171; holo: AD; iso: CANB, K, MO, PERTH.

Hairs on branches predominantly non-glandular, appressed, rarely absent.

Uncommon, endemic to the northern Eyre Peninsula, S.A. Mostly occurs in *Triodia* hummock grassland on rhyolitic-porphyrific hills of the Gawler Ranges and on isolated hilltops further south. Map 11.

S.A.: c. 30 km SW of Kimba, L. Haegi 1309 (AD, MO, NSW, PERTH); Mt Wallaby, E. N. S. Jackson 2016 (AD, BRI); Mt Notts, D. E. Symon 8072 (ADW).

**9. Anthocercis gracilis** Benth. in DC., *Prodr.* 10: 192 (1846)

T: Swan River, W.A., *Drummond s.n.*; holo: K; iso: BM, K.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 608 (1975).

Rounded shrublet to 60 cm, almost leafless in flowering state, mostly glabrous or with scattered glandular and non-glandular hairs. Leaves narrowly elliptic or obovate, sessile, 3–27 mm long, 1–2 mm wide, entire to minutely toothed. Flowers scattered, solitary or in cymes; pedicels 5–8 mm long. Calyx 3.5–4 mm long. Corolla 15–21 mm long, pale yellow-green, striations purplish; lobes linear, 10–15 mm long. Stamens 3.5–4 mm long. Capsule ellipsoid, acute, 6.5–10 mm long. Seeds 1.5 mm long. *Slender Tailflower*.

A rare species confined to the escarpment of the Darling Range near Perth, W.A. Occurs in granite-derived soil in open-forest. Map 12.

W.A.: 22 km ESE of Perth, *L. Haegi 1161* (AD, BIRM, BRI, CANB, MO, NSW, PERTH); 22 km E of Perth, *K. F. Kenneally 4714* (PERTH).

**Putative hybrid**

*Anthocercis tenuipes* Gand., *Bull. Soc. Bot. France* 65: 69 (1918).

T: near Nepean R., N.S.W., *W. Forsyth s.n.* (incorrectly attributed to J.H.Maiden by Gandoger); holo: LY, iso: AD, BRI, NSW.

Probably a hybrid between *Duboisia myoporoides* R. Br. & *Cyphanthera scabrella* (Benth.) Miers.

**2. SYMONANTHUS**

*Symonanthus* Haegi, *Telopea* 2: 175 (1981); after David Symon (1920–), Australian systematic botanist prominent in the taxonomy of Australian Solanaceae; and the Greek *anthos* (a flower).

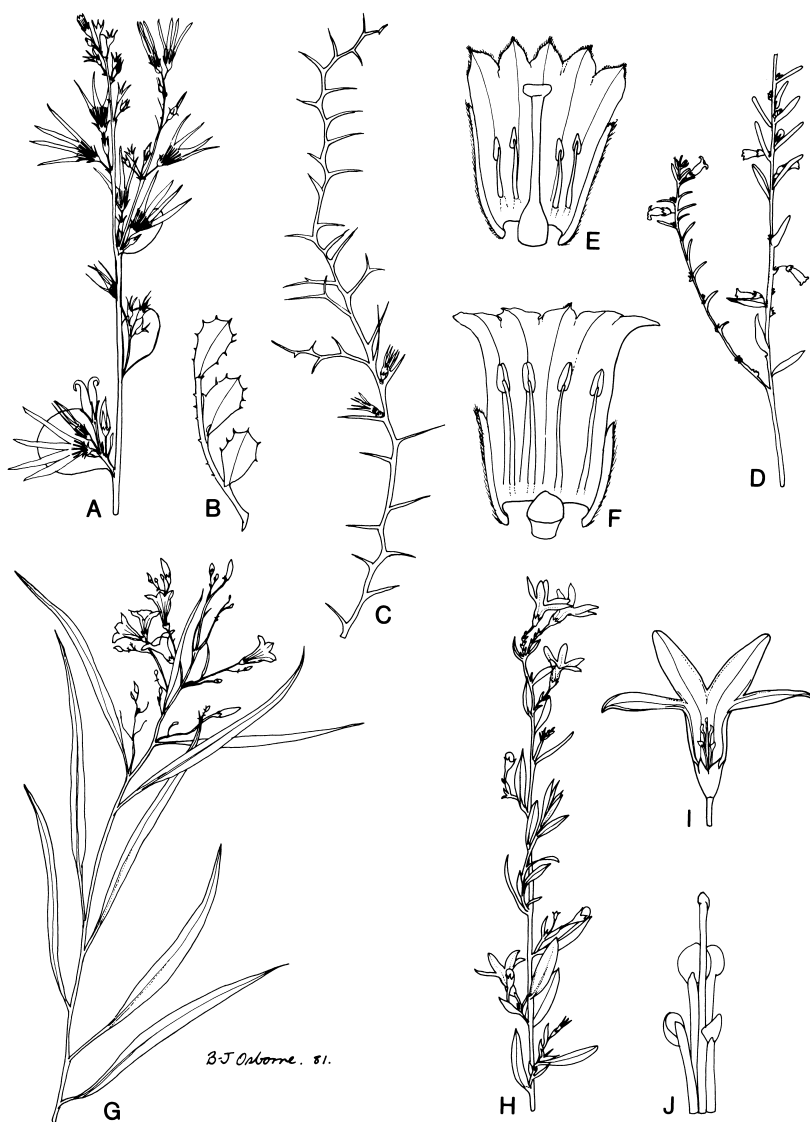
Type species: *Symonanthus bancroftii* (F. Muell.) Haegi, based on *Isandra bancroftii* F. Muell.

*Isandra* F. Muell., *S. Sci. Rec.* 3: 2 (1883), *nom. illeg.*, non Salisb., *Gen. Pl. Fragm.* 67 (1866).

Type species: *Isandra bancroftii* F. Muell.

Dioecious shrubs or undershrubs, pubescent with non-glandular and glandular hairs. Leaves alternate, simple, sessile. Flowers solitary or in 2–3-flowered cymes, terminal or on short lateral branches, slightly zygomorphic, subtended by pairs of opposite bracts. Calyx campanulate to cupular, 5-lobed. Corolla narrowly tubular with erect or spreading limb, white with purple striations in tube; limb 5-lobed, the lobes short, volute in bud. Stamens 4 or 5, occasionally 3, equal, inserted at base of corolla-tube; a staminode sometimes present; anthers bilocular, cohering, dorsifixed, dehiscent by longitudinal slits. Ovary bilocular. Stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening from apex by 4 valves, more or less enclosed by calyx. Seeds ellipsoid. *n*=36; L. Haegi, *loc. cit.*

A genus of 2 species endemic in south-western W.A. Dioecious state not obvious as female flowers have a distinct androecium but sterile anthers, while male flowers have an obvious but sterile gynoecium.



**Figure 5.** **A**, *Anthocercis littorea* (E. Canning 6565, CBG),  $\times 0.5$ . **B**, *Anthocercis littorea*, juvenile foliage (E. Canning 6615, CBG),  $\times 0.5$ . **C**, *Anthocercis genistoides* (E. Canning 7472, CBG),  $\times 0.5$ . **D**, *Symonanthus bancroftii* (Bendering, C. A. Gardner, PERTH),  $\times 0.5$ . **E**, *Symonanthus aromaticus*, female flower (L. Haegi 1820, CBG),  $\times 4.5$ . **F**, *Symonanthus aromaticus*, male flower (L. Haegi 1817, CBG),  $\times 4.5$ . **G**, *Duboisia hopwoodii* (D. E. Symon 8143, CANB),  $\times 0.5$ . **H–J**, *Cyphanthera anthocercidea* (Cult. Canberra ex M. E. Phillips 206, CBG); H  $\times 0.5$ , I  $\times 2.7$ , J (stamens & style)  $\times 5$ .





**Figure 6.** *Symonanthus aromaticus*, male.  
Photograph — L. Haegi.

**Figure 7.** *Duboisia hopwoodii*.  
Photograph — R. W. Purdie.



**Figure 8.** *Duboisia myoporoides*.  
Photograph — M. Fagg.

**Figure 9.** *Grammosolen dixonii*.  
Photograph — L. Haegi.

L. Haegi, Australian genera of the Solanaceae, in J. G. Hawkes et al., *Linn. Soc. Symp. Ser.* 7: 121–124 (1979); L. Haegi, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

- 1 Undershrub to 25 cm tall; branches and lower surface of leaves pubescent with glandular hairs; leaves 5–17 mm long; corolla-tube urn-shaped; filaments pubescent at base

**1. *S. bancroftii***

- 1: Shrub to 1.3 m tall; branches and lower surface of leaves densely villous with loosely matted non-glandular hairs and smaller glandular hairs; leaves usually 20–45 mm long; corolla-tube elongate funnel-shaped; filaments glabrous

**2. *S. aromaticus***

**1. *Symonanthus bancroftii* (F. Muell.) Haegi, *Telopea* 2: 175 (1981).**

*Isandra bancroftii* F. Muell., *S. Sci. Rec.* 3: 2 (1883)

T: 'between Stirling's Range and the eastern sources of Swan-River; *Th. Muir*'; syn: K.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 607 (1975), as *Isandra bancroftii*.

Undershrub to 25 cm, moderately to sparsely pubescent mainly with glandular, simple and little-branched hairs; non-glandular hairs present on pedicels, calyx and corolla. Leaves narrowly ovate to linear, sessile, 5–17 mm long, 1–3 mm wide, entire to sinuate, the margins much recurved. Flowers solitary. Male flower: pedicels 1–3.5 mm long; calyx 2–2.5 mm long; corolla 5–6 mm long, the tube 4–5 mm long; stamens 5, 3.5–4.5 mm long; ovary 0.4–1 mm long, infertile. Female flowers similar but stamens 1.5 mm long and infertile; ovary 1 mm long; ovules 4 or 5. Capsule subglobular, 3–4 mm long. Seeds c. 2 mm long. Fig. 5D.

An extremely rare species known from only a few localities in the south-eastern wheatbelt region of south-western W.A. Map 13.

W.A.: Bending, Sept. 1922, C. A. Gardner (PERTH); Cumming, 1892, *M. Heal* (MEL).

**2. *Symonanthus aromaticus* (C. Gardner) Haegi, *Telopea* 2: 175 (1981)**

*Anthocercis aromatica* C. Gardner, *Hooker's Icon. Pl.* ser. 5, 4: t. 3382 (1939).

T: Lake Cowan, Forrestania, W.A., Sept. 1929, C. A. Gardner 2650; holo: PERTH; iso: K, ADW (photo). Lake Cowan is probably an error for Lake Cronin.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 610 (1975), as *Anthocercis aromatica*.

Erect shrub to 1.3 m; branches, lower surface of leaves and outer surface of corolla moderately to densely villous with non-glandular, forked to much-branched hairs and smaller glandular hairs; upper surface of leaves, pedicels and calyx sparsely to moderately pubescent mainly with glandular hairs; non-glandular hairs also present. Leaves crowded, narrowly triangular to linear, sessile, usually 20–45 mm long, 1.5–5 mm wide, entire, the margins narrowly revolute. Flowers solitary or in 2–3-flowered cymes. Male flowers: pedicels 3–7.5 mm long; calyx 4–5 mm long; corolla 7–8 mm long, the tube 6–7 mm long; stamens 3–6 mm long; ovary 0.7–0.9 mm long, infertile. Female flowers similar but smaller: pedicels 1–3.5 mm long; calyx 4–5 mm long; corolla c. 6 mm long, the tube 5 mm long; stamens 4(5), 2–3 mm long, infertile; ovary 1.5 mm long, ovules 6–10. Capsule broadly ovoid-ellipsoid to subglobular, 3.5–4.5 mm long. Seeds c. 2 mm long. Figs. 5E–F, 6.

Endemic to south-western W.A. in the south-eastern wheatbelt region. Occurs as scattered populations in sandy soil, usually in disturbed habitats in mallee or woodland. Map 14.

W.A.: c. 13 km NW of Newdegate, *L. Haegi* 1072 (AD, BRI, CANB, MO, PERTH); c. 12 km NW of Newdegate, *L. Haegi* 1820 (BIRM, BRI, CBG, CORD, F, MEL, MO, NSW, PERTH); c. 13 km N of Newdegate, 10 Oct. 1965, *F. Humphreys* (PERTH); Bald Rock, E of Hyden, *N. G. Marchant* 72/654 (PERTH).

### 3. DUBOISIA

*Duboisia* R. Br., *Prodr.* 448 (1810); named in honour of Charles Dubois (1656–1740), a London merchant and patron of botany.

Type species: *D. myoporoides* R. Br.

*Entrecasteauxia* Montr., *Mém. Acad. Roy. Sci. Lyon, Sect. Sci.* ser. 2, 10: 244 (1860).

Type species: *E. elliptica* Montr.

[*Anthocercis* auct. non Labill.; F. Muell., *Fragm. Phytogr. Austral.* 2: 138 (1861), 6: 142 (1868).]

Large shrubs or small trees, glabrous or almost so. Leaves alternate, simple, sessile or shortly petiolate. Inflorescence panicle-like, broad or sometimes narrow, terminal, leafy. Flowers bisexual, slightly zygomorphic, subtended by pairs of opposite bracts. Calyx regular, campanulate, 5-lobed. Corolla campanulate, white with purple striations in throat; tube funnel-shaped to campanulate; limb 5-lobed, the lobes short and broad or long and narrow, volutive in bud. Stamens 4, sometimes 5, didynamous, inserted at base of corolla-tube; a staminode sometimes present; anthers unilocular, not cohering, dehiscing by a terminal, semicircular slit. Ovary bilocular; stigma capitate, very shortly bilobed. Fruit a succulent berry. Seeds reniform.  $n=30$ ; *L. Haegi, Telopea* 2: 173 (1981).

A genus of 3 species occurring on the Australian mainland; two species endemic and one also in New Caledonia. Species contain alkaloids of the nicotine and tropane groups.

T. H. Johnston & J. B. Cleland, The history of the Aboriginal narcotic, pituri, *Oceania* 4: 201–233, 268–289 (1933–1934); C. Barnard, The duboisias of Australia, *Econ. Bot.* 6: 3–17 (1952); L. Haegi, Australian genera of the Solanaceae, in J. G. Hawkes et al., *Linn. Soc. Symp. Ser.* 7: 121–124 (1979); N. Peterson, Aboriginal uses of Australian Solanaceae, in Hawkes et al., *op. cit.* 171–190.

1 Leaves mostly narrowly elliptic to linear

3. *D. hopwoodii*

1: Leaves mostly obovate to obovate-elliptic or ovate to ovate-elliptic

2 Leaves mostly obovate to obovate-elliptic, acute to obtuse; pedicels 2–7 mm long; corolla 4–7 mm long, the lobes broadly rounded

1. *D. myoporoides*

2: Leaves mostly ovate to ovate-elliptic, acuminate; pedicels 10–16 mm long; corolla 13–19 mm long, the lobes narrowly acute

2. *D. leichhardtii*

#### 1. *Duboisia myoporoides* R. Br., *Prodr.* 448 (1810)

T: Port Jackson, N.S.W., *R. Brown s.n.*; syn: BM, K, MEL, NSW, P.

*Entrecasteauxia elliptica* Montr., *Mém. Acad. Roy. Sci. Lyon, Sect. Sci.* ser. 2, 10: 244 (1860).

T: 'In sylvis Art', *Montrouzier s.n.*; ?P, n.v.

Illustration: K. A. W. Williams, *Native Pl. Queensland* 98 (1979).

Tall shrub or tree to 24 m; bark thick and corky towards base. Leaves narrowly obovate to narrowly obovate-elliptic, occasionally narrowly elliptic, sessile (or with petiole to 3 cm long), 4–15 cm long, 1–4 cm wide, slightly discolorous. Inflorescence broadly pyramidal; bracts 1–11 mm long; pedicels 2–7 mm long. Calyx 1–3 mm long, the lobes usually one-fifth to one-third as long as tube. Corolla 4–7 mm long; tube 2–4 mm diam. at apex; lobes 1–3.5 mm long. Stamens 4, sometimes 5, 1.5–3 mm long. Style 1–2 mm long, slightly shorter to longer than upper stamens. Berry usually globose, rarely ellipsoid to ovoid, 4.5–8 mm long, purple-black; fruiting pedicels 6–12 mm long. Seeds 2.3–3.1 mm long. *Corkwood*. Fig. 8.

Occurs in eastern Australia from northern Qld to south-eastern N.S.W.; also native to New Caledonia. Grows in high rainfall areas in sand or loam, often at rainforest margins or in clearings, or in moist Eucalyptus forest. Map 15.

Qld: Coolum, *C. Bell* 160 (BRI); 11 km NW of Wallaman Falls, *A. S. & M. G. Thorsborne* 285 (BRI). N.S.W.: Middle Brother State Forest, *L. Haegi* 1583 (AD, BRI, MO, NSW, PERTH); Clyde River, *T. G. Hartley* 14012 (CANB).

Contains tropane alkaloids; leaves harvested commercially as source of hyoscyne for medicinal drugs. Reported to be toxic to cattle, horses and humans. Known to hybridise with *Duboisia leichhardtii* (F. Muell.) F. Muell.; may hybridise with *Cyphanthera albicans* (A. Cunn.) Miers (see *C. frondosa* Miers and *C. cuneata* Miers) and with *C. scabrella* (Benth.) Miers (see *Anthocercis tenuipes* Gand.)

## 2. *Duboisia leichhardtii* (F. Muell.) F. Muell., *Syst. Census Austral. Pl.* 97 (1883)

*Anthocercis leichhardtii* F. Muell., *Fragm. Phytogr. Austral.* 6: 142 (1868).

T: extra-tropical eastern Australia, *Leichhardt s.n.*; syn: K, MEL 71039.

Illustration: S.L. Everist, *Poison. Pl. Austral.*, t.(col.) 51 (1974).

Tall shrub or small tree to 12 m; bark thick and corky towards base. Leaves narrowly ovate-elliptic, rarely narrowly ovate or narrowly elliptic, almost sessile (or with petiole to 8 mm long), 5–13 cm long, 7–20 mm wide, concolorous. Inflorescence broadly pyramidal; bracts 0.5–2.5 mm long; pedicels 10–16 mm long. Calyx 1.5–3 mm long, the lobes about half as long as tube. Corolla 13–19 mm long; tube 4–4.5 mm diam. at apex; lobes 6.5–11.5 mm long. Stamens 4, 2.5–4 mm long. Style 2.5–4 mm long, exceeding upper stamens by 0.5–1 mm. Berry globose, 4–5 mm diam., purple-black; fruiting pedicels to 20 mm long. Seeds 2.5–3 mm long. *Corkwood*.

Occurs in south-eastern and south-central Qld. Grows in fertile loam, often in softwood scrub and in disturbed sites. Map 16.

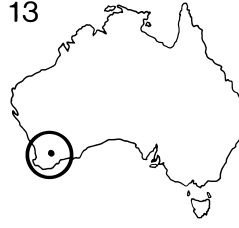
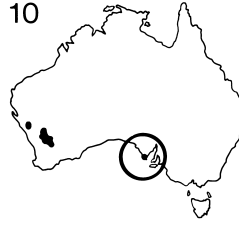
Qld: c. 3 km NW of Yarraman, 30 July 1969, *S. L. Everist* (BRI); c. 24 km W of Mitchell, *S. L. Everist* 4046 (BRI, CANB).

Reported to be toxic to cattle, horses and humans. Contains tropane alkaloids; harvested as a source of hyoscyne for medicinal drugs. A hybrid between *D. leichhardtii* and *D. myoporoides* R. Br. also yields tropane alkaloids and is cultivated commercially for hyoscyne production.

## 3. *Duboisia hopwoodii* (F. Muell.) F. Muell., *Fragm. Phytogr. Austral.* 10: 20 (1876)

*Anthocercis hopwoodii* F. Muell., *Fragm. Phytogr. Austral.* 2: 138 (1861).

T: near Darling River, *H. Beckler s.n.*; syn: K, MEL 70979.



1. *Anthocercis viscosa*  
subsp. *viscosa*

4. *Anthocercis angustifolia*

7. *Anthocercis ilicifolia*  
subsp. *caldariola*

10. *Anthocercis anisantha*  
subsp. *anisantha*

13. *Symonanthus bancroftii*

2. *Anthocercis viscosa*  
subsp. *caudata*

5. *Anthocercis littorea*

8. *Anthocercis intricata*

11. *Anthocercis anisantha*  
subsp. *collina*

14. *Symonanthus aromaticus*

3. *Anthocercis fasciculata*

6. *Anthocercis ilicifolia*  
subsp. *ilicifolia*

9. *Anthocercis genistoides*

12. *Anthocercis gracilis*

15. *Duboisia myoporoides*





**Figure 10.** *Cyphanthera anthocercidea*.  
Photograph — M. Fagg.

**Figure 11.** *Cyphanthera scabrella*.  
Photograph — M. Fagg.



**Figure 12.** *Anthotroche myoporoides*.  
Photograph — L. Haegi.

**Figure 13.** *Cyphanthera odgersii* subsp.  
*odgersii*. Photograph — M. Fagg.

Illustrations: C. A. Gardner & H. W. Bennetts, *Toxic Pl. W. Austral.*, 177 (1956); G. M. Chippendale & L. R. Murray, *Poison. Pl. Northern Territory*, fig. 42 (1963); S. L. Everist, *Poison. Pl. Austral.*, fig. 36 (1974); B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 607 (1975).

Rounded shrub to 4 m tall and 3 m wide. Leaves narrowly elliptic or ovate-elliptic to linear, sessile (or rarely with petiole to 3 mm long), 2–12 cm long, 1–13 mm wide, concolorous. Inflorescence narrow; bracts 0.5–4 mm long; pedicels 1.5–5 mm long. Calyx 1.5–4.5 mm long, the lobes usually about one-third as long as tube. Corolla 7–15 mm long; tube 4.5–8 mm diam. at apex; lobes 2.5–5.5 mm long. Stamens 4, 3–8 mm long. Style 3.5–6.5 mm long, equal to or shorter than upper stamens. Berry usually globose or subglobose, rarely ellipsoid, 2–5 mm diam., purple-black; fruiting pedicels 3–5 mm long. Seeds 2–2.5 mm long. *Pituri*. Figs 5G, 7.

Widespread in arid regions of W.A., southern N.T., and S.A., extending to central-western Qld and western N.S.W. Usually grows in red or yellow sand or sandy loam, on sandy plains, low dunes or sandy rises, often with *Triodia*. Map 17.

W.A.: c. 20 km E of Wiluna, *N. H. Speck 1331* (AD, CANB, PERTH). N.T.: c. 100 km N of Alice Springs, *D. J. Nelson 1769* (AD, DNA, MEL). S.A.: c. 30 km N of Minnipa, *A. E. Orchard 1778* (AD). Qld: Sandringham, 1886, *G. Field* (MEL). N.S.W.: c. 8.5 km N of Windara Homestead *D. F. Blaxell 670* (NSW).

Contains the alkaloids nicotine and nor-nicotine; used by Aborigines as an animal poison and as a narcotic (the name *pituri* also widely applied to narcotic species of *Nicotiana*). Toxic to horses, goats, sheep and camels; toxicity varies with locality, age and part of plant. May hybridise with *Grammosolen dixonii* (F. Muell. & R. Tate) Haegi and with *Anthotroche pannosa* Endl.

### Excluded species

*Duboisia campbellii* Morrison, *J. W. Austral. Natural Hist. Soc.* 2: 15 (1906)

T: Hannans Lake, Boulder, W.A., Nov. *W. D. Campbell*, syn: *n.v.*; Norseman, Dundas Goldfield, W.A., Oct. 1904, *W. D. Campbell s.n.*; syn: BM, PERTH.

= *Eremophila saligna* (S. Moore) C. Gardner (R. J. Chinnock, AD, pers. comm.).

## 4. CYPHANTHERA

*Cyphanthera* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 376 (1853); from the Greek *kyphos* (bent or humped), and *anthera* (an anther), in reference to the horseshoe-shaped unilocular anthers.

*Anthocercis* Labill. sect. *Cyphanthera* (Miers) F. Muell., *Fragm. Phytogr. Austral* 2: 138 (1861).

Type species: not designated.

*Eadesia* F. Muell., *Trans. & Proc. Philos. Inst. Victoria* 2: 71 (1858).

Type species: *E. anthocercidea* F. Muell.

Shrubs, tomentose with non-glandular hairs or pubescent with mainly glandular hairs, or almost glabrous. Leaves alternate, simple, sessile, rarely petiolate. Inflorescence a cyme or raceme-, panicle- or thyrse-like, terminal or lateral; or flowers solitary, terminal, leaf-opposed, inter-foliar or in branch forks. Flowers bisexual, slightly zygomorphic, with or without subtending pairs of bracts. Calyx campanulate to cupular, 5-lobed. Corolla funnel-shaped to campanulate with spreading limb, white to pale yellow, striated in tube; limb 5-lobed, the lobes volutive in bud. Stamens 4, didynamous, inserted at base of corolla-tube; a staminode sometimes

present; anthers unilocular, not cohering, dehiscent by a terminal, semicircular slit. Ovary bilocular; stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening from apex by 4 valves, at least the lower half enclosed by calyx. Seeds subreniform.  $n=30$ ; L. Haegi, *Telopea* 2: 176 (1981).

A genus of 9 species endemic in southern temperate Australia.

J. Miers, On the genera of the tribe Duboisieae, *Ann. Mag. Nat. Hist. ser. 2*, 11: 375–381 (1853); L. Haegi, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

- |    |  |                            |
|----|--|----------------------------|
| 1  | Branches, leaves and calyx-lobes densely woolly-tomentose; flowers in dense woolly clusters, often in leafy spikes   | 9. <i>C. odgersii</i>      |
| 1: | Branches, leaves and calyx-lobes not woolly-tomentose; flowers solitary, in cymes, thyrses, or narrow, leafy, panicle-like inflorescences  |                            |
| 2  | Upper branches densely (sometimes sparsely) tomentose with mostly dendritic, non-glandular hairs   |                            |
| 3  | Inflorescence a thyrse; corolla-lobes broad and rounded  | 5. <i>C. racemosa</i>      |
| 3: | Flowers solitary or in few-flowered cymes, or inflorescence panicle-like, narrow, leafy; corolla-lobes long and narrow   |                            |
| 4  | Flowers solitary or in distant cymes   | 4. <i>C. scabrella</i>     |
| 4: | Flowers in leafy, panicle-like inflorescences  |                            |
| 5  | Leaves almost glabrous or sparsely pubescent, the margins flat, midrib not indented above  | 1. <i>C. anthocercidea</i> |
| 5: | Leaves moderately to densely pubescent, the margins slightly inrolled, midrib indented above   |                            |
| 6  | Stalked, stellate-dendritic hairs absent from stems; secondary veins of leaves obscure   | 2. <i>C. albicans</i>      |
| 6: | Stalked, stellate-dendritic hairs common on stems; secondary veins of leaves conspicuous at least on lower surface   | 3. <i>C. tasmanica</i>     |
| 2: | Upper branches sparsely to moderately pubescent with mostly simple or forked, glandular hairs (hairs sometimes decapitated, but branches then viscid), or with scattered, weak, dendritic hairs, or glabrous |                            |
| 7  | Branches and leaves not viscid; flowers in thyrses; leaves mostly more than 10 mm long   | 5. <i>C. racemosa</i>      |
| 7: | Branches and leaves viscid; flowers solitary or in few-flowered cymes; leaves mostly less than 10 mm long  |                            |
| 8  | Leaves triangular-cordate, the bases subauriculate   | 7. <i>C. miersiana</i>     |
| 8: | Leaves ovate, elliptic or oblong, the bases cuneate or rounded   |                            |
| 9  | Mature leaves to 2.2 mm long, more or less appressed to stem; filaments glabrous   | 8. <i>C. microphylla</i>   |
| 9: | Mature leaves 2–10 mm long, spreading to oblique; filaments pubescent at base  | 6. <i>C. myosotide</i>     |

## 1. *Cyphanthera anthocercidea* (F. Muell.) Haegi, *Telopea* 2: 176 (1981)

*Eadesia anthocercidea* F. Muell., *Trans. & Proc. Philos. Inst. Victoria* 2: 72 (1858); *Anthocercis eadesii* F. Muell., *Fragm. Phytogr. Austral.* 2: 139 (1861), *nom. illeg.*; *Anthocercis anthocercidea* (F. Muell.) Druce, *Bot. Soc. Exch. Club Brit. Isles Rep.* 1916, Suppl. 2: 605 (1917).



T: Near Mt Zero, Vic., *C. Wilhelmi* s.n.; syn: K, MEL.

*Anthocercis genistifolia* Gand., *Bull. Soc. Bot. France* 65: 69 (1918).

T: New south Wales, *Herb. Chas. Walter* s.n.; holo: LY. Locality may be an error, since the species is otherwise unknown in N.S.W.

[*Anthocercis frondosa* auct. non (Miers) J. Black, J. H. Willis, *Handbook Pl. Victoria* 2: 558 (1972).]

Erect shrub to 2 m. Branches moderately tomentose with both dendritic, non-glandular hairs and smaller glandular hairs. Leaves ovate to narrowly ovate, rarely ovate-elliptic, sessile or almost so, 8–35 mm long, 2–10 mm wide, sparsely pubescent; juvenile leaves up to 11 cm long and 4 cm wide, with petioles to 15 mm long. Inflorescence panicle-like, dense, leafy; pedicels 2.5–6.5 mm long, sparsely pubescent. Calyx 3–4 mm long, glabrous or almost so. Corolla 10–14.5 mm long, almost glabrous, white, the striations purple; lobes ovate-truncate to linear, 4–5.5 (rarely 9) mm long. Stamens 2–4 mm long. Capsule more or less globose, 4–5 mm diam. Seeds 2.4–3.5 mm long. Figs. 5H–J, 10.

Occurs mainly in the Wimmera region of Vic.; recorded from eastern Vic. but not collected there since 1882. Occurs in rocky gullies in dry, sclerophyll forest, and on exposed rocky spurs in shrubland, in sandy soils derived from sandstone. Map 18.

Vic.: c. 1.5 km E of Mt Zero, *L. Haegi* 1450 (AD, BIRM, CORD, F, MEL, MO, NSW, PERTH); north Grampians, *R. Hill* 1195 (AD); near Mt Zero, *M.E. Phillips* 206 (MEL).

## 2. *Cyphanthera albicans* (Cunn.) Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 379 (1853).

*Anthocercis albicans* Cunn., in B. Field (ed.), *Geogr. Mem. New South Wales* 335, t. 2 (1825).

T: Bathurst, N.S.W., *A. Cunningham* 113/1822; lecto: K; iso: BM, K; *vide* Benth, in DC., *Prodr.* 10: 192 (1846), by exclusion; Peel's Range (now Cocoparra Range) near Griffith, N.S.W., *A. Cunningham* 240/1817; syn: BM, K.

Erect shrub to 3 m, greyish. Branches granular-tomentose or pubescent with mainly dendritic, non-glandular hairs and scattered glandular hairs. Leaves elliptic to ovate-elliptic or obovate-elliptic, almost sessile, 5–25 mm long, 1.5–7 mm wide, tomentose; juvenile leaves to 13 cm long, 4 cm wide. Inflorescence panicle-like, dense, leafy; pedicels 1–6 mm long. Calyx 2–5.5 mm long, sparsely to densely pubescent. Corolla 6–22 mm long, glabrous or pubescent, white, cream or pale yellow, the striations purple; lobes ovate-truncate to almost linear, 3–15 mm long. Stamens 2–5 mm long. Capsule globose to broadly ellipsoid, 2.5–8 mm long. Seeds 2.3–3.8 mm long. *Grey Ray Flower*.

A moderately widespread species in N.S.W., but also found in eastern Vic. and south-eastern Qld.

- |    |  |                             |
|----|--|-----------------------------|
| 1  | Corolla yellow or pale yellow; branches and leaves closely tomentose, the hairs usually less than 0.3 mm long                | <b>2b. subsp. tomentosa</b> |
| 1: | Corolla white to creamy-white; branches and leaves tomentose or loosely tomentose, the longest hairs usually 0.3–0.8 mm long |                             |
| 2  | Leaves mostly 6–15 mm long; corolla 6.5–13 mm long   | <b>2a. subsp. albicans</b>  |
| 2: | Leaves mostly 18–25 mm long; corolla 13–22 mm long   | <b>2c. subsp. notabilis</b> |

**2a. Cyphanthera albicans (Cunn.) Miers subsp. albicans**

*Cyphanthera ovalifolia* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 380 (1853).

T: 'Nova Hollandia, W. M'Arthur — v.s. in herb. Hook. (*Backhouse*).'; holotype: K.

Leaves mostly 6–20 mm long, 1.5–7 mm wide, sometimes larger. Corolla 6.5–13 mm long, glabrous to moderately pubescent outside with non-glandular hairs.

Occurs as small, often disjunct populations throughout the range of the species in the Great Dividing Range, from south-eastern Qld, through N.S.W. to north-eastern Vic.; not recently collected from Vic. Grows in sclerophyll forest or shrubland in sandy soils derived from sandstone, rarely from granite or aplite. Map 19.

Qld: c. 44 km SW of Stanthorpe, *V. K. Moriarty 505* (BRI). N.S.W.: c. 48 km SE of Rylstone, *E. F. Constable 5114* (CANB, NSW, PERTH). Vic.: Berrima River, 1870, *L. Calvert* (MEL).

Geographically isolated populations show morphological differences. Populations in south-eastern Qld with narrower and smaller leaves approach *Cyphanthera scabrella* (Benth.) Miers, but may be distinguished by the denser inflorescence and pubescence.

**2b. Cyphanthera albicans subsp. tomentosa (Benth.) Haegi, *Telopea* 2: 176 (1981)**

*Anthocercis albicans* var. *tomentosa* Benth. in DC., *Prodr.* 10: 192 (1846); *Cyphanthera tomentosa* (Benth.) Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 379 (1853).

T: On hills near the Macquarie River, *A. Cunningham s.n.*; syn: BM, K; Interior of New Holland, *Mitchell s.n.*; syn: K, MEL.

Leaves mostly 5–17 mm long, 3–6 mm wide, sometimes larger. Corolla 8–19 mm long, sparsely to moderately pubescent outside with non-glandular and/or glandular hairs.

Occurs only in N.S.W., chiefly on the South Western Plains, with disjunct populations in the Central Tablelands and South Western Slopes. Usually in red sandy-loam in mallee associations; common after fire. Map 20.

N.S.W.: c. 11 km ESE of Barmedman, *L. Haegi 1574* (AD, MEL, MO, NSW, PERTH); c. 8 km W of Weethalle, *C. W. E. Moore 3896* (CANB); c. 66 km W of West Wyalong, *R. D. Pearce 83* (ADW, BIRM, MO, NSW).

**2c. Cyphanthera albicans subsp. notabilis Haegi, *Telopea* 2: 176 (1981)**

T: Timore Rock, Warrumbungle Ranges, N.S.W., 10 Sept. 1977, *L. Haegi 1379*; holotype: CANB; isotype: AD, K, L, MO, NSW.

[*Anthocercis albicans* auct. non Cunn.: Maiden & Betche, *Proc. Linn. Soc. New South Wales* 30: 368–369 (1905).]

Leaves mostly 15–25 mm long, 3–6 mm wide, sometimes larger. Corolla 13–22 mm long, glabrous outside.

Endemic to the Warrumbungle Ranges in North Western Slopes region of N.S.W. Grows on rocky slopes in dark sandy soils derived from igneous rocks; common in shrubland on exposed sites, but occurs sporadically in dry sclerophyll forest. Map 21.

N.S.W.: Warrumbungle Ranges, *L. Haegi 1588* (AD, BRI, CANB, F, NSW, PERTH); Warrumbungle Mtns, *H. S. McKee 248* (MEL, NE, NSW, SYD).

**3. Cyphanthera tasmanica** Miers, *Ann. Mag. Nat. Hist. ser. 2*, 11: 377 (1853)

*Anthocercis tasmanica* (Miers) J.D. Hook., *Fl. Tasmaniae* 1: 289, t. 92 (1857).

T: 'Van Diemen's Land', Tas., *Gunn* 1992; syn: HO, K, NSW; Kelvedon, Great Swanport, Tas, *Backhouse s.n.*; syn: K.

Illustration: M. Stones & W. Curtis, *Endemic Fl. Tasmania* 5: t. 199 (1975), as *Anthocercis tasmanica*.

Erect shrub to 4 m, grey-green. Branches densely to moderately granular-tomentose with stellate-dendritic, non-glandular hairs and scattered glandular hairs. Leaves elliptic, almost sessile, 15–30 mm long, 4–9 mm wide, sometimes larger, tomentose. Inflorescence panicle-like, dense, leafy; pedicels 2–9 mm long. Calyx 3.5–7 mm long, tomentose. Corolla 10–15 mm long, pubescent, creamy-white, the striations purplish; lobes ovate-truncate, 5–9 mm long. Stamens 2–4 mm long. Capsule more or less globose, 4–5 mm diam. Seeds 2.5–3.5 mm long.

A rare species endemic to the east coast of Tas. and adjacent offshore islands. Occurs on steep, rocky, exposed coastal sites. Map 22.

Tas.: Kelvedon, 13 Nov. 1972, A. *Himson s.n.* (HO); Kelvedon, Dec. 1975, A. *Himson s.n.* (ADW 51136); Cygnet River, F. *Mueller s.n.* (MEL 70245).

**4. Cyphanthera scabrella** (Benth.) Miers, *Ann. Mag. Nat. Hist. ser. 2*, 11: 380 (1853)

*Anthocercis scabrella* Benth., in DC., *Prodr.* 10: 192 (1846).

T: Euroka Creek, Nepean River, Blue Mtns, N.S.W., 1834, R. *Cunningham s.n.*; holo: K; iso: K.

Erect or scrambling shrub to 1.3 m, grey-green. Branches sparsely to moderately scabrous-tomentose with dendritic and forked, non-glandular hairs and scattered glandular hairs. Leaves broadly elliptic to broadly ovate, rarely elliptic, almost sessile, mostly 3–7 mm long, 2–4 mm wide, sometimes larger, tomentose. Flowers solitary or in 1–3-flowered cymes; pedicels 3.5–10 mm long. Calyx 1.5–2.5 mm long, glabrous. Corolla 6.5–11.5 mm long, almost glabrous, creamy-white, often tinged with yellowish-green, the striations purple; lobes linear, 3–6.5 mm long. Stamens 1.5–2 mm long. Capsule more or less globose, c. 3 mm diam. Seeds 2–2.3 mm long. Fig. 11.

An uncommon species endemic in the Blue Mtns of N.S.W. Occurs as small, scattered populations in dry to wet sclerophyll forest, in sandstone soil. Map 23.

N.S.W.: Nepean River district, Sept. 1897, W. *Forsyth* (AD, NSW); c. 80 km NW of Sydney, L. *Haegi* 1416 (BRI, MEL, NSW).

**5. Cyphanthera racemosa** (F. Muell.) Haegi, *Telopea* 2: 177 (1981)

*Anthocercis racemosa* F. Muell., *Fragm. Phytogr. Austral.* 1: 211 (1859).

T: Between Murchison River and Port Gregory, W.A., *Oldfield s.n.*; syn: K, MEL.

Shrub to 1.2 m. Branches usually sparsely tomentose with non-glandular hairs. Leaves narrowly elliptic, oblong or obovate, sessile or almost so, 5–25 mm long, 1.5–4.5 mm wide, sparsely tomentose; juvenile leaves larger, slightly fleshy. Inflorescence thyrselike; pedicels 4–20 mm long. Calyx 2–7 mm long, glabrous or pubescent, often tinged purple. Corolla 7–18 mm long, pubescent outside, white, the striations purple; lobes usually ovate to elliptic, 3–11 mm long, papillose inside. Stamens 3–5.5 mm long. Capsule ovoid-ellipsoid, 3.5–5 mm long. Seeds 1.6–2.5 mm long.

Occurs in south-western W.A. near the W coast, between the lower Murchison R. and Kellerberrin. Grows in shrubland and scrub-heath on sand plains and coastal dunes; often common after fire. Map 24.

W.A.: c. 160 km (N) from Geraldton on NW Coastal Highway, *A. M. Ashby 2178* (AD, PERTH); 60 km SE of Geraldton, *L. Haegi 1936*, (BRI, CANB, NSW, PERTH); Kalbarri National Park, *G. L. Webster 18621* (NSW).

Populations in the far south-eastern range of distribution with dense tomentum and rounded corolla lobes.

## 6. *Cyphanthera myosotidea* (F. Muell.) Haegi, *Telopea* 2: 177 (1981)

*Anthocercis myosotidea* F. Muell., *Trans. Philos. Soc. Victoria* 1: 20 (1855).

T: River Murray, 1847, *coll. unknown*; syn: MEL; Moorundie, S.A., Feb. 1847, *coll. unknown*; syn: MEL; Murray River, *F. Mueller s.n.*; syn: K.

*Anthocercis amblyantha* F. Muell., *Fragm. Phytogr. Austral.* 1: 179 (1859).

T: Wimmera, Vic., *Dallachy s.n.*; syn: K, MEL.

Illustration: J. M. Black, *Fl. S. Austral.*, 2nd edn, 4: fig. 1088 (1957), as *Anthocercis myosotidea*.

Rounded undershrub to 30 cm tall, 45 cm wide. Branches viscid. Leaves oblong, elliptic or ovate, sometimes abruptly narrowed in upper half, sessile or almost so, 2–10 mm long, 1–4 mm wide, sometimes larger, viscid-pubescent with glandular and non-glandular hairs. Flowers solitary, or in 1–3-flowered cyme-like groups; pedicels 1–10 mm long. Calyx 2–5 mm long, pubescent. Corolla 6–11 mm long, sparsely pubescent outside, papillose inside, white, the striations purple; lobes broadly elliptic to orbicular, 2.5–5 mm long. Stamens 2–5 mm long, the filaments pubescent at base. Capsule globose to broadly ovoid, 2.5–4 mm long. Seeds c. 2.5 mm long.

Occurs from north-western Vic. through the Murray region to Eyre Peninsula and Kangaroo Island, S.A. Common in sandy soil in mallee associations, usually in disturbed sites; common after fire. Map 25.

S.A.: c. 5 km SE of Halidon, *L. Haegi 694* (AD, BIRM, BRI, CANB, MEL, MO, NSW, PERTH); Hambidge Reserve, *D. E. Symon 4165* (ADW, BIRM, K, CANB); 16 km SW of Buckleboo, *D. J. E. Whibley 309* (AD). Vic.: c. 19 km S of Ouyen, 17 Oct. 1960, *J. H. Willis s.n.* (MEL).

May hybridise with *Grammosolen dixonii* (F. Muell. & R. Tate) Haegi.

## 7. *Cyphanthera miersiana* Haegi, *Telopea* 2: 177 (1981)

T: 25 km E of Wiluna, W.A., 22 Oct. 1966, *C. A. Gardner 19061*; holo: PERTH; iso: AD, MO.

Erect shrub to 70 cm. Branches moderately pubescent with mainly simple, glandular and non-glandular hairs. Leaves triangular-cordate, sessile, 3–4 mm long, 2–2.5 mm wide, pubescent. Flowers solitary or in few-flowered cyme-like groups; pedicels 4.5–7.5 mm long. Calyx 4–5 mm long, densely glandular-pubescent. Corolla 6–10 mm long, almost glabrous outside, white, the striations purple; lobes broadly ovate to orbicular, 2–4 mm long. Stamens 4–5 mm long. Capsule ovoid-ellipsoid, apiculate, 4 mm long. Seeds not seen.

An uncommon species endemic to the Wiluna area, W.A.; grows on sand dunes. Map 26.

W.A.: near Uramurdah Creek, *L. A. Craven 5266* (A, AD, BRI, CANB, G, K, L, LAE, MO, NT, P, PERTH, PRE, RSA); Kathleen Valley Reserve, 1971, *S. J. J. F. Davies s.n.* (PERTH).

**8. *Cyphanthera microphylla*** Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 381 (1853)

T: interior of south-western Australia, 1849, *Drummond 177*; holo: K, ADW (photo); iso: MEL.

*Anthocercis microphylla* F. Muell., *Fragm. Phytogr. Austral.* 1: 179 (1859).

T: Salt River, W.A., *coll. unknown*; holo: MEL 70213; iso: ADW (photo).

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 610 (1975), as *Anthocercis microphylla* Miers.

Rounded undershrub to 40 cm tall. Branches sparsely pubescent with predominantly simple, glandular and non-glandular hairs, viscid, glabrescent. Leaves broadly ovate to narrowly ovate, elliptic or oblong, sessile, 1–2 mm long, 0.6–1 mm wide, sparsely pubescent, viscid; juvenile leaves larger, thick and leathery. Flowers solitary or in 1–6-flowered cyme-like groups; pedicels 3–10 mm long. Calyx 2–3 mm long, pubescent. Corolla 7–11 mm long, glabrous or sparsely pubescent outside, pubescent inside, white, yellowish in late bud, the striations purple; lobes ovate to broadly ovate, 2.5–6 mm long. Stamens 2–4 mm long. Capsule ovoid to subglobose, 3.5 mm long. Seeds 1.5–2.7 mm long.

Endemic and moderately widespread in drier parts of south-western W.A. Usually occurs in sandy soils in mallee or shrubland, often in disturbed habitats; common after fire. Map 27.

W.A.: near Amery, *T. E. H. Aplin 2572* (PERTH); c. 75 km W of Esperance, *Hj. Eichler 20017* (AD, CANB, PERTH); 10 km S of Lake Grace, *L. Haegi 1054* (AD, BRI, CANB, MO, PERTH).

**9. *Cyphanthera odgersii*** (F. Muell.) Haegi, *Telopea* 2: 177 (1981)

*Anthocercis odgersii* F. Muell., *Fragm. Phytogr. Austral.* 10: 19 (1876).

T: [Queen] Victoria Spring, W.A., *Young s.n.*; syn: MEL.

Shrub to 2.5 m, greyish. Branches densely woolly-tomentose with mainly branched, non-glandular hairs, with some glandular hairs. Leaves broadly to narrowly ovate-elliptic, almost sessile, 11–35 mm long 7–13 mm wide, woolly-tomentose. Flowers in dense clusters, often forming leafy spikes; pedicels 0.5–2 mm long. Calyx 4–7 mm long, pubescent in lower half, woolly above. Corolla 5.5–8.5 mm long, sparsely pubescent outside, densely pubescent inside, white, the striations purple; lobes ovate to broadly ovate, 1.3–2.5 mm long. Stamens 1.3–3 mm long. Capsule ellipsoid to ovoid, 3–5 mm long. Seeds 2.8–3.4 mm long.

Widespread, but uncommon, in southern W.A. Occurs on sand plains and sand dunes.

Leaves 1–2 times as long as wide; corolla-lobes 2–2.5 mm long

**9a. subsp. *odgersii***

Leaves 2.3–4 times as long as wide; corolla-lobes 1.3–1.8 mm long

**9b. subsp. *occidentalis***

**9a. *Cyphanthera odgersii*** (F. Muell) Haegi subsp. ***odgersii***

Shrub to 1 m. Hairs on branches to 2 mm long. Leaves 11–20 mm long. Corolla-lobes ovate to broadly ovate, 2–2.5 mm long. Filaments pubescent at base with glandular and non-glandular hairs. Fig. 13.

Occurs from the Queen Victoria Spring area, in the far south-western Great Victoria Desert, westwards to Coolgardie, with isolated occurrences near Mt Magnet and Southern Cross, W.A. Sometimes in disturbed or burnt sites. Map 28.

W.A.: c. 90 km WSW of Coolgardie, *R. J. Chinnock* 3098 (AD, MO, PERTH); c. 90 km SW of Coolgardie, *L. Haegi* 1780 (BRI, F, NSW, PERTH); c. 20 km E of Zanthus, *E. Wittwer* W1977 (PERTH).

**9b. *Cyphanthera odgersii* subsp. *occidentalis* Haegi, *Telopea* 2: 178 (1981)**

T: Cowcowing railway siding, W.A., 23 Sept. 1976, *L. Haegi* 1100; holo: PERTH; iso: AD, CANB, K, MO.

[*Anthocercis odgersii* F. Muell. sensu A.J. Ewart, *Victorian Naturalist* 23: 155 (1907).]

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 610 (1975), as *Anthocercis odgersii*.

Shrub to 2.5 m. Hairs on branches 1–6.5 mm long. Leaves 18–35 mm long. Corolla lobes broadly ovate, 1.3–1.8 mm long. Filaments pubescent at base with non-glandular hairs only.

Known from only 2 localities in the central wheatbelt of south-western W.A. Grows on sand plains. Map 29.

W.A.: Cowcowing, *M. Koch* 1104 (AD, MEL, NSW, PERTH).

**Putative hybrids**

*Cyphanthera cuneata* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 378 (1853).

T: "Novae Hollandiae Prov. Camden.—v.s. in herb. Lindley.", *Macarthur* 90; holo: CGE; iso: K.

May be a hybrid between *Duboisia myoporoides* R. Br. and *Cyphanthera albicans* (Cunn.) Miers.

*Cyphanthera frondosa* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 11: 376 (1853); *Anthocercis frondosa* (Miers) J. M. Black, *Fl. S. Austral.* 504 (1926).

T: 'Sydney (in Hort. Bot. cult. et e Terra Diemen forsan introducta). —v.s. in herb Heward. (A. Cunningham).'; syn: BM, K.

May be a hybrid between *Duboisia myoporoides* R. Br. and *Cyphanthera albicans* (Cunn.) Miers.

**5. GRAMMOSOLEN**

*Grammosolen* Haegi, *Telopea* 2: 178 (1981); from the Greek *gramme* (a line or stroke of a pen), and *solen* (a pipe), in reference to the striated corolla-tube.

Type species: *G. dixonii* (F. Muell. & R. Tate) Haegi, based on *Newcastelia dixonii* F. Muell. & R. Tate.

Shrubs, densely tomentose with non-glandular and inconspicuous glandular hairs. Leaves alternate, simple, almost sessile or petiolate. Inflorescence cyme-like, terminal on short, lateral, leafy branches. Flowers bisexual, actinomorphic, subtended by pairs of opposite or sub-opposite bracts. Calyx cupular, 5-lobed. Corolla narrowly tubular with spreading limb, drab white with violet striations; limb with 5 (rarely 4 or 6) long and narrow lobes, volutive in bud. Stamens 5, unequal, inserted at base of corolla-tube; filaments pubescent at base; anthers unilocular, not cohering, dehiscing by a semicircular slit. Ovary bilocular. Stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening from apex by 4 valves, more or less enclosed by calyx. Seeds subreniform. *n*=56; L. Haegi, *loc. cit.*

A genus of 2 species endemic in arid and semi-arid S.A.

L. Haegi, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

- |    |  |                        |
|----|--|------------------------|
| 1  | Branches woolly-tomentose; leaves crowded, often imbricate, almost sessile or with petiole to 3 mm long; calyx-lobes more than 1 mm long | 1. <b>G. dixonii</b>   |
| 1: | Branches closely tomentose; leaves well-spaced and not obscuring stem, all with petiole 2–4 mm long; calyx-lobes less than 1 mm long     | 2. <b>G. truncatus</b> |

## 1. **Grammosolen dixonii** (F. Muell. & R. Tate) Haegi, *Telopea* 2: 178 (1981)

*Newcastelia dixonii* F. Muell. & R. Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 10: 81 (1888) ('*Newcastlia*').

T: River Murray, 30 miles from Vic. border, *coll. unknown*; syn: AD; and Crystal Brook, S.A., *S. Dixon s.n.*; syn: AD, BM, MEL.

Erect, spreading or sprawling shrub to 2 m high and 5 m diam., greyish. Branches woolly. Leaves ovate-triangular to subcordate, sessile (or with petiole to 3 mm long), 6–20 mm long, 4–17 mm wide, densely tomentose, entire to undulate. Inflorescence 1–3-flowered, sometimes forming leafy spikes; pedicels to 0.8 mm long, glabrous. Calyx 3 mm long, densely tomentose. Corolla 7–13 mm long, pubescent outside, papillose inside; lobes 3–8 mm long, 1.5–4 mm wide. Stamens 2.5–5 mm long. Capsule subglobose, 3.5–4.5 mm long. Seeds 2.5–3.5 mm long. Figs 9, 14I.

Occurs in the Murray region, northern Yorke Peninsula and north-eastern Eyre Peninsula, S.A. Grows in deep sandy soils, often in disturbed mallee-spinifex associations. Map 30.

S.A.: 20 km NE of Blanchetown, *L. Haegi* 676 (AD, BRI, CBG, NSW, NT, PERTH); between Cowell and Arno Bay, *D. N. Kraehenbuehl* 528 (AD); 13 km WSW of Waikerie, *D. E. Symon* 8795 (ADW, CANB).

## 2. **Grammosolen truncatus** (Ising) Haegi, *Telopea* 2: 178 (1981)

*Anthotroche truncata* Ising, *Trans. & Proc. Roy. Soc. S. Austral.* 46: 605; t. 38, fig. 1 (1922).

T: Ooldea, S.A., 15 Sept. 1920, *E. H. Ising s.n.*; syn: AD, ADW, BM, BRI, MEL, NSW; Barton, S.A., 19 Sept. 1920, *E. H. Ising*; syn: AD.

Erect shrub to 2 m, greyish. Branches densely tomentose with mainly non-glandular, stellate-dendritic hairs. Leaves ovate to ovate-elliptic, occasionally elliptic, 5–18 mm long, 3–11 mm wide, entire, densely tomentose; petiole 2–4 mm long. Inflorescence 1–3-flowered, often in short, leafy clusters; pedicels to 0.6 mm long, glabrous to moderately pubescent. Calyx 2.5–4 mm long, densely tomentose, also with a few glandular hairs. Corolla 7–11 mm long, pubescent outside, papillose inside; tube markedly spreading in upper part; lobes 2.5–6 mm long, 1.5–3 mm wide. Stamens 2–4 mm long. Capsule globose, 4–4.5 mm diam. Seeds c. 2.8 mm long. Fig. 14J.

Occurs from western Gawler Ranges, Eyre Peninsula, northwest to the Gairdner-Torrens Basin and Nullarbor region in c. 130°E long., S.A. Grows in deep sand, usually on sand ridges in mallee associations, often in disturbed sites with *Triodia*. Map 31.

S.A.: c. 3 km S of Maralinga, *N. Forde* 620 (AD, CANB); Gawler Ranges, *L. Haegi* 770 (AD, CBG, NSW); Gawler Ranges, *D. Symon* 8206 (ADW).

## 6. ANTHOTROCHE

*Anthotroche* Endl., in Endl. & Fenzl, *Nov. Stirp. Dec.* 6 (1839); from *the Greek anthos* (a flower), and *trochos* (a wheel), in reference to the resemblance of the corolla to a wheel.

Type species: *A. pannosa* Endl.

Shrubs, densely tomentose with non-glandular and inconspicuous glandular hairs. Leaves alternate, simple, entire, petiolate or almost sessile. Flowers solitary or clustered, axillary or terminal, bisexual, actinomorphic. Calyx campanulate to cupular, 5-lobed. Corolla campanulate to rotate; tube narrowly funnel-shaped or dilated, greenish-yellow, rarely whitish, striated; limb of 5 (sometimes 4 or 6) short, broad lobes, induplicate in bud, violet, rarely whitish. Stamens 5, equal or subequal, inserted at base of corolla-tube; anthers unilocular, not cohering, dehiscent by a semicircular slit. Ovary bilocular. Stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening from apex by 4 valves, more or less enclosed by calyx. Seeds subreniform.  $n=31$ ; L. Haegi, *Telopea* 2: 174 (1981).

A genus of 3 species endemic in arid and temperate W.A.

L. Haegi, Australian genera of the Solanaceae, in J. G. Hawkes et al. *Linn. Soc. Symp. Ser.* 7: 121–124 (1979); L. Haegi, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

- |    |   |                                 |
|----|---|---------------------------------|
| 1  | Leaves mostly obovate to obovate-elliptic; flowers funnel-shaped; corolla-lobes ovate-triangular; stamens included                          | <b>1. <i>A. myoporoides</i></b> |
| 1: | Leaves usually ovate, elliptic or orbicular; flowers broadly rotate; corolla-lobes broadly ovate or broadly ovate-truncate; stamens exerted |                                 |
| 2  | Leaves woolly-tomentose with much-branched hairs; pedicel less than 2.5 mm long, woolly-pubescent with non-glandular hairs                  | <b>2. <i>A. pannosa</i></b>     |
| 2: | Leaves closely-tomentose with dendritic hairs; pedicel usually 5–15 mm long, pubescent with glandular hairs                                 | <b>3. <i>A. walcottii</i></b>   |

**1. *Anthotroche myoporoides*** C. Gardner, *J. Roy. Soc. W. Austral.*, 27: 191 (1942)

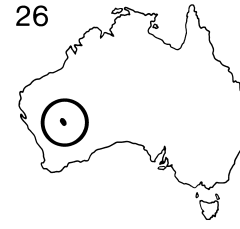
T: Irwin District, near Indarra, W.A., C. A. Gardner 2650; syn: BM, K, PERTH.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 605 (1975).

Erect, rounded, often intricately branched shrub to 3 m, closely and densely tomentose throughout with non-glandular, dendritic hairs and smaller glandular hairs, greyish, the new growth bronze-green. Leaves obovate to narrowly obovate-elliptic, mostly 20–35 mm long, 5–15 mm wide, juvenile leaves larger; petiole to 10 mm long, sometimes very short. Flowers axillary or terminal, in loose, 4–6-flowered clusters; pedicels absent or to 5 mm long. Calyx 4.5–9 mm long; lobes 2–4 mm long. Corolla 5.5–8.5 mm long; tube pale greenish with deep violet (rarely drab grey-green) striations; lobes 2.5–4 mm long, violet, rarely drab white, the margins sometimes white. Stamens included. Capsule more or less globose, 3–4 mm diam. Seeds c. 3 mm long. Figs 12, 14A–B.

Endemic in the northern Irwin District of south-western W.A. Occurs in small populations on sand plains in shrubland or mallee. Map 32.





16. *Duboisia leichhardtii*  
 19. *Cyphanthera albicans*  
     subsp. *albicans*  
 22. *Cyphanthera tasmanica*  
 25. *Cyphanthera myosotidea*  
 28. *Cyphanthera odgersii*  
     subsp. *odgersii*

17. *Duboisia hopwoodii*  
 20. *Cyphanthera albicans*  
     subsp. *tomentosa*  
 23. *Cyphanthera scabrella*  
 26. *Cyphanthera miersiana*  
 29. *Cyphanthera odgersii*  
     subsp. *occidentalis*

18. *Cyphanthera anthocercidea*  
 21. *Cyphanthera albicans*  
     subsp. *notabilis*  
 24. *Cyphanthera racemosa*  
 27. *Cyphanthera microphylla*  
 30. *Grammosolen dixonii*

W.A.: 3 km NW of Indarra Siding, *L. Haegi* 1156 (AD, BIRM, BRI, CBG, MO, NT, PERTH); 410 mile post, (±160 km N of Geraldton) NW Coastal Highway, *F. Lullfitz* L1964 (PERTH).

## 2. *Anthotroche pannosa* Endl., in Endl. & Fenzl, *Nov. Stirp. Dec.* 7 (1839)

T: south-western New Holland, (W.A.), *Roe s.n.*; syn: W.

*A. blackii* F. Muell., *Fragm. Phytogr. Austral.* 8: 232 (1874).

T: Between Mt Olga and Barrow Range, *E. Giles s.n.*; holo: MEL 7095.

*A. healiana* F. Muell., *Victorian Naturalist* 7: 153 (1891).

T: At the sources of the Swan River, near Cummening, W.A., *M. Heal s.n.*; syn: K, MEL, ?PERTH.

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 604 (1975), as *A. pannosa* Endl., *A. blackii* F. Muell. and *A. healiana* F. Muell.

Erect or rounded shrub to 2.5 m, rarely a dwarf or prostrate plant to 1.5 m diam., densely woolly- or granular-tomentose throughout with non-glandular, branched hairs and smaller glandular hairs, grey-green to whitish. Leaves broadly ovate, orbicular, ovate or elliptic, occasionally obovate to narrowly ovate, mostly 10–30 mm long, 5–15 mm wide, the juvenile leaves larger; petiole to 5 mm long or very short. Flowers axillary, solitary or in 2–3-flowered clusters, sometimes forming leafy spikes; pedicels absent or up to 2.5 mm long. Calyx 4.5–9.5 mm long; lobes 3–6.5 mm long. Corolla 7–13 mm long; tube abruptly spreading towards limb, deep greenish-yellow with purple striations, occasionally black; lobes 3–6.5 mm long, purple-black, sometimes with narrow white margin. Stamens exserted. Capsule ovoid-ellipsoid to subglobular, 4–7 mm long. Seeds 2.5–3.3 mm long. Fig. 16.

Widespread from inland south-western W.A. eastwards to the Great Victoria Desert. Occurs on sand dunes, sand plains, or sandy rises in low-lying saline areas, usually in woodland, mallee, shrubland or scrub-heath. Map 33.

W.A.: 58 km N of Neale Junction, Great Victoria Desert, *A. S. George* 8378 (PERTH); c. 2 km N of Morawa, *L. Haegi* 1131 (AD, BIRM, CANB, MO, NT, PERTH); c. 26 km ENE of Mullewa, *L. Haegi* 1989 (NSW).

A variable species; plants in the south-western end of the range have large, very densely woolly leaves and were previously called *A. healiana* F. Muell.

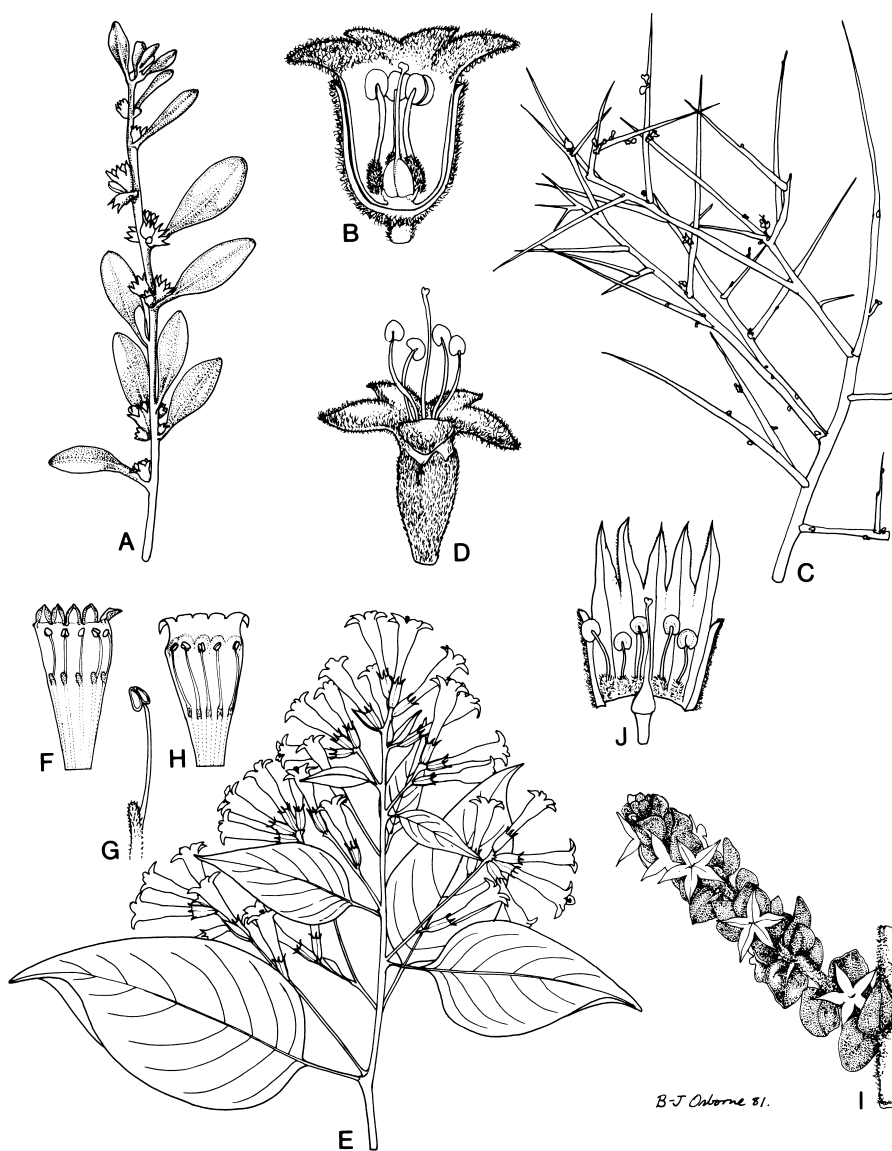
## 3. *Anthotroche walcottii* F. Muell., *Fragm. Phytogr. Austral.* 1: 123 (1859)

T: Mt Curious, W.A., *P. Walcott s.n.*; holo: MEL 70972.

Illustration: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 604 (1975).

Erect to sprawling shrub to 2 m. Branches closely and densely granular-tomentose with non-glandular, dendritic and branched hairs, and occasional shorter, glandular hairs, grey or rusty. Leaves ovate, elliptic, obovate or orbicular, 7–20 mm long, 7–16 mm wide, the juvenile leaves larger; all closely and densely tomentose; petiole to 20 mm long. Flowers axillary, solitary or in 2–3-flowered clusters; pedicels 5–15 mm long. Calyx 3–7 mm long, pubescent; lobes 2–3.5 mm long. Corolla 5–8 mm long; tube abruptly spreading towards limb, deep greenish-yellow with purple striations; lobes 3–5 mm long, purple-black. Stamens exserted. Capsule broadly ovoid to broadly ellipsoid, 4–8 mm long. Seeds 2.3–2.5 mm long.

Endemic near the W coast of W.A. between Geraldton and Shark Bay. Occurs on yellow sand plain in scrub-heath. Map 34.



B-J Osborne 81.

**Figure 14.** A–B, *Anthotroche myoporoides* (M. E. Phillips 1162, CBG); A  $\times 0.5$ , B  $\times 4$ . C–D, *Crenidium spinescens* (L. Haegi 200, CBG); C  $\times 0.5$ , D  $\times 7$ . E–G, *Cestrum aurantiacum* (Brisbane, 1976, J. Gilleatt, BRI); E  $\times 0.5$ , F  $\times 1$ , G  $\times 3$ . H, *Cestrum elegans* (D. E. Symon 11571, ADW),  $\times 1$ . I, *Grammosolen dixonii* (L. Haegi 676, CBG),  $\times 0.5$ . J, *Grammosolen truncatus* (L. Haegi 770, CBG),  $\times 2.5$ .

W.A.: c. 38 km NW of Ajana, *L. Haegi* 1153 (AD, BIRM, CANB, MO, NT, PERTH); Kalbarri National Park, *T. A. Halliday* 140 (ADW, PERTH); Kalbarri National Park, *R. D. Royce* 772 (PERTH).

## 7. CRENIDIUM

*Crenidium* Haegi, *Telopea* 2: 179 (1981); from the Greek *krenidion* (a spring or fountain), alluding to the exerted stamens and style.

Type species: *C. spinescens* Haegi.

Shrubs, leafless except young branches. Flowers in cyme-like clusters at nodes, bisexual, slightly zygomorphic, each subtended by a pair of opposite bracts. Calyx cupular, 5-lobed. Corolla narrowly tubular with spreading limb, pale yellow; limb with 5 short, broad lobes, induplicate in bud. Stamens usually 4, didynamous, inserted at base of corolla-tube; a staminode present or rarely fertile; anthers unilocular, not cohering, dehiscing by a semicircular slit. Ovary bilocular; stigma capitate, very shortly bilobed. Fruit a smooth capsule, opening by 2 bifid valves, the lower half enclosed by calyx. Seeds subreniform.  $n=35$ ; *L. Haegi*, *loc. cit.*

A monotypic genus endemic to inland south-western W.A. and the southern eremea.

*L. Haegi*, A conspectus of Solanaceae tribe Anthocercideae, *Telopea* 2: 173–180 (1981).

### ***Crenidium spinescens* Haegi, *Telopea* 2: 179 (1981)**

T: Mongers Lake [= Lake Monger], W.A., 12 June 1961, *C. A. Gardner* 13070; holo: PERTH; iso: CANB, K, MO.

Rounded, intricately branched shrub to 1.7 m. Branches spinescent, tomentose with non-glandular dendritic hairs, glabrescent. Leaves present only on immature parts, scattered, narrowly elliptic to linear, sessile, 3–10 mm long, 0.5–1.5 mm wide, tomentose, entire, the margins slightly recurved. Pedicels 1–3 mm long. Calyx 1.3–2 mm long, tomentose; lobes minute. Corolla 2.5–4 mm long, tomentose outside; lobes ovate to broadly ovate, 1.5–2.5 mm long. Stamens and style much exerted. Capsule ovoid, 4–4.5 mm long. Seeds 3.5–4 mm long. Figs 14C–D, 17.

Occurs from Menzies to Lake Moore in southern W.A. Grows in deep sand on the margins of salt lakes. Map 35.

W.A.: Lake Seabrook, *J. S. Beard* 5158 (PERTH); Lake Goongarrie, *L. Haegi* 2000 (AD, ADW, BIRM, BRI, CANB, CBG, CORD, F, MEL, MO, NSW, NT, PERTH, PRE).

## Trib. II. CESTREAE Don

Trib. *Cestreae* Don, *Gen. Hist.* 4: 400 (1837).

Type genus: *Cestrum* L.

Woody shrubs, rarely small trees. Pedicels articulated. Corolla tubular with a short fold on upper part of tube, actinomorphic. Stamens 5, all fertile, free, included; filaments longer than anthers, geniculate at proximal end; anthers dorsifixed, small, circular; thecae free in basal third, dehiscing introrsely. Ovary on prominent disc. Fruit a berry or capsule. Seeds prismatic or ovoid; embryo straight, or slightly curved at apex.

Four genera in north and south America; one genus naturalised in Australia.

**8. CESTRUM**

*Cestrum* L., *Sp. Pl.* 1: 191 (1753), & *Gen. Pl.* 5th edn, 88 (1754); name variously said to derive from the Greek *kestron* (a plant); or the Greek *kestrum* (an engraver's tool), in reference to the anther shape; or because of the supposed similarity to a plant of the same name described by Dioscorides.

Type species: *C. nocturnum* L.

Woody shrubs or small trees, glabrous, or pubescent with simple, forked or dendritic hairs. Leaves mostly alternate, sometimes paired, simple, entire, petiolate. Inflorescence usually raceme- or panicle-like, axillary or terminal. Flowers bisexual, sometimes slightly zygomorphic, often subtended by a small bract. Calyx tubular, 5–7-lobed. Corolla tubular or salver-shaped (not in Australia), variously coloured; tube often slightly inflated towards limb; limb shortly 5–7-lobed, the lobes valvate in bud. Stamens 5, equal or subequal, variously inserted on corolla-tube; anthers bilocular, versatile, dehiscing by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a succulent berry. Seeds prismatic or ovoid.

A genus of c. 250 species, native to tropical Central and South America, with major concentrations in Brazil and the Andean region. Several species widely cultivated as ornamentals for their fragrant, often nocturnal flowers. Four species naturalised in Australia as garden escapes.

P. Francey, *Monographie du genre Cestrum* L., *Candollea* 6: 46–398 (1935), 7: 1–132 (1936); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

- |    |   |                                 |
|----|---|---------------------------------|
| 1  | Flowers reddish; plants softly pubescent; berry red when mature   | <b>1. <i>C. elegans</i></b>     |
| 1: | Flowers orange to greenish-yellow; new growth sparsely pubescent or glabrescent; berry white or black when mature |                                 |
| 2  | Corolla orange-yellow; leaves elliptic to broadly elliptic; berry white when mature                               | <b>2. <i>C. aurantiacum</i></b> |
| 2: | Corolla greenish-yellow; leaves narrowly elliptic to lanceolate; berry black or white when mature                 |                                 |
| 3  | Corolla-tube 2–3 mm wide at apex; filaments with an erect process; berry white when mature                        | <b>3. <i>C. nocturnum</i></b>   |
| 3: | Corolla-tube 3–5 mm wide at apex; filaments without an erect process; berry black when mature                     | <b>4. <i>C. parqui</i></b>      |

**1. \**Cestrum elegans*** (Brongn. ex Neumann) Schldl., *Linnaea* 19: 261 (1846)

*Habrothamus elegans* Brongn. ex Neumann, *Ann. Pomone* 118 (1844).

T: not Australian; *n.v.*

Woody shrub to 3 m, all parts pubescent. Leaves broadly lanceolate; lamina 6–17 cm long, 2–9 cm wide, pubescent; petiole 10–30 mm long. Inflorescence a congested, terminal panicle of subspicate racemes, densely pubescent with purple hairs; flowers numerous, sessile or on pedicels 0.5 mm long, the lower ones subtended by lanceolate, often coloured, bracts. Calyx 6–8 mm long; lobes triangular-acuminate, to 3 mm long. Corolla reddish; tube 15–20 mm long, 1–1.5 mm diam. at base, expanded to 5 mm at apex; lobes 2.5–4 mm long. Stamens inserted just below middle of

corolla-tube; filaments 10 mm long, swollen and sparsely pubescent at base; anthers 1–1.5 mm long. Style c. 17 mm long. Berry more or less globular, c. 10 mm diam., red. Seeds not known. Fig. 14H.

An uncommon garden escape in south-eastern Qld and southern Vic. Map 36.

Qld: Tamborine, 4 July 1962, *S. L. Everist, J. Teys & P. Knowles* (BRI). Vic.: Perrins Creek Road, Apr. 1977, *A.M. Opie* (MEL).

**2. \*Cestrum aurantiacum** Lindley, *Edwards's Bot. Reg.* 30: misc. 71, no. 65 (1844); 31: t. 22 (1845)

T: Described from plants cultivated in Chiswick Gardens from seed said to be native to Chimalapa, Guatemala; *n.v.*

Large shrub to 4 m, sparsely pubescent on new growth. Leaves elliptic; lamina 7–10 cm long, usually more than 3 cm wide; petiole 1–4 cm long. Inflorescence subspicate, raceme-like, axillary and terminal; flowers 10–15, sessile or almost so, frequently subtended by a leafy bract, lanceolate below to linear above. Calyx 5–8 mm long; lobes narrowly triangular to linear, 1–3 mm long. Corolla orange-yellow; tube 17–21 mm long, very slightly inflated in upper part; lobes 3.5–5 mm long. Stamens inserted about middle of corolla-tube; filaments c. 5 mm long, with a blunt, conical, pubescent process at point of insertion, sparsely and minutely pubescent below; anthers c. 1.5 mm long. Style 15–16 mm long. Berry 7–12 mm long, white. Seeds ovoid, c. 3 mm long, dark brown. *Orange Cestrum*. Fig. 14E–G.

Occasionally cultivated as garden plant; now an uncommon weed in south-eastern Qld and coastal N.S.W. Occurs in waste places mostly in urban areas. Map 37.

Qld: Tamborine, 15 June 1959, *T. C. Wilcox* (BRI). N.S.W.: Upper Cordeaux Dam, 2 May 1957, *E. F. Constable* (NSW).

Toxic to sheep and cattle.

**3 \*Cestrum nocturnum** L., *Sp. Pl.* 1: 191 (1753)

T: 'Habitat in Jamaica, Chilli'; BM, *n.v.*, *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 60: 607 (1973).

Large shrub or small tree to 4 m; young twigs sparsely pubescent. Leaves lanceolate-elliptic; lamina 10–15 cm long, 4–7 cm wide, the midrib pubescent below; petiole 5–10 mm long. Inflorescence an often congested, terminal, leafy panicle of spike-like racemes; flowers numerous, sessile or on pedicels to 3 mm long, subtended by leafy, linear bracts 3–10 mm long. Calyx c. 2.5 mm long; lobes triangular, c. 0.8 mm long. Corolla greenish-yellow, slightly enlarged upwards; lobes c. 4 mm long. Stamens inserted in upper half of corolla-tube; filaments c. 3 mm long, with an erect process just below point of insertion, retrorsely pubescent where adnate to tube; anthers 0.5 mm long. Style 15–16 mm long. Berry 8–10 mm diam., white. Seeds prismatic, c. 4 mm long. *Lady of the night*.

Sparingly naturalised near Maitland, N.S.W. Native to the Antilles and Central America.

N.S.W.: East Maitland, 5 Feb. 1974, *Lynch* (NSW).

Widely cultivated in tropical areas for the strongly scented flowers. Reported as toxic to stock but possibly in error for *C. parqui* L'Hér.



**Figure 15.** *Anthotroche pannosa*.  
 Photograph — M. Fagg.

**Figure 16.** *Nicotiana benthamiana*.  
 Photograph — A. S. George.



**Figure 17.** *Crenidium spinescens*.  
 Photograph — L. Haegi.

**Figure 18.** *Nicotiana rosulata* subsp.  
*rosulata*. Photograph — A. S. George.

**4. \*Cestrum parqui** L'Hér., *Stirp. Nov.*, fasc. 4: 73; t. 36 (1788)

T: not Australian; *n.v.*

Illustrations: W. T. Parsons, *Noxious Weeds Victoria*, fig. 233 (1973); S. L. Everist, *Poison Pl. Austral.*, t. 50 (1974); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland*, 330 (1977).

Woody shrub to 3 m; new shoots and leaf axils minutely pubescent. Leaves narrowly elliptic to lanceolate; lamina 20–65 mm long, usually less than 30 mm wide; petiole up to 10 mm long. Inflorescence terminal, panicle-like, congested; flowers numerous, sessile or on pedicels to 10 mm long, occasionally subtended by short bract. Calyx 3–5 mm long; lobes triangular, 1 mm long. Corolla greenish-yellow; tube narrow, 15–18 mm long; lobes 3.5–5 mm long. Stamens inserted near middle of corolla-tube; filaments 6–7 mm long, swollen and retrorsely pubescent in lower part; anthers 0.5–1 mm long. Style 17–18 mm long. Berry oval-ovoid, 10–15 mm long, black. Seeds prismatic, 3.5–4 mm long, dark brown. *Green Cestrum*, *Green Poisonberry*.

Originally cultivated as a garden plant, now a naturalised and common weed in south-eastern Qld, eastern N.S.W., Vic. and higher rainfall areas of S.A. Grows in waste places in urban areas. Map 38.

S.A.: Burra, *D. E. Symon 8814* (ADW, CANB). Qld.: Brisbane, *J. Gillett 61* (BRI). N.S.W.: Clarence River near Lawrence, 20 Apr. 1953, *J. Vickery* (NSW). Vic.: Whitfield, Apr. 1940, *coll. unknown* (MEL).

A declared noxious weed in Qld, N.S.W. and Vic. Toxic to cattle, horses, poultry and sheep. Distinguished from other species by the broader corolla-tube and the black fruit.

**Trib. III. NICOTIANEAE**

Trib. *Nicotianeae* Don, *Gen. Hist.* 4: 399 (1837).

Type genus: *Nicotiana* L.

Herbs, rarely shrubs. Pedicels not articulated. Corolla infundibular or campanulate, actinomorphic or almost so; aestivation contorted, the limb plicate. Stamens 5, rarely 2 or 4; anthers ventrifixed; thecae rarely confluent. Fruit a capsule. Embryo straight or almost so.

Nine genera, in North and South America except *Nicotiana* which also occurs in Australasia and Africa. Three genera in Australia, two introduced.

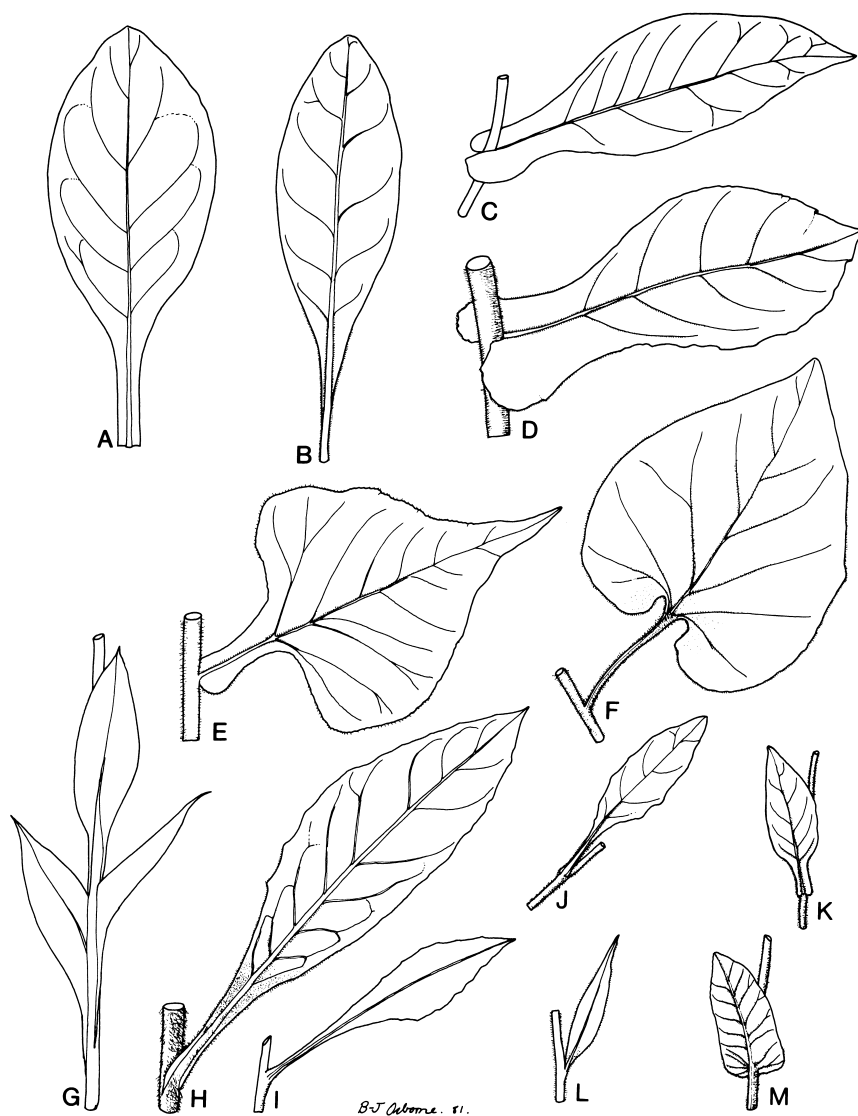
**9. NICOTIANA**

*Nicotiana* L., *Sp. Pl.* 1: 180 (1753), *Gen. Pl.* 5th edn, 84 (1754); after Jean Nicot (1530–1600), consul from the King of France to Lisbon in 1560, who sent Seeds of the tobacco plant to France.

Type species: *N. tabacum* L.

Annual or short-lived perennial herbs or spindly shrubs, glabrous or pubescent with glandular or non-glandular hairs. Leaves alternate, radical and/or cauline, simple, entire to sinuate, petiolate or sessile. Flowers solitary in leaf axils, or inflorescence panicle-like, rarely raceme-like with each flower subtended by a bract; flowers bisexual, actinomorphic or slightly zygomorphic. Calyx tubular to narrowly campanulate, the connate margins often thin and translucent (the thin areas termed 'inter-sepal membranes'), 5-lobed, persistent in fruit. Corolla tubular or salver-shaped, white, green, yellow or pink; limb 5-lobed, the lobes usually folded in bud. Stamens

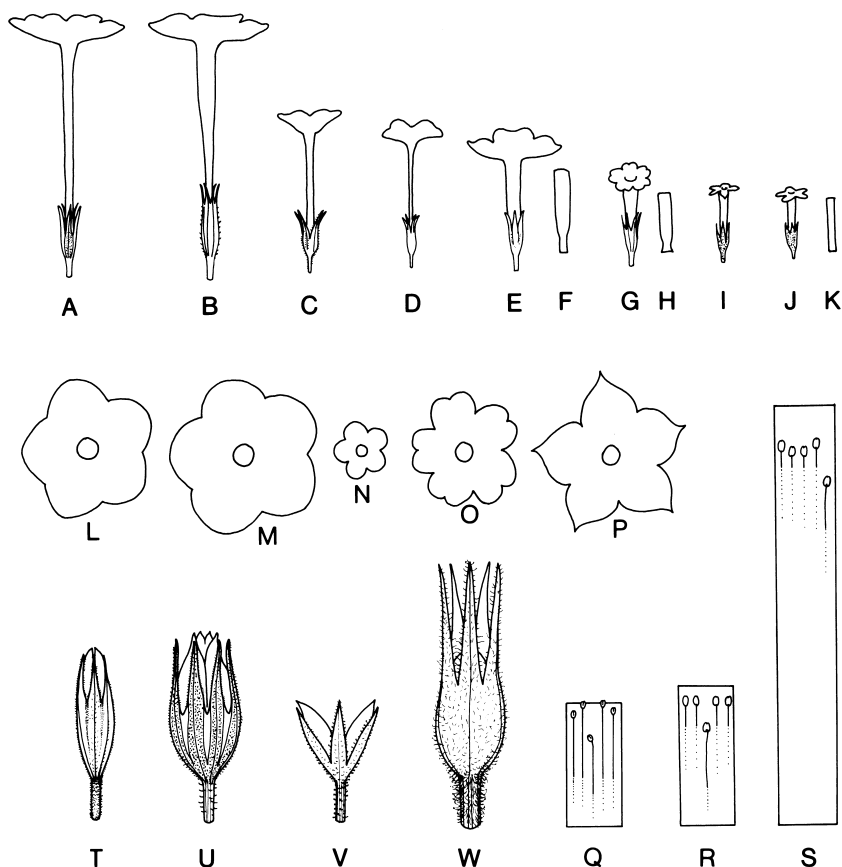




**Figure 19.** *Nicotiana* leaves. A–B–radical; C–I–lower cauline; J–M–upper cauline. **A.** *N. debneyi* subsp. *debneyi* (Cult. Canberra ex S.A., R. L. Warner, CANB). **B.** *N. velutina* (M. Lazarides 5960, CANB). **C.** *N. debneyi* subsp. *debneyi* (Cult. Canberra ex N. T. Burbidge 5409, CANB). **D.** *N. gossei* (Cult. Canberra ex Ayers Rock, N.T., H. W. Lea, CANB). **E.** *N. cavicola* (Cult. Canberra ex Mugga, W.A., J. M. Dickens, CANB). **F.** *N. umbricata* (N. T. Burbidge 5957, CANB). **G.** *N. excelsior* (Cult. Canberra ex Woomera, S.A., W. B. MacDougall, CANB). **H.** *N. maritima* (C. R. Alcock 1095, CANB). **I.** *N. velutina* (R. Schodde 831, CANB). **J.** *N. megalosiphon* subsp. *megalosiphon* (N. T. Burbidge 5525, CANB). **K.** *N. megalosiphon* subsp. *sessilifolia* (P. K. Latz 2484, CANB). **L.** *N. velutina* (R. Schodde 831, CANB). **M.** *N. gossei* (Cult. Canberra ex Ayers Rock, N.T., H. W. Lea, CANB). All  $\times 0.5$ .

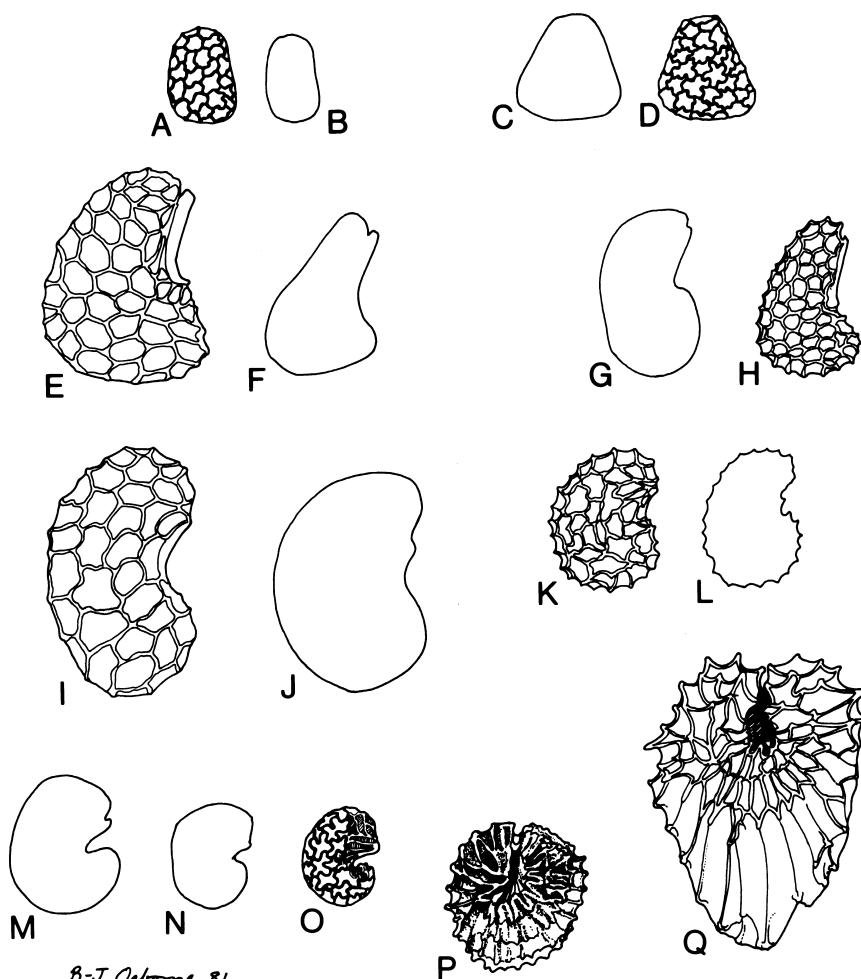


**Figure 20.** *Nicotiana* inflorescences. **A**, *N. benthamiana* (R. A. Perry 2269, CANB),  $\times 0.4$ . **B**, *N. debneyi* subsp. *debnayi* (Cult. Canberra ex Loxton, S.A., W. H. Browning, CANB),  $\times 0.25$ . **C**, *N. cavicola* (Cult. Canberra ex Mugga, W.A., J. M. Dickens, CANB),  $\times 0.4$ .



B-J Osborne 81.

**Figure 21.** A–K, *Nicotiana* flowers (F, H, K—corolla-tube), all  $\times 0.5$ . A, *N. megalosiphon* subsp. *megalosiphon* (unknown, A. V. Hill, CANB). B, *N. excelsior* (Cult. Canberra ex Mt. Olga, N.T., D. E. Symon, CANB). C, *N. benthamiana* (Cult. Canberra ex N.T. Burbidge 5983, CANB). D, *N. rosulata* subsp. *rosulata* (Cult. Canberra ex N.T. Burbidge 6067, CANB). E–F, *N. suaveolens* (N. T. Burbidge 6422, CANB). G–H, *N. velutina* (M. Lazarides 5960, CANB). I, *N. debneyi* subsp. *monoschizocarpa* (J. Muspratt 92, CANB). J–K, *N. goodspeedii* (R. Schodde 735, CANB). L–P, *Nicotiana* corolla-limbs: L–N—obtuse; O—notched; P—acute; all  $\times 0.8$ . L, *N. cavicola* (Cult. Canberra ex N. T. Burbidge 4746, CANB). M, *N. gossei* (Cult. Canberra ex Finke R., N.T., W.A. Dept. of Agriculture, CANB). N, *N. debneyi* subsp. *debneyi* (R. W. Johnson 2814, CANB). O, *N. simulans* (Cult. Canberra ex N. T. Burbidge 6082, CANB). P, *N. umbratica* (Cult. Canberra ex N. T. Burbidge 5873, CANB). Q–S, *Nicotiana* anther position, all  $\times 1$ . Q, *N. debneyi* subsp. *debneyi* (R. W. Johnson 2814, CANB); upper 4 anthers in 2 pairs. R, *N. occidentalis* subsp. *hesperis* (N. T. Burbidge 6486, CANB); upper 4 anthers level. S, *N. umbratica* (Cult. Canberra ex N. T. Burbidge 5820, CANB); upper 4 anthers in 2 pairs. T–W, *Nicotiana* fruits, all  $\times 1.5$ . T, *N. rosulata* subsp. *rosulata* (Cult. Canberra ex N. T. Burbidge 4811, CANB). U, *N. suaveolens* (N. T. Burbidge 6421, CANB). V, *N. debneyi* subsp. *monoschizocarpa* (J. Muspratt 92, CANB). W, *N. gossei* (Cult. Canberra ex Palm Valley, N.T., D. E. Symon, CANB).



B-J Osborne 81.

**Figure 22.** *Nicotiana* seeds. Shape: A–B–ovoid; C–D–trapezoid; E–H–acutely angled; I–L–reniform; M–O–‘C’-shaped; P–Q–‘U’-shaped. Ornamentation: E, H–regularly honeycombed; A, I–irregularly honeycombed; D, K, O–wrinkled; P, Q–transverse. **A–B**, *N. benthamiana* (Cult. Canberra ex N. T. Burbidge 5983, CANB). **C–D**, *N. debneyi* subsp. *debneyi* (Cult. Canberra ex Loxton S.A., W. H. Browning, CANB). **E**, *N. excelsior* (Cult. Canberra ex Mt. Olga, N.T., D. E. Symon, CANB). **F–G**, *N. megalosiphon* subsp. *megalosiphon* (L. Pedley 764, CANB). **I–J**, *N. excelsior* (Cult. Canberra ex Woomera, S.A., W. B. MacDougall, CANB). **K–L**, *N. rosulata* subsp. *rosulata* (Cult. Canberra ex N. T. Burbidge 4811, CANB). **M**, *N. velutina* (N. T. Burbidge 4369, CANB). **N–O**, *N. goodspeedii* (R. Schodde 735, CANB). **P–Q**, *N. occidentalis* subsp. *hesperis* (N. T. Burbidge 6451, CANB). All  $\times 21$ .

5, equal or unequal in length, often 4 reaching throat of corolla-tube, the 5th shorter; anthers bilocular, dorsifixed, not cohering, dehiscing by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a smooth-walled capsule surrounded by persistent calyx, dehiscing from apex by 4 (rarely 2) valves. Seeds reniform to C-shaped, often angled.

In native species, limb of corolla usually closed in full sunlight and open in shade or after sunset. Cleistogamous flowers found in some species, depending on age of plant, day length and temperature conditions; corollas of such flowers usually very short, often scarcely exceeding calyx. Keys and descriptions in this treatment based on normal flowers only.

A genus of 60–70 species, mostly native to South America but also found in North America, south-western Africa (1 species), Australia and the South Pacific region. Many species important as drug plants, having long history of use for smoking, chewing or snuff production, in areas to which they are native or introduced. Commercial tobacco mainly derived from *N. tabacum* L. and *N. rustica* L. In Australia, 16 species endemic to the mainland and one introduced species (*N. glauca* Graham) widely naturalised. *N. tabacum* cultivated commercially and occasionally found as a spontaneous escape; *N. alata* Link & Otto and *N. sylvestris* Spegazzini & Comes cultivated as garden ornamentals.

H. Wheeler, Studies in *Nicotiana*. II. A taxonomic survey of the Australian species, *Univ. Calif. Publ. Bot.* 18(4): 45–68 (1935); T. H. Goodspeed et al., The genus *Nicotiana*, *Chron. Bot.* 16: 1–536 (1954); N. T. Burbidge, The Australian species of *Nicotiana* L. (Solanaceae), *Austral. J. Bot.* 8: 342–380 (1960); P. K. Latz, The Central Australian species of *Nicotiana*, *Austral. Pl.* 7: 280–283 (1974); P. Horton, A taxonomic revision of *Nicotiana* (Solanaceae) in Australia, *J. Adelaide Bot. Gard.* 3: 1–56 (1981).

Key adapted from P. Horton, *op. cit.* 9–11.

- |  |                                  |
|--|----------------------------------|
| 1 Perennial, spindly shrub to 6 m; corolla yellow  | <b>17. <i>N. glauca</i></b>      |
| 1: Annual or short-lived perennial herb; corolla white or pink   |                                  |
| 2 Plant 1–3 m high; inflorescence short, dense, panicle-like; corolla white or pink  | <b><i>N. tabacum</i> †</b>       |
| 2: Plant usually less than 1 m high; inflorescence loose, elongated, panicle- or raceme-like, or flowers solitary in leaf axils; corolla white                   |                                  |
| 3 Ellipsoid-headed glandular hairs present at least on inflorescence   |                                  |
| 4 Lamina of lower leaves wider than long, or nearly as wide; cauline leaves petiolate  |                                  |
| 5 Petioles broadly winged; corolla-lobes obtuse  | <b>2. <i>N. cavicola</i></b>     |
| 5: Petioles very narrowly winged or almost terete; corolla-lobes acute   | <b>3. <i>N. umbratica</i></b>    |
| 4: Lamina of lower leaves longer than wide; at least the uppermost cauline leaves sessile or almost so   |                                  |
| 6 Inflorescence many-branched when mature, leafless; corolla-limb 6–13 mm diam., lobes obtuse to acute; Seeds oblong to trapezoid                                | <b>1. <i>N. debneyi</i></b>      |
| 6: Inflorescence few-branched when mature, often leafy in lower part; corolla-limb 10–25 mm diam., lobes notched; Seeds reniform, acutely angled, C- or U-shaped | <b>4. <i>N. occidentalis</i></b> |

- 3: Ellipsoid-headed glandular hairs absent
- 7 Flowering stems leafy; flowers solitary in leaf axils or arising from internodes **5. N. benthamiana**
- 7: Flowering stems leafless, or leafy at base only; flowers in raceme- or panicle-like inflorescences
- 8 Cauline leaves decurrent on stem **6. N. excelsior**
- 8: Cauline leaves not decurrent on stem
- 9 Leaves mostly cauline, bases broadly auriculate and stem-clasping
- 10 Corolla-tube 15–20 mm long; capsule 5–9 mm long **7. N. amplexicaulis**
- 10: Corolla-tube more than 25 mm long; capsule 7–16 mm long
- 11 Testa irregularly honeycombed or wrinkled; corolla-lobes usually obtuse **8. N. gossei**
- 11: Testa regularly honeycombed; corolla-lobes usually notched **9. N. megalosiphon**
- 9: Leaves radical and cauline or mostly radical; cauline leaves not broadly auriculate and stem clasping
- 12 Stems and leaves pubescent all over
- 13 Corolla-tube more than 25 mm long or, if shorter, the length more than 14 times the width (measured at top of calyx)
- 14 Corolla-tube usually less than 40 mm long; upper 4 anthers not all at the same level **10. N. simulans**
- 14: Corolla-tube usually at least 40 mm long; upper 4 anthers all at the same level **9. N. megalosiphon**
- 13: Corolla-tube less than 25 mm long or, if longer, the length less than 14 times the width (measured at top of calyx)
- 15 Pubescence velvety; intersepal membranes inconspicuous; Seeds C-shaped **15. N. velutina**
- 15: Pubescence not velvety; intersepal membranes often conspicuous; Seeds reniform or acutely angled
- 16 Bases of stems usually white- or grey-woolly; hairs non-glandular **14. N. maritima**
- 16: Bases of stems not white- or grey-woolly; hairs glandular and non-glandular **16. N. rotundifolia**
- 12: Stems and leaves glabrous, glabrescent, or pubescent near base only
- 17 Capsule usually at least 3 times as long as wide; corolla-tube 1–2 mm wide at top of calyx, the length more than 14 times the width at that point **11. N. rosulata**
- 17: Capsule not more than twice as long as wide; corolla-tube 1–6 mm wide at top of calyx, the length less than 14 times the width at that point
- 18 Stems and leaves glabrous or basal leaves, stem bases and young shoots pubescent

- |   |                                   |
|---|-----------------------------------|
| <b>19</b> Corolla-tube usually more than 18 mm long, distinctly broadening up to the limb | <b>13. <i>N. suaveolens</i></b>   |
| <b>19:</b> Corolla-tube usually 8–18 mm long, not distinctly broadening up to the limb    | <b>12. <i>N. goodspeedii</i></b>  |
| <b>18:</b> Stems and leaves glabrescent   |                                   |
| <b>20</b> Seeds C-shaped; intersepal membranes inconspicuous                              | <b>15. <i>N. velutina</i></b>     |
| <b>20:</b> Seeds reniform or acutely angled; intersepal membranes conspicuous             | <b>16. <i>N. rotundifolia</i></b> |

† Primarily a cultivated species; not treated further in this work.

### Sect. I. Suaveolentes

*Nicotiana* sect. *Suaveolentes* Goodspeed, *Univ. Calif. Publ. Bot.* 18: 342 (1945).

Type species: *N. suaveolens* Lehm.

Herbs. Lower leaves petiolate; cauline leaves often sessile. Corolla salver-shaped, white or cream. Stamens usually 4 short (inserted near apex of corolla-tube) and 1 long (inserted lower in tube), rarely all 5 equal or subequal.

#### 1. *Nicotiana debneyi* Domin, *Biblioth. Bot.* 89: 593; t. 36, figs 6–8 (1929)

T: Rockingham Bay, Qld, ?1868, *Dallachy s.n.*; holo: K n.v., photo ADW; iso: ?MEL.

*N. suaveolens* var. *parviflora* Benth., *Fl. Austral.* 4: 470 (1868), *p.p.*, fide T. H. Goodspeed, *Chron. Bot.* 16: 483 (1954).

Herb to 1.5 m, leaves and lower stems sparsely pubescent with non-glandular hairs. Radical leaves elliptic, the lamina up to 25 cm long and 14 cm wide; petiole to 14 cm long, broadly winged, somewhat stem-clasping and auriculate at base; cauline leaves smaller, the upper ones narrowly elliptic to linear and becoming sessile, the base auriculate and stem-clasping. Inflorescence panicle-like, usually many-branched, densely pubescent with glandular hairs. Calyx 4–10 mm long. Corolla-tube 10–25 mm long, narrow at base; limb 6–13 mm diam. Upper 4 anthers at the same level or nearly so. Capsule ellipsoid to ovoid, 5–11 mm long. Seeds ovoid to trapezoid.

Corolla-lobes broad, obtuse; capsule 4-valved

**1a. subsp. *debneyi***

Corolla-lobes narrow, acute to narrowly obtuse; capsule 2-valved

**1b. subsp. *monoschizocarpa***

#### 1a. *Nicotiana debneyi* Domin subsp. *debneyi*

Illustration: K. Domin, *loc. cit.*

Corolla-tube 1.5–3 mm wide at top of calyx; lobes broad, obtuse. Staminal filaments 6–11 mm long, inserted in lower half of corolla-tube. Capsule dehiscent by 4 valves. Testa wrinkled or with wavy-edged honeycomb. *n*=24. Figs 19A, C; 20B; 21N, Q; 22C–D.

Occurs mainly in coastal and subcoastal regions of eastern Australia, from Cairns, Qld, to Nowra, N.S.W., with minor, possibly relict, occurrences in central-western Qld. Also occurs naturally in New Caledonia and on Lord Howe Island. Grows in a range of soils on coastal headlands, in deep gorges, cave openings and disturbed rainforest or softwood scrub, often among regrowth after fire. Map 39.

Qld: Biloela, *L. S. Smith 3461* (BRI); Lamington National Park, 27 May 1961, *J. H. Willis* (MEL). N.S.W.: 32 km NW of Kyogle, *R. Henderson 488* (NSW); 45 km WSW of Moura, *R.W. Johnson 2814* (CANB).

**1b. *Nicotiana debneyi* subsp. *monoschizocarpa*** P. Horton, *J. Adelaide Bot. Gard.* 3: 12 (1981)

T: Daly River Crossing, Daly River road, N.T., 28 Sept. 1973, *J. McKean 1183*; holo: NT, iso: CANB, DNA, NSW.

Corolla-tube to 1.5 mm wide at top of calyx; lobes narrow, acute or slightly obtuse. Staminal filaments to 3.5 mm long, inserted in upper half of corolla-tube. Capsule dehiscing by 2 valves. Testa honeycombed.  $n=24$ . Fig. 21V.

Known only from Daly River and Reynolds River region in north-western N.T. Grows in clay soils of riverbanks. Map 40.

N.T.: Daly River, *C. R. Dunlop 5028* (ADW, DNA); Oolloo Stn, *J. Muspratt 92* (CANB, NT).

**2. *Nicotiana cavicola*** N. Burb., *Austral. J. Bot.* 8: 354; fig. 7; t. 11, fig. 2 (1960)

T: Cultivated plant, 9 Feb. 1958, grown from sample T.S. 202, the original seed collected 7 miles E of Meekatharra, W.A., 11 Dec. 1955, *N. T. Burbidge 4774*; lecto: CANB 79168, *fide* P. Horton, *J. Adelaide Bot. Gard.* 3: 14 (1981).

Illustrations: N. T. Burbidge, *loc. cit.*

Herb to 1 m, moderately pubescent with glandular hairs. Leaves radical and cauline, broadly triangular to broadly cordate, the upper leaves narrower; lamina up to 20 cm long, 13 cm wide; petiole to 11 cm long, broadly winged, the base occasionally auriculate and stem-clasping. Inflorescence panicle-like, few-branched; lower bracts leafy. Calyx 7–25 mm long. Corolla-tube 18–50 (usually 22–45) mm long, 1–3.5 mm wide at top of calyx; limb 10–40 mm diam., the lobes usually obtuse. Upper 4 anthers at the same level or nearly so, their filaments to 2.5 (occasionally to 5) mm long; 5th filament to 6.5 (occasionally to 14) mm long, usually inserted in upper half of corolla-tube. Capsule ovoid to broadly ellipsoid, 6–12 mm long. Seeds reniform; testa with wavy-edged honeycomb or irregular wrinkles.  $n=20, 23$ . Figs 19E; 20C; 21L.

Occurs in central-western W.A. usually associated with shaded sites on breakaways and rocky outcrops. Used as chewing tobacco by Aborigines. Map 41.

W.A.: Lake Weelhamby, *R. D. Pearce 112* (ADW); Lake Austin, 1894, *J. Robertson* (MEL); near Mileura, *N. H. Speck 996A* (CANB); c. 14 km W of Mileura, *N. H. Speck 1008* (PERTH).

**3. *Nicotiana umbratica*** N. Burb., *Austral. J. Bot.* 8: 352; fig. 6; t. 11, fig. 1 (1960)

T: Woodstock Stn, Pilbara District, W.A., received May 1958, *E. H. M. Ealey E.161*; holo: CANB; iso: K n.v., photo ADW.

Illustrations: N. T. Burbidge, *loc. cit.*

Herb to c. 70 cm, variably pubescent with glandular hairs. Leaves mostly cauline, broadly cordate to triangular, the upper ones narrowly ovate, occasionally linear; lamina up to 12 cm long, 10 cm wide; petiole to 11 cm long, very narrowly winged, not stem-clasping. Inflorescence panicle-like, few-branched. Calyx 6–15 mm long. Corolla-tube 40–65 mm long (occasionally shorter), 1–2.5 mm wide at top of calyx; limb 20–35 mm diam., the lobes usually acute. Upper 4 anthers borne at slightly different levels, their filaments 1.5–2.5 mm long; 5th filament 2–7 mm long, inserted



in upper half of corolla-tube. Capsule ovoid-ellipsoid, 6–10 mm long. Seeds reniform; testa irregularly honeycombed or wrinkled.  $n=23$ . Figs 19F; 21P, S.

Restricted to western part of Pilbara District of W.A. Typically grows in shelter of large boulders on rocky outcrops. Map 42.

W.A.: Eginbah Stn, *N. T. Burbidge* 1048 (PERTH); Woodstock Stn, *N. T. Burbidge* 5820 (AD, CANB, MEL, PERTH).

#### 4. *Nicotiana occidentalis* H. Wheeler, *Univ. Calif. Publ. Bot.* 18(4): 52 (1935)

T: Port Hedland, W.A., 11 Aug. 1911, *E. Mjöberg* 105; holo: NSW 47226.

Herb to 1.3 m, densely pubescent with sticky, glandular hairs. Radical leaves elliptic; lamina up to 20 cm long; petiole to 5 (occasionally 16) cm long, broadly winged, the base usually slightly stem-clasping; cauline leaves narrower, the upper ones pandurate or lanceolate and sessile, their bases usually auriculate and somewhat stem-clasping. Inflorescence panicle-like, few-branched; lower bracts usually leafy. Calyx 5–14 mm long. Corolla-tube 1–4 mm wide at top of calyx; limb 10–25 mm diam., the lobes notched. Upper 4 anthers at same level or nearly so, their filaments 1–5 mm long; filament of 5th stamen 3–8 mm long. Cleistogamous flowers common, especially in subsp. *obliqua*. Capsule ovoid to ellipsoid, 7–14 mm long. *Native Tobacco*.

A variable species, represented by three subspecies, occurring mainly in arid areas of W.A., N.T. and S.A.

- |    |   |                                |
|----|---|--------------------------------|
| 1  | Corolla-tube always longer than 25 mm; upper 4 anthers at the same level  | <b>4a. subsp. occidentalis</b> |
| 1: | Corolla-tube longer than 25 mm and 2 of upper 4 anthers above the other 2, or corolla-tube shorter than 25 mm and upper 4 anthers at the same level |                                |
| 2  | Seeds usually acutely angled or reniform, never crested   | <b>4b. subsp. obliqua</b>      |
| 2: | Seeds U-shaped, occasionally crested  | <b>4c. subsp. hesperis</b>     |

#### 4a. *Nicotiana occidentalis* H. Wheeler subsp. *occidentalis*

Calyx usually one third to one fifth the length of corolla-tube. Corolla-tube 25–50 mm long. Upper 4 anthers at the same level; filament of the 5th stamen inserted in upper half of corolla-tube. Seeds usually acutely angled or reniform, occasionally C-shaped; testa irregularly honeycombed or wrinkled.

Restricted to coastal and near-coastal areas and adjacent offshore islands of W.A., between Port Hedland and Exmouth Gulf. Grows mainly in sandy or rocky soils, often near creeks or in shelter of boulders or trees. Map 43.

W.A.: Near Minilya River, *A. M. Ashby* 2943 (AD); Cape Range, *A. S. George* 2495 (PERTH); Trimouille Island, 10 Nov. 1953, *G.Hill* (CANB).

#### 4b. *Nicotiana occidentalis* subsp. *obliqua* N. Burb., *Austral. J. Bot.* 8: 364; t. 8, fig. 2 (1960)

T: Victoria Desert, Camp 53, W.A., 15 Sept. 1891, *R. Helms s.n.*; holo: NSW 47228; iso: AD, MEL.

Illustration: *N. T. Burbidge, loc. cit.*

Calyx usually one quarter to one half the length of corolla-tube. Corolla-tube 15–40 mm long, shorter in cleistogamous flowers. Upper 4 anthers at the same level or 2 higher than the other 2; filament of 5th stamen inserted in upper half of corolla-tube or about half-way down. Seeds acutely angled or reniform; testa irregularly honeycombed or wrinkled.  $n=21$ .

Widespread in arid regions of W.A., N.T. and S.A. south of latitude 21°S, extending to far western Qld and N.S.W. Grows under trees and shrubs in hummock grassland on sandy plains, and along rocky creeklines. Map 44.

W.A.: About 82 km N of Carnarvon, *A. M. Ashby 2242* (PERTH). N.T.: Charlotte Waters, 6 July 1955, *G. Chippendale* (NSW); Mt Fraser, *P. K. Latz 5063* (ADW, NT); near Alice Springs, *D. J. Nelson 2213* (ADW, CANB). S.A.: near Cordillo Downs Homestead, *T.R.N. Lothian 647* (AD).

**4c. *Nicotiana occidentalis* subsp. *hesperis* (N. Burb.) P. Horton, *J. Adelaide Bot. Gard.* 3: 19 (1981)**

*N. hesperis* N. Burb., *Austral. J. Bot.* 8: 361; fig. 9; t. 15 (1960).

T: Rocky Pool, Gascoyne River, 35 miles E of Carnarvon, W.A., 3 Sept. 1959, *N. T. Burbidge 6494A*; holotype: CANB; isotype: BRI, K *n.v.*, photo ADW.

Illustration: N. T. Burbidge, *loc. cit.*, as *N. hesperis* N. Burb.

Calyx usually half to two-thirds length of corolla-tube. Corolla-tube 11–18 mm long, slightly narrowed at base. Upper 4 anthers at the same level; filament of the 5th stamen inserted in lower half of corolla-tube or about half-way up. Seeds usually U-shaped, occasionally crested along outer surface; testa with transverse wrinkles. Figs 21R; 22P–Q.

Mainly restricted to coastal and near-coastal areas and adjacent offshore islands of W.A. between latitudes 23°S and 30°S. Usually grows along creeklines, or in shelter of boulders or trees in sandy or rocky soils. Map 45.

W.A.: Near Leonora, *T. E. H. Aplin 2296* (ADW, PERTH); near Woodleigh Stn Homestead, *N. T. Burbidge 6455* (BRI, MEL, NSW); Wooramel River Bridge, Carnarvon road, *N. T. Burbidge 6480* (CANB).

**5. *Nicotiana benthamiana* Domin, *Biblioth. Bot.* 89: 591; t. 37, fig. 1 (1929)**

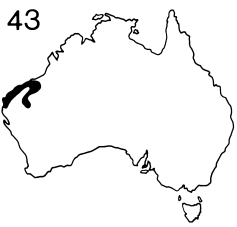
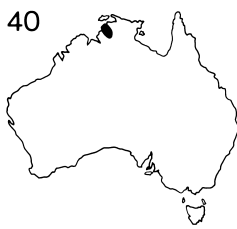
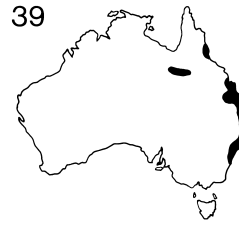
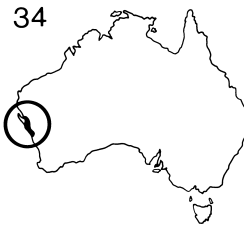
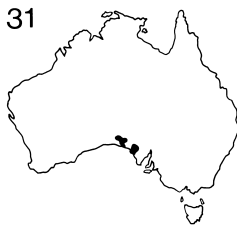
*N. suaveolens* var. *cordifolia* Benth., *Fl. Austral.* 4: 470 (1868).

T: NW coast of Australia, *Bynoe s.n.*; K *n.v.*, photo ADW.

Illustration: K. Domin, *loc. cit.*

Leafy herb to 1.5 m, moderately densely pubescent with glandular hairs. Leaves mostly cauline, broadly ovate, the upper ones shorter and narrowly ovate; lamina up to 15 cm (occasionally to 23 cm) long; basal leaves petiolate, the petiole to 6 cm long, broadly to narrowly winged, upper leaves sessile or almost so. Flowers solitary in axils or arising from internodes. Calyx 5–17 mm long; lobes usually spreading or recurved. Corolla-tube 20–60 mm long, to 2.5 mm wide at top of calyx; limb 7–21 mm diam.; lobes usually obtuse or slightly notched. Two of the upper 4 anthers usually slightly above the other 2, the filaments to 2.5 mm long; 5th filament 5–10 mm long, inserted in upper half of corolla-tube. Capsule ovoid to ellipsoid, 6–13 mm long. Seeds reniform; testa usually with wavy-edged honeycomb or wrinkles.  $n=19$ . Figs 16; 20A; 21C; 22A–B.

Widespread but patchy distribution in W.A. and N.T. north of latitude 26°S, extending into central-western Qld. Typically grows on low rocky hills and outcrops in shelter of rocks or in caves. Map 46.



31. *Grammosolen truncatus*

34. *Anthotroche walcottii*

37. *Cestrum aurantiacum*

40. *Nicotiana debneyi*  
subsp. *monoschizocarpa*

43. *Nicotiana occidentalis*  
subsp. *occidentalis*

32. *Anthotroche myoporoides*

35. *Crenidium spinescens*

38. *Cestrum parqui*

41. *Nicotiana cavicola*

44. *Nicotiana occidentalis*  
subsp. *obliqua*

33. *Anthotroche pannosa*

36. *Cestrum elegans*

39. *Nicotiana debneyi*  
subsp. *debneyi*

42. *Nicotiana umbratica*

45. *Nicotiana occidentalis*  
subsp. *hesperis*

W.A.: Rawlinson Range, A. S. George 8818 (PERTH). N.T.: Tobermorey Stn, 10 Oct. 1955, G. Chippendale (BRI, CANB, NSW, NT); Seigal Creek area, N. M. Henry 792 (BRI, CANB, NT); Nicholson River, T. S. Henshall 383 (DNA, NT, PERTH). Qld: Duchess, S. T. Blake 11527 (BRI).

Highly prized by Aborigines in central Australia as chewing tobacco.

A variant with more succulent foliage, the leaves on the flowering shoots broadly ovate, auriculate and stem-clasping, and a larger corolla (tube to 90 mm long and limb usually more than 30 mm diam.), known only from Dalhousie Springs, S.A., may represent a new species.

**6. *Nicotiana excelsior*** (J. Black) J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 50: 286 (1926)

*N. suaveolens* var. *excelsior* J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 39: 835; t. 70 (1915).

T: Mt Carminia (now Mt Carmeena), Everard Range, S.A., 12 Aug. 1914, S. A. White s.n.; lecto: AD 97807202; iso: NSW, fide P. Horton, *J. Adelaide Bot. Gard.* 3: 23 (1981).

*N. macrocalyx* Domin, *Biblioth. Bot.* 89: 593; t. 36, figs 9–10 (1929).

T: Camp 19, Birksgate Range, S.A., 12 July 1891, R. Helms s.n.; holo: K n.v., photo ADW; iso: AD, MEL.

Leafy herb to c. 1.7 m; stems and leaves mostly glabrous, the inflorescence sparsely pubescent with non-glandular hairs. Leaves mostly cauline, elliptic to ovate, the lower ones often obovate, the uppermost narrowly elliptic or lanceolate; lamina up to 25 cm long; lower leaves shortly petiolate, the petiole broadly winged, stem-clasping; upper leaves sessile, the base decurrent. Inflorescence panicle-like, few-branched, the lower bracts occasionally leafy. Calyx 15–30 mm long. Corolla-tube usually 40–70 mm long, 1–5 mm wide at top of calyx; limb 20–35 mm (occasionally to 50) diam.; lobes usually obtuse. Upper 4 anthers at the same level or 2 slightly above the other 2, their filaments to 2.5 mm long; filament of the 5th stamen 6–15 mm long, inserted at middle or in lower half of corolla-tube. Capsule ellipsoid to ovoid-ellipsoid, 12–20 mm long. Seeds reniform or acutely angled; testa usually honeycombed.  $n=19$ . Figs 19G; 21B; 22E, I–J.

Restricted to ranges of north-western S.A. and southern N.T. where it grows in sheltered areas in rocky gullies and creeklines. Collections from Fraser Ra., W.A., and Mt. Lyndhurst, S.A., may not be from natural populations. Leaves, flowers and flowering stalks highly valued by Aborigines as chewing tobacco. Probably dispersed by Aborigines to areas outside natural range. Map 47.

N.T.: Mann Ranges, P. K. Latz 894 (AD, CANB, NT); Mt Olga, 12 June 1953, D. E. Symon (ADW). S.A.: Ernabella, 21 May 1966, F. T. Turvey (AD).

**7. *Nicotiana amplexicaulis*** N. Burb., *Austral. J. Bot.* 8: 359; fig. 8; t. 13, fig. 1 (1960)

T: Carnarvon Range, 63 miles S of Rolleston, Qld, 13 Nov. 1956, N. T. Burbidge 5562; holo: CANB; iso: AD, BRI, K n.v., photo ADW, MEL, NSW.

Illustrations: N. T. Burbidge, *loc. cit.*

Herb to 1.3 m, densely pubescent with soft, non-glandular hairs. Leaves mostly cauline, the lower ones elliptic, the upper narrowly elliptic or lanceolate; lamina up to 22 (occasionally to 30) cm long; lower leaves petiolate, the petiole to 8 cm long, broadly winged, auriculate and stem-clasping; upper leaves sessile, the uppermost auriculate. Inflorescence panicle-like, few-branched; lower bracts sometimes leafy.

Calyx 7–14 mm long. Corolla-tube 15–20 mm long, 2–3.5 mm wide at top of calyx; limb 6–12 mm diam., the lobes obtuse or notched. Two of upper 4 anthers usually slightly above the other 2, their filaments to 2.5 mm long; filament of the 5th stamen 8–11 mm long, inserted in lower half of corolla-tube. Capsule ellipsoid to ovoid-ellipsoid, 5 mm long. Seeds reniform, ovoid or L-shaped; testa wrinkled. *n*=18.

Restricted to Carnarvon Range, southern Qld, and adjacent ranges to the east. Grows in shaded habitats on sandstone cliffs and at cave entrances. Map 48.

Qld: Carnarvon Range, *N. T. Burbidge* 5560 (AD, CANB, NSW); Glenhaughton—Mapala road, *M. Olsen & N. B. Byrnes* 3560 (BRI).

### 8. *Nicotiana gossei* Domin, *Biblioth. Bot.* 89: 592; t. 36, figs 2–5 (1929)

T: 'Centre of South Australia', *Gosse* 243; holo: K *n.v.*, photo ADW.

Illustration: K. Domin, *loc. cit.*

Leafy herb to 2 m, densely pubescent, often woolly with glandular hairs. Leaves mostly cauline, broadly elliptic, the upper ones narrowly elliptic, lanceolate or pandurate, auriculate and stem-clasping at base; lamina up to 35 cm long; lower leaves petiolate, the petiole to 8 cm long; upper leaves sessile. Inflorescence panicle-like, usually few-branched; lower bracts occasionally leafy. Calyx 12–30 mm long. Corolla-tube 25–75 mm long, 1–5 mm wide at top of calyx; limb 15–35 mm diam.; lobes obtuse or occasionally shallowly notched. Upper 4 anthers at about the same level, their filaments to 5.5 mm long; filament of the 5th stamen 2–15 mm long, inserted in upper half of corolla-tube or just below middle. Capsule ellipsoid to ovoid, 8–16 mm long. Seeds acutely angled or reniform; testa irregularly honeycombed or wrinkled. *n*=18. Figs 19D, M; 21M, W.

Restricted to ranges of southern N.T. and north-western S.A., growing in pockets of fertile, often sandy, soil, in shelter of rocks on upper slopes. Map 49.

N.T.: Kings Canyon, *P. K. Latz* 355 (AD, MEL, NT); Longs Range, *P. K. Latz* 4215 (CANB, DNA, NT). S.A.: Musgrave Range, 12 Aug. 1973, *Wallace* (ADW).

Highly prized by Aborigines as chewing tobacco and considered one of the most potent of central Australian species of *Nicotiana*.

### 9. *Nicotiana megalosiphon* Van Heurck & Muell. Arg., in Van Heurck, *Obs. Bot.* 126 (1870)

T: Port Curtis, Qld, *coll. unknown*; *n.v.*

*N. suaveolens* var. *longiflora* Benth., *Fl. Austral.* 4: 470 (1868), *fide* K. Domin, *Biblioth. Bot.* 89: 592 (1929) and P. Horton, *J. Adelaide Bot. Gard.* 3: 47 (1981)

T: Interior Qld and N.S.W., *coll. unknown*; *n.v.*

Herb to 90 cm, densely pubescent with glandular hairs. Leaves radical and cauline or mostly radical, petiolate or sessile; lower leaves elliptic to ovate, the upper cauline ones lanceolate to linear; lamina up to 17 cm long; petiole to 9 cm long, usually narrowly winged. Inflorescence panicle-like, few-branched. Calyx 10–20 mm long. Corolla-tube 35–95 mm long, to 2.5 mm wide at top of calyx; limb 15–35 mm diam., the lobes usually notched. Upper 4 anthers at about same level, their filaments to 2 mm long; filament of 5th stamen 1.5–11 mm long, inserted in upper half of corolla-tube. Capsule ovoid-ellipsoid, 7–16 mm long. Seeds reniform or acutely angled.

Closely related to *N. simulans* N. Burb. with which depauperate specimens may be confused. Represented by two subspecies in N.T., Qld and northern N.S.W. May be poisonous to cattle and sheep.

Upper cauline leaves petiolate; seed testa wrinkled or irregularly honeycombed

**9a. subsp. megalosiphon**

Upper cauline leaves sessile; seed testa regularly honeycombed

**9b. subsp. sessilifolia**

### **9a. *Nicotiana megalosiphon* Van Heurck & Muell. Arg. subsp. megalosiphon**

Leaves usually all petiolate; base of lamina obtuse, cuneate or attenuate. Seed testa wrinkled or irregularly honeycombed. *n*=20. Figs 19J; 21A; 22F–G.

Widespread in central and south-eastern Qld and northern N.S.W. Grows in sand, loam or clay, in Acacia and Eucalypt woodland, often in disturbed areas. Map 50.

Qld: near Aramac, *N. T. Burbidge* 5525 (AD); Hannaford, *L. Pedley* 764 (BRI, CANB). N.S.W.: near Brewarrina, *J. Thompson* 1118 (NSW).

### **9b. *Nicotiana megalosiphon* subsp. sessilifolia P. Horton, *J. Adelaide Bot. Gard.* 3: 28 (1981)**

T: Marshall River, N.T., 19 May 1972, *P. K. Latz* 2503; holo: NT; iso: ADW, BRI, CANB, NSW.

Lower leaves petiolate, the lamina obtuse or cuneate at base; upper leaves sessile, auriculate and stem-clasping. Testa usually regularly honeycombed. Fig. 19K.

Occurs in arid N.T. north of Alice Springs, extending to western Qld. Grows in sand, loam or clay along water courses, rarely in soil pockets on rocky hillsides. Map 51.

N.T.: Mount Wedge Stn, *P. K. Latz* 2154 (CANB, NT, PERTH); Davenport Range, *P. K. Latz* 6917 (ADW, BRI, NT). Qld: Kallala Stn, *S. L. Everist* 3229 (BRI, CANB); Leichhardt Falls, *S. Jacobs* 1303 (NSW).

Robust specimens superficially resemble *N. gossei* Domin; distinguished by the regular pattern on the testa, the non-woolly pubescence and the shorter calyx.

### **10. *Nicotiana simulans* N. Burb., *Austral. J. Bot.* 8: 365; fig. 10; t. 16, fig. 1 (1960)**

T: Approximately 40 miles (64 km) from Mt Willoughby towards Mabel Creek, S.A., 10 Oct. 1955, *N. T. Burbidge* & *M. Gray* 4625; holo: CANB.

Illustrations: *N. T. Burbidge*, *loc. cit.*

Herb to 1.2 m, variably pubescent with glandular hairs. Leaves radical and cauline, or mostly radical, the lamina up to 23 cm long and 12 cm wide; radical leaves elliptic, petiolate, the petiole to 9 cm long, narrowly to broadly winged, the base usually slightly stem-clasping; cauline leaves narrowly ovate or elliptic, petiolate, the upper ones lanceolate, sessile and slightly stem-clasping. Inflorescence panicle-like, few-branched; lower bracts occasionally leafy. Calyx 5–17 mm long; intersepal membranes often conspicuous. Corolla-tube 20–40 mm long, to 3.5 mm wide at top of calyx; limb usually 10–20 mm diam., the lobes notched. Cleistogamous flowers with much shorter corolla-tube occasionally present. Two of upper 4 anthers usually above the other 2, the filaments to 5 mm long; filament of the 5th stamen 2–8 mm long, inserted in upper half of corolla-tube or half-way down. Capsule ovoid to

ellipsoid, 5–13 mm long. Seeds reniform or acutely angled; testa usually regularly honeycombed.  $n=20$ . Fig. 21 O.

Widespread in arid areas south of the tropic, extending from the coast of W.A. to central plains of N.S.W., with an isolated occurrence in south-western Qld. Grows in sandy and rocky soils, usually in shelter of boulders or in litter under trees, frequently near minor water courses. Map 52.

W.A.: 75 km S of Mundiwindi, *N. T. Burbidge 6068* (PERTH). N.T.: Mulga Park Stn, *P. K. Latz 5081* (ADW, MEL, NT). S.A.: Bon Bon Stn, *B. Lay 252* (AD). Qld: 32 km NNE of Eulo, *L. Pedley 2441* (BRI). N.S.W.: Purnanga Stn, *L. R. Richley 1385* (NSW).

# **11. *Nicotiana rosulata* (S. Moore) Domin, *Biblioth. Bot.* 89: 592; t. 36, fig. 11 (1929)**

*N. suaveolens* var. *rosulata* S. Moore, *J. Linn. Soc. Bot.* 34: 206 (1899).

T: Near Wilson's Pool, W.A. Goldfields, Apr. 1895, *S. Moore s.n.*; lecto: BM *n.v.*, photo ADW; iso: K *n.v.*, photo ADW; *fide* P. Horton, *J. Adelaide Bot. Gard.* 3: 30 (1981).

*N. stenocarpa* H. Wheeler, *Univ. Calif. Publ. Bot.* 18(4): 61 (1935), *fide* N. T. Burbidge, *Austral. J. Bot.* 8: 375 (1960)

T: Laverton, W.A., Nov. 1909, *J. H. Maiden s.n.*; holo: NSW.

Herb to 1 m; stems and leaves glabrous or sparsely pubescent with non-glandular hairs. Leaves all or mostly radical, usually elliptic or the upper cauline ones lanceolate to linear, petiolate or upper cauline leaves almost sessile; lamina up to 21 cm long; petiole to 8 cm long, narrowly winged. Inflorescence panicle-like, few-branched, variably pubescent with glandular hairs. Calyx 6–22 mm long. Corolla-tube 15–64 mm long, 1–2 mm wide at top of calyx; limb 7–25 mm diam., the lobes notched. Upper 4 anthers at the same level or 2 slightly above the other 2, the filaments to 3.5 mm long; filament of the 5th stamen 5–18 mm long, inserted in upper half of corolla-tube. Cleistogamous flowers occasionally present. Capsule ellipsoid to narrowly ellipsoid, 6–16 mm long. Seeds usually reniform or acutely angled; testa irregularly honeycombed or wrinkled.

Widespread in W.A., southern N.T. and north-eastern S.A. A variable species, the corolla-tube becoming progressively shorter from north-eastern to south-western part of the range. Two subspecies distinguished but intermediates occur where distributions overlap.

Plants sparsely pubescent near base; cauline leaves usually absent; corolla-tube usually shorter than 35 mm

**11a. subsp. *rosulata***

Plants usually glabrous (excluding flowers); cauline leaves usually present; corolla-tube usually longer than 35 mm

**11b. subsp. *ingulba***

## **11a. *Nicotiana rosulata* (S. Moore) Domin subsp. *rosulata***

Illustrations: K. Domin, *loc. cit.*; N. T. Burbidge, *op. cit.*, fig. 11.

Leaves and lower parts of stem usually sparsely pubescent, upper parts of stem glabrous. Leaves usually all radical. Corolla-tube typically 17–37 mm long.  $n=20$ . Figs 18; 21D, T; 22K–L.

Widespread across central W.A., extending to north-western S.A. Grows mostly in sandy soils, often under trees along minor water courses. Map 53.

W.A.: 5 km N of Agnew, *T. E. H. Aplin 2364* (PERTH). S.A.: 25 km SW of Everard Park Homestead, *D. J. E. Whibley 1117* (AD, MEL).

**11b. *Nicotiana rosulata* subsp. *ingulba* (J. Black) P. Horton, *J. Adelaide Bot. Gard.* 3: 33 (1981)**

*N. ingulba* J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 57: 156; t. 9, fig. 1 (1933).

T: Harper's Spring, N.T., *E. Kramer s.n.*; holotype: AD.

Illustration: J. M. Black, *loc. cit.*

Leaves and stems usually glabrous. Cauline leaves usually present. Corolla-tube typically 30–56 mm long. *n*=20.

Occurs in southern N.T. and central-eastern W.A. Commonly grows in sandy soil in shelter of trees and often in hummock grassland. Map 54.

W.A.: 60 km SE of Giles Meteorological Stn, A. S. George 8773 (PERTH). N.T.: Mount Wedge Stn, M. Lazarides 6060 (AD, BRI, CANB, NT); 42 km N of Barrow Creek, R. A. Perry 5338 (AD, BRI, CANB, MEL, NSW, NT).

Commonly used as chewing tobacco by Aborigines in central Australia.

**12. *Nicotiana goodspeedii* H. Wheeler, *Univ. Calif. Publ. Bot.* 18(4): 63 (1935)**

T: Fowler's Bay, S.A., 1879, *Richards s.n.*; holotype: MEL.

Herb to 1 m, often with many stems; stems and leaves usually glabrous. Leaves mostly radical, elliptic to spatulate, the cauline ones narrower; lamina up to 20 cm long; petiole to 8 cm long, narrowly winged; upper leaves sessile. Inflorescence panicle-like, usually few-branched, pubescent with glandular hairs. Calyx 4–12 mm long. Corolla-tube 8–20 mm long, 1–3 mm wide at top of calyx, slightly narrowed at base; limb 5–12 mm diam., the lobes obtuse or notched. Upper 4 anthers at about the same level, their filaments to 4.5 mm long; filament of the 5th stamen 4–10 mm long, inserted in lower half of corolla-tube. Capsule ellipsoid or ovoid-ellipsoid, 5–10 mm long. Seeds C-shaped; testa wrinkled. *n*=20. Fig. 22N–O.

Widespread in southern Australia, extending from south-eastern W.A. to north-western Vic., the Riverina area and central plains of N.S.W. Grows mostly in alkaline soils, often in sand overlying limestone, in open, frequently disturbed areas. Map 55.

W.A.: Mundrabilla Stn, T. E. H. Aplin 1715 (PERTH). S.A.: 24 km N of Maralinga, R. A. Perry 5567 (CANB); near Morgan, R. Schodde 735 (AD, CANB). N.S.W.: 23 km NNW of Conoble Railway Stn, J. Pickard 1931 (NSW). Vic.: 12 km N of Managatang, A. C. Beauglehole 55985 (MEL).

**13. *Nicotiana suaveolens* Lehm., *Gen. Nicot. Hist.* 43 (1818)**

*N. undulata* Vent., *Jard. Malm.* 1: 10; t. 10 (1803), *nom. illeg.*, non Ruiz Lopez & Pavón (1799); *N. suaveolens* var. *undulata* Comes, *Monogr. Nicot.* 40 (1899), *fide* H. E. Wheeler, *op. cit.*, 59, based on *N. undulata* Vent.

T: *N. undulata* ex Hortus Malmaison, Herbar de Ventenat, from seed from Port Jackson, N.S.W.; holotype: G *n.v.*, photo ADW.

*N. suaveolens* var. *parviflora* Benth., *Fl. Austral.* 4: 470 (1868), p.p., *fide* T. H. Goodspeed, *Chron. Bot.* 16: 473 (1954).

T: Port Jackson, N.S.W., *coll. unknown*; *n.v.*

*N. exigua* H. Wheeler, *op. cit.*, 64, *fide* P. Horton, *J. Adelaide Bot. Gard.* 3: 34 (1981).

T: Cultivated plant 31424 P6, grown at University of California Botanic Gardens 1932 from seed accession 1931–59, collected Dalby, Qld, J. H. McCarthy *s.n.*; holotype: UC *n.v.*; isotype: AD.

Herb to 1.5 m; stems and leaves glabrous or variably pubescent with non-glandular hairs, occasionally white-woolly. Leaves usually radical and cauline, ovate or elliptic,



the upper ones lanceolate to linear; lamina up to 16 (occasionally to 30) cm long; petiole to 7 (occasionally to 16) cm long, usually narrowly winged, the base sometimes slightly stem-clasping. Inflorescence panicle-like, usually few-branched, pubescent with glandular hairs. Calyx 6–13 (rarely to 26) mm long; intersepal membranes usually conspicuous. Corolla-tube 17–55 mm long, 2–6 mm wide at top of calyx, distinctly narrowed at base; limb 14–35 mm diam., the lobes obtuse or notched. Upper 4 anthers at about same level, their filaments to 3 mm long; filament of 5th stamen 11–16 mm long, inserted in lower half of corolla-tube. Capsule ovoid or ovoid-ellipsoid, 7–12 mm long. Seeds usually reniform or acutely angled; testa irregularly honeycombed or wrinkled.  $n=16$ . *Native Tobacco*. Fig. 21E–F, U.

Widespread in coastal and inland areas of south-eastern N.S.W. and Vic. Grows in sandy or stony soil on creek banks and rocky slopes; often in the understorey of woodland or shrubland. Map 56.

N.S.W.: NW of Yenda, *N. T. Burbidge 6421* (AD, BRI, CANB, MEL, NSW). Vic.: Brisbane Ranges, 22 Oct. 1955, *J. H. Willis* (MEL).

A variable species with diploid and tetraploid races; possibly hybridises with *N. velutina* H. Wheeler where distributions overlap.

#### 14. *Nicotiana maritima* H. Wheeler, *Univ. Calif. Publ. Bot.* 18(4): 56 (1935)

T: Hallet's Cove, S.A., Sept. 1932, *J. B. Cleland s.n.*; holo: UC *n.v.*; iso: AD 97615147.

Herb to 1 m; leaves and stems variably pubescent with non-glandular hairs, usually white- or grey-woolly at base of stems. Leaves mostly radical, ovate or elliptic, petiolate, the upper cauline ones narrowly elliptic or lanceolate, usually sessile; lamina up to 22 cm long; petiole to 9 cm long, usually broadly winged and often slightly stem-clasping. Inflorescence panicle-like, usually few-branched, pubescent with glandular hairs. Calyx 6–16 mm long; intersepal membranes often conspicuous. Corolla-tube 13–30 mm long, 2–5 mm wide at top of calyx, distinctly narrowed at base; limb 8–24 mm diam.; lobes usually notched. Upper 4 anthers at about the same level, their filaments to 4 mm long; filament of the 5th stamen 6–12 mm long, inserted in lower half of corolla-tube. Capsule ellipsoid to ovoid-ellipsoid, 4–12 mm long. Seeds mostly reniform or acutely angled; testa irregularly honeycombed or wrinkled.  $n=16$ . *Coast Tobacco*. Fig. 19H.

Mainly restricted to coastal regions of Eyre Peninsula, Yorke Peninsula, Southern Lofty and South Eastern regions of S.A. and adjacent offshore islands, but known from early collections in western Vic. Grows mostly in sandy, gravelly or rocky soil, often on the coast or along creek banks near the coast. Map 57.

S.A.: S of Tumby Bay, *C. R. Alcock 1095* (ADW, CANB); Second Valley, *D. E. Symon 10563* (ADW); Woods Well—Culburra road, *L. D. Williams 578* (AD).

A variable species very similar to *N. suaveolens* Lehm. and *N. velutina* H. Wheeler; distinguished from *N. suaveolens* by the pubescent stems and leaves and from *N. velutina* by the reniform or acutely angled seeds.

#### 15. *Nicotiana velutina* H. Wheeler, *Univ. Calif. Publ. Bot.* 18(4): 55 (1935)

T: Broken Hill, N.S.W., 4 Oct., 1920, *A. Morris s.n.*; holo: NSW.

*N. suaveolens* var. *parviflora* Benth., *Fl. Austral.* 4: 470 (1868), p.p., *fide* T. H. Goodspeed, *Chron. Bot.* 16: 465 (1954).

Herb to 1.5 m, variably pubescent with glandular and non-glandular hairs. Leaves radical and cauline or mostly radical, usually elliptic, petiolate, the upper ones lanceolate or linear and often sessile; lamina up to 28 cm long; petiole to 15 cm long, usually narrowly winged, the base occasionally stem-clasping. Inflorescence panicle-like, usually few-branched. Calyx 5–17 mm long. Corolla-tube 11–35 mm long, 1–5 mm wide at top of calyx, distinctly narrowed at base; limb 7–30 mm diam., the lobes obtuse or notched. Upper 4 anthers at about the same level, their filaments to 3.5 mm long; filament of the 5th stamen 5–10 mm long, inserted in lower half of corolla-tube. Capsule ellipsoid to ovoid-ellipsoid, 5–11 mm long. Seeds mostly C-shaped; testa usually wrinkled.  $n=16$ . Figs 19B, I, L; 21G–H; 22M.

Widespread in southern N.T., S.A., south-western and south-central Qld, central and western N.S.W. and north-western Vic. An extremely common species which grows in sandy soil, often in disturbed areas, frequently on sand dunes and sand banks left by floods along inland rivers. Map 58.

N.T.: 48 km SSW of Napperby Stn, *M. Lazarides* 6087 (AD, CANB, MEL, NT, PERTH). S.A.: 30 km NE of Leigh Creek, *R. Schodde* 981 (AD, CANB). Qld.: Poeppel Corner, *D. E. Boyland* 276 (BRI, CANB). N.S.W.: 12 km N of Milparinka, *J. Pickard* 3139 (NSW). Vic.: Wyperfeld National Park, 10 Sept. 1950, *J. H. Willis* (MEL).

Thought to be poisonous to stock. Very similar to *N. maritima* H. Wheeler and *N. suaveolens* Lehm. but distinguished by the velvety pubescence and C-shaped seeds; extends further into arid areas than these two species. May hybridise with *N. suaveolens* Lehm. and *N. megalosiphon* Van Heurck & Muell. Arg.

## 16. *Nicotiana rotundifolia* Lindley, *Bot. Reg.* 24: misc. 59, no. 110 (1838)

*N. suaveolens* var. *rotundifolia* (Lindley) Comes, *Monogr. Nicot.* 42 (1899), *fide* T. H. Goodspeed, *Chron. Bot.* 16: 481 (1954); *N. fastigiata* Nees, in Lehm., *Pl. Preiss.* 1: 343 (1845) *nom. illeg.* based on *N. rotundifolia* Lindley.

T: Cultivated from seed from Swan River, W.A., *R. Mangles s.n.*; *n.v.*

*N. neesii* Lehm. ex Nees, in Lehm., *op. cit.*, 344, *fide* N. T. Burbidge, *Austral. J. Bot.* 8: 370 (1960).

T: Western side of Mt Brown, York, W.A., Sept. 1839, *L. Preiss* 1912; ?holo: LD.

*N. rotundifolia* subsp. *aridicola* N. Burb., *Austral. J. Bot.* 8: 370; t. 5, fig. 2; t. 6, fig. 2; t. 17, fig. 2 (1960).

T: Pioneer Rock, N of Lake Cowan, W.A., 19 Sept. 1947, *N. T. Burbidge* 2668; holo: CANB.

Illustrations: N. T. Burbidge, *loc. cit.*

Herb to 90 cm, variably pubescent with glandular and non-glandular hairs. Leaves mostly or all radical (cauline leaves occasionally numerous), elliptic, petiolate, the upper ones lanceolate to linear, almost sessile; lamina up to 12 (occasionally 25) cm long; petiole to 7 (sometimes to 14) cm long, narrowly winged. Inflorescence panicle-like, few-branched. Calyx 5–13 mm long, the intersepal membranes usually conspicuous. Corolla-tube 13–18 mm long, 1–3 mm wide at top of calyx, usually narrowed at base; limb 5–10 (occasionally to 16) mm diam., the lobes notched. Two of upper 4 anthers slightly above the other 2, the filaments to 1.3 mm long; filament of the 5th stamen 4–8 mm long, inserted in lower half of corolla-tube. Cleistogamous flowers occasionally present. Capsule ovoid or ovoid-ellipsoid, 4–9 mm long. Seeds reniform or acutely angled; testa irregularly honeycombed or wrinkled.  $n=22$ .

Occurs in south-western W.A. Grows in a variety of habitats from granite outcrops to sandy water courses, usually in shelter of boulders or trees. Map 59.

W.A.: 150 km E of Norseman, *T. E. H. Aplin* 1757 (ADW, PERTH); c. 65 km W of Esperance, *Hj. Eichler* 20174 (AD, PERTH).

**Sect. II. Paniculatae**

*Nicotiana* sect. *Paniculatae* Goodspeed, *Univ. Calif. Publ. Bot.* 18: 336 (1945)

Type species: *N. paniculata* L.

Stout herbs or soft-wooded shrubs. Leaves petiolate. Corolla tubular or tubular-salver-shaped, green or yellow. Stamens equal or subequal.

**17. \**Nicotiana glauca*** Graham, *Bot. Mag.* 55: t. 2837 (1828), and *Edinb. New Philos. J.* 5: 175 (1828) (*n.v.*)

T: Cultivated 1828 at Royal Botanic Garden, Edinburgh, from seed sent from Buenos Aires, Argentina; holotype: E.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1082 (1957); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland*, t. xi (1977).

Erect, often spindly, tree-like shrub to 6 m; stems and leaves glabrous, new growth and inflorescence very sparsely pubescent with non-glandular hairs. Leaves glaucous, ovate or elliptic; lamina up to 13 (occasionally to 35) cm long; petiole to 6 (occasionally to 12) cm long, terete or narrowly winged near lamina. Inflorescence terminal, panicle-like, short, dense. Calyx 7–17 mm long. Corolla-tube 20–40 mm long, 3–6 mm wide at top of calyx, narrowed at base; limb 8–13 mm diam., the lobes obtuse. Stamens almost equal in height, the filaments 19–29 mm long, all inserted in lower half of corolla-tube. Capsule ellipsoid or ovoid-ellipsoid, rarely sub-orbicular, 7–13 mm long; pedicel curved or reflexed at time of fruiting. Seeds broadly ovoid to reniform; testa honeycombed or wrinkled. *n*=12. *Tree Tobacco*.

Native to Argentina but naturalised in many warm-temperate regions of the world. In Australia, widespread in southern S.A., south-eastern Qld, N.S.W. and Vic., and around settled areas in southern W.A. and southern N.T. Grows in open and disturbed areas. Map 60.

W.A.: 34 km S of Geraldton, *T. E. H. Aplin 1490* (PERTH). S.A.: Andamooka, *D. E. Symon 11448* (ADW). Qld.: 39 km S of Eulo, *J. Ebersohn 259* (BRI). N.S.W.: near Milparinka, *J. Pickard 3138* (NSW). Vic.: Lake Bael Bael, *H. I. Aston 545* (MEL).

Known to form hybrids with the native species *N. suaveolens* Lehm., *N. simulans* N. Burb. and *N. goodspeedii* H. Wheeler. Occasionally used by Aborigines as a narcotic.

**Doubtful species**

*N. australis* R. Br., in Comes, *Monogr. Nicot.* 41 (1899); the specimen cited under this name by K. Domin, *Biblioth. Bot.* 89: 592 (1929) is apparently *N. velutina* H. Wheeler, *fide* P. Horton, *J. Adelaide Bot. Gard.* 3: 47 (1981).

**Putative hybrid**

*N. flindersiensis* Nicholls, *Victorian Nat.* 53: 64 (1936).

T: Flinders Peak, You Yangs Range, Vic., ?*W. H. Nicholls s.n.*; holotype: MELU *n.v.*

Possibly a hybrid between *N. glauca* Graham and *N. suaveolens* Lehm.

## 10. PETUNIA

*Petunia* A. L. Juss., *Ann. Mus. Paris* 2: 215; t. 47 (1803); from *petum*, a South American aboriginal name for tobacco.

Type species: *P. parviflora* A. L. Juss.

Annual or short-lived perennial herbs, pubescent with glandular hairs, viscid. Leaves alternate or upper ones paired, simple, entire, petiolate or sessile. Flowers solitary in leaf axils, bisexual, usually slightly zygomorphic. Calyx campanulate, deeply 5-lobed. Corolla single (to double in cultivars), funnel-shaped or salver-shaped, white, pink or purple; limb shortly 5-lobed, the lobes induplicate in bud. Stamens 5, 4 in two pairs, the 5th the shortest, inserted on corolla-tube; anthers bilocular, not cohering, versatile, dehiscent by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a smooth capsule, opening from apex, enclosed by calyx. Seeds globular to angular.

A genus of 30–40 species mostly native to mountainous areas of South America, especially Brazil, with one species reaching North America. The genus is closely related to *Nicotiana* from which it differs mainly in having solitary flowers and a base chromosome number of  $n=14$  (*Nicotiana*  $n=12$ ). Two species naturalised in Australia; a third species widely cultivated as an ornamental and occasionally occurring as a garden escape.

D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

1 Leaves oblong-linear to spatulate, 5–12 mm long; corolla 5–9 mm long 2. *P. parviflora*

1: Leaves ovate to elliptic, 2–7 cm long; corolla mostly longer than 3 cm

2 Corolla-tube obconical, scarcely inflated; stamens inserted at middle of corolla-tube; corolla mostly white, single

1. *P. axillaris*

2: Corolla-tube slightly inflated below limb; stamens inserted below middle of corolla-tube; corolla white or variously coloured, single or double

*P. ×hybrida* †

† Primarily a cultivated species; see note under *P. axillaris*.

### 1. \**Petunia axillaris* (Lam.) Britton, Sterns & Pogg., *Prelim. Cat.* 38 (1888)

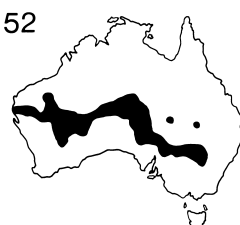
*Nicotiana axillaris* Lam., *Tabl. Encycl.* 2: 7 (1794).

T: Described from Montevideo, Uruguay, *Commerson s.n.*; iso: ?P *n.v.*

*Nicotiana obtusisepala* Domin, *Biblioth. Bot.* 89: 593; t. 36, fig. 1 (1929), *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 3: 147 (1981).

T: Hughenden, Qld, Feb. 1910, *Domin s.n.*; holo: PR *n.v.*, photo ADW.

Annual or short-lived perennial herb. Stems erect or decumbent. Leaves ovate to elliptic, the lamina 2–7 cm long; lower leaves alternate, petiolate; upper leaves sometimes opposite, sessile or almost so, decreasing in size on flowering stems. Pedicels 2–4 cm long. Calyx 10–20 mm long; lobes oblong. Corolla white; tube obconical, 30–45 mm long; limb rotate to broadly stellate, 40–60 mm diam.; lobes rounded. Stamens on filaments 10–15 mm long; anthers 2–3 mm long. Style 20–30 mm long, erect. Capsule conical, obtuse, 8–12 mm long, not or shortly exceeded by calyx-lobes. Seeds globular or sub-angular, 0.6 mm diam., light brown.



46. *Nicotiana benthamiana*

49. *Nicotiana gossei*

52. *Nicotiana simulans*

55. *Nicotiana goodspeedii*

58. *Nicotiana velutina*

47. *Nicotiana excelsior*

50. *Nicotiana megalosiphon*  
subsp. *megalosiphon*

53. *Nicotiana rosulata*  
subsp. *rosulata*

56. *Nicotiana suaveolens*

59. *Nicotiana rotundifolia*

48. *Nicotiana amplexicaulis*

51. *Nicotiana megalosiphon*  
subsp. *sessifolia*

54. *Nicotiana rosulata*  
subsp. *ingulba*

57. *Nicotiana maritima*

60. *Nicotiana glauca*

Occasionally grown as an ornamental, but naturalised in waste ground in south-eastern Qld and eastern N.S.W. Map 61.

Qld: Helidon, *P. R. Sharpe & B. L. Lebler* 2476 (BRI). N.S.W.: 30 km SE of Bonshaw, *S. Jacobs* 3377 (NSW).

The domesticated garden species *P. ×hybrida* Vilm. is derived from *P. axillaris*, *P. integrifolia* (Hook.) Schinz & Thellung, and complex hybrids between them. *P. ×hybrida* occasionally appears spontaneously and may possibly revert to *P. axillaris*.

## 2. \**Petunia parviflora* A. L. Juss., *Ann. Mus. Paris* 2: 216; t. 47, fig. 1 (1803)

T: Not Australian; ?P *n.v.*

Annual or possibly short-lived perennial herb. Stems prostrate or decumbent. Leaves oblong-linear to spatulate, 5–12 mm long, sessile. Pedicels 1–2 mm long. Calyx 5–6 mm long; lobes linear-spatulate, the intersepal membranes distinct. Corolla funnel-shaped, slightly exceeding calyx-lobes, bluish-purple; limb shallowly lobed. Stamens on filaments 3–4 mm long; anthers 0.5 mm long. Style 3–4 mm long, bent at apex. Capsule 3–5 mm long, much exceeded by calyx-lobes. Seeds sub-globular, 0.5 mm diam., pale brown.

An uncommon weed recorded only from eastern N.S.W. Map 62.

N.S.W.: Boggabri district, Apr. 1948, *J. O'Reilly* (NSW).

## 11. NIEREMBERGIA

*Nierembergia* Ruíz Lopez & Pavón, *Prodr.* 23 (1794); after the naturalist Juan Eusebio Nieremberg (1595–1658), a Spanish Jesuit and first professor of natural history at Madrid.

Type species: *N. repens* Ruíz Lopez & Pavón

Perennial herbs, glabrous or pubescent with simple or glandular hairs. Leaves alternate, rarely paired, mostly simple, entire, sessile or petiolate. Flowers solitary, terminal or in upper leaf axils, bisexual, slightly zygomorphic. Calyx tubular to obconical, 5-lobed. Corolla white or violet; tube slender, elongate; limb expanded, campanulate to funnel-shaped, 5-lobed, the lobes induplicate in bud. Stamens 5, inserted at summit of corolla-tube, 4 in pairs, the 5th shorter, exerted and surrounding style; anthers bilocular, ventrifixed, dehiscing by longitudinal slits. Ovary bilocular; stigma expanded, bilobed. Fruit a smooth capsule, opening from apex, the valves deeply bifid at dehiscence, enclosed by persistent calyx. Seeds prismatic.

A genus of c. 30 species mostly native to Argentina and adjacent countries in South America, with one disjunct species in North America. One species commonly grown as a garden ornamental in Australia and sparsely naturalised in N.S.W.

R. Millan, Revision de las especies del genero *Nierembergia* (Solanaceae), *Darwinia*: 487–549 (1941); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

**\**Nierembergia hippomanica* Miers, *London. J. Bot.* 5: 168 (1846)**

T: From Argentina; *n.v.*

Herb with almost woody rootstock and many, slender stems to 45 cm tall, pubescent with minute simple hairs. Leaves linear, sessile, 18–25 mm long, 1–1.5 mm wide. Pedicels 2–5 mm long. Calyx obconical; tube 4–6 mm long, the veins conspicuous; lobes narrowly triangular, 5–6 mm long. Corolla-tube 9–10 mm long, 1 mm diam., abruptly expanded into rotate to broadly stellate limb 15–25 mm diam., the lobes rounded, intense violet with yellow eye. Staminal filaments 5–6 mm long, sparsely glandular-pubescent. Stigma umbrella-like over anthers. Capsule elliptic, 3–4 mm long. Seeds c. 1 mm long, dark brown to black. Fig. 23B–D.

Very infrequent weed of waste ground, recorded only from scattered localities in north-eastern N.S.W. Map 63.

N.S.W.: near Wellington, *D. F. Blaxell 691* (NSW).

A variable species with c. 12 varieties. Australian material appears closest to *N. hippomanica* var. *caerulea* (Miers) Millan, although some material has previously been identified as *N. hippomanica* var. *violacea* Millan. Suspected of being toxic to horses and poultry.

**Trib. IV. SALPIGLOSSIDEAE**

Trib. *Salpiglossideae* Benth., *Scroph. Ind.* 2 (1935)

Type genus: *Salpiglossis* Ruiz Lopez & Pavón

Mainly herbs, rarely shrubs. Pedicels not articulate. Corolla infundibular, bilabiate, zygomorphic; aestivation imbricate, rarely valvate. Stamens 4 (rarely 2), if androecium tetramerous then usually didynamous; upper stamens may vary in size or have unequal thecae (many complex modifications of stamens, staminodes and stigmas), if androecium dimerous then 3 staminodes present. Fruit a capsule. Seeds prismatic; embryo straight, erect or slightly bent.

A tribe of about 7 genera in South America. One genus introduced into Australia.

**12. BROWALLIA**

*Browallia* L., *Sp. Pl.* 2: 631 (1753), & *Gen. Pl.* 5th edn, 278 (1754); after John Browal (1707–1755), Bishop of Abo, Sweden, who was a magistrate, botanical writer and a friend of Linnaeus.

Type species: *B. americana* L.

Erect, branching herbs to 1 m, glabrous or pubescent with simple and glandular hairs. Leaves usually alternate, sometimes paired, simple, entire, petiolate. Flowers solitary, axillary, bisexual, zygomorphic. Calyx tubular, 4–5-lobed, the lobes triangular to oblong. Corolla salver-shaped, white or blue; tube swollen at apex but contracted at mouth; limb 4–5-lobed, the lobes induplicate in bud. Stamens usually 4, inserted in upper part of corolla-tube, paired, a staminode or 5th stamen sometimes present; anthers

anthers bilocular, not cohering, basifixed, dehiscent by longitudinal slits. Ovary bilocular; stigma expanded. Fruit a capsule, opening from apex, enclosed by calyx. Seeds prismatic.

A genus of two species, native to Central America and tropical South America, but widely grown in other parts of the world as ornamentals. One species naturalised in Australia.

W. G. D'Arcy, Flora of Panama, pt IX, Solanaceae, *Ann. Missouri Bot. Gard.* 60: 576–582 (1973); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

**\**Browallia americana* L., *Sp. Pl.* 2: 631 (1753)**

T: Described from cultivated material grown from seed collected in Panama; BM n.v., *vide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 60: 578 (1973).

Erect herb, sparsely to densely pubescent. Leaves ovate; lamina up to 7 cm long, 5 cm wide; petiole 5–10 mm long. Flowers in upper axils; pedicels 2–5 mm long. Calyx 10–12 mm long, sometimes smaller, strongly angled; lobes 1.5–4 mm long. Corolla white or shades of purple-blue, often with contrasting centre; tube 15–20 mm long, swollen on one side in region of anthers; limb 10–15 mm diam., the lobes shallow. Upper pair of stamens attached to rim of corolla-tube and incurved over mouth, short, broad; lower pair attached in tube, longer, slender, the apices inverted. Stigma elaborately expanded, flattened between the two pairs of anthers. Capsule erect, 5–6 mm long. Seeds 0.75–1 mm long, dark brown.

Known only from Dayborough, Qld. First recorded as naturalised in Australia as *B. demissa* L. by C. T. White, *Proc. Roy. Soc. Queensland* 47: 73 (1936), when described as a weed hard to eradicate. No subsequent collections made.

Qld: Dayborough, *H. Mead* (BRI 232459).

## Subfam. II. SOLANOIDEAE

Solanaceae subfamily *Solanoideae*

Type genus: *Solanum* L.

Seeds discoidal or more or less kidney-shaped, flat, compressed; embryo linear, strongly curved or circinnate; cotyledons imcumbent, rarely oblique; endosperm various.

The larger of the two subfamilies in the Solanaceae with over 50 genera, 11 represented in Australia, in the tribes *Lycieae*, *Jaboroseae*, *Solaneae*, *Nicandreae*, *Datureae* and *Hyoscyameae*.



**Trib. V. LYCIEAE**

Trib. *Lycieae* Hunz., *Kurtziana* 8: 28 (1977).

Type genus: *Lycium* L.

Mostly shrubs, sometimes halophytic. Corolla infundibular, actinomorphic; aestivation imbricate, cochlear or quincuncial. Stamens 5, all fertile; filaments inserted on back of anthers; anther thecae separated from each other for the lower third or more, dehiscing by longitudinal slits. Gynoecium bilocular. Fruit a berry or drupe. Embryo strongly curved or spiral; cotyledons incumbent.

A small tribe of three genera, mainly South American; only *Lycium* has species in the Old World. One genus in Australia, with one indigenous and three naturalised species.

**13. LYCIUM**

*Lycium* L., *Sp. Pl.* 1: 191 (1753), & *Gen. Pl.* 5th edn, 88 (1754); from the Greek *lykion*, the name of a thorny shrub believed to be a native of Lycia.

Type species: *L. afrum* L.

Shrubs, often spiny, usually glabrous. Leaves alternate or clustered, simple, entire, shortly petiolate. Flowers solitary or in small groups at nodes, bisexual, actinomorphic. Calyx tubular to campanulate, unevenly 4–5-lobed, sometimes 2-lipped. Corolla funnel-shaped, creamy white to lilac, soon turning brown; limb 4–5-lobed, the lobes imbricate in bud. Stamens usually 5, unequal, inserted towards base of corolla-tube; anthers bilocular, not cohering, dorsifixed, dehiscing by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a succulent berry, partially enclosed by calyx. Seeds asymmetrically D-shaped.

A genus of c. 100 species, in temperate America, southern Africa, Eurasia and the Pacific. One endemic and three naturalised species in Australia.

L. Haegi, Taxonomic account of *Lycium* (Solanaceae) in Australia, *Austral. J. Bot.* 24: 669–679 (1976).

- |    |  |                                  |
|----|--|----------------------------------|
| 1  | Corolla 15–20 mm long; leaves at least 5 times as long as broad  | <b>4. <i>L. afrum</i></b>        |
| 1: | Corolla 8–12 mm long; leaves usually less than 5 times as long as broad  |                                  |
| 2  | Corolla lobes about a quarter of corolla length; stamens included or scarcely exerted; fresh leaves thick, fleshy, usually 1.5–5 mm wide | <b>1. <i>L. australe</i></b>     |
| 2: | Corolla lobes a third to half of corolla length; stamens much exerted; fresh leaves slightly fleshy, some more than 5 mm wide            |                                  |
| 3  | Lateral branches mostly longer than 10 mm, leafy, ending in a spine; leaves mostly obovate; berry more or less globose                   | <b>2. <i>L. ferocissimum</i></b> |
| 3: | Lateral branches mostly 2–10 mm long, leafless, ending in a spine, or spines absent; leaves mostly ovate; berry more or less ellipsoid   | <b>3. <i>L. barbarum</i></b>     |

**1. *Lycium australe* F. Muell., *Fragm. Phytogr. Austral.* 1: 83 (1859)**

T: Murray Scrub, *Mueller*; lecto: MEL 501790, *fide* L. Haegi, *Austral. J. Bot.* 24: 671 (1976); Murray Scrub, *Behr*, and Murray, *Mueller*; syn: MEL 501792 (mixed sheet); Murray, *Behr*, and Victoria, *Mueller*; syn: K (mixed sheet) *n.v.*, photo ADW.

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 597 (1975); L. Haegi, *op. cit.*, fig. 2A–D.

Intricately branched shrub to 2.5 m with rigid branches; lateral branches leafy, often ending in a spine. Leaves usually clustered, narrowly obovoid to ellipsoid, to 25 mm long, thick and fleshy, greyish-green. Pedicels 2–5 mm long, sometimes longer. Calyx tubular to ellipsoid, 1.5–5 mm long. Corolla 8–12 mm long, creamy white, lilac towards limb; limb spreading. Stamens 4 or 5, included or scarcely exerted. Pistil 5–8 mm long. Fruiting calyx not deeply split. Berry ovoid to ellipsoid, 2–5 mm diam., dull orange-red, with 5–20 seeds. Seeds 1.5–2 mm long, 1–1.5 mm wide, dull yellow. *Australian Boxthorn*. Fig. 23E–F.

Endemic to the Australian mainland, in arid and semi-arid areas of N.S.W., Vic., S.A. and W.A. Grows in subsaline soil at edges of salt lakes and claypans. Map 64.

W.A.: 447 mile peg, Great Northern Highway, A. S. *George 3640* (PERTH). S.A.: c. 15 km E of Port Augusta, D. E. *Symon 497* (ADW). N.S.W.: Kudgee Lake, 21 July 1955, E. F. *Constable* (NSW). Vic.: Hattah Lakes National Park, 29 Aug. 1969, G. W. *Anderson* (MEL).

In W.A. the plants are often more robust, with slightly larger leaves, flowers and fruits which approach *L. afrum* L. in size. The fruits are edible.

**2. \**Lycium ferocissimum* Miers, *Ann. Mag. Nat. Hist.* ser. 2, 14: 187 (1854)**

T: 'C.B.S.—v.s. in herb Hook. Uitenhag (*Harvey*, n. 105)'; holo: K *n.v.*, photo ADW.

*L. macrocalyx* Domin, *Biblioth. Bot.* 89: 590 (1929).

T: Near Jericho, Qld, Mar. 1910, *Domin 8317*; lecto: PR, *fide* L. Haegi, *Austral. J. Bot.* 24: 674 (1976); syn: PR.

[*L. europaeum* auct. non L.; F.M. Bailey, *Queensland Fl.* 4: 1094 (1901)]

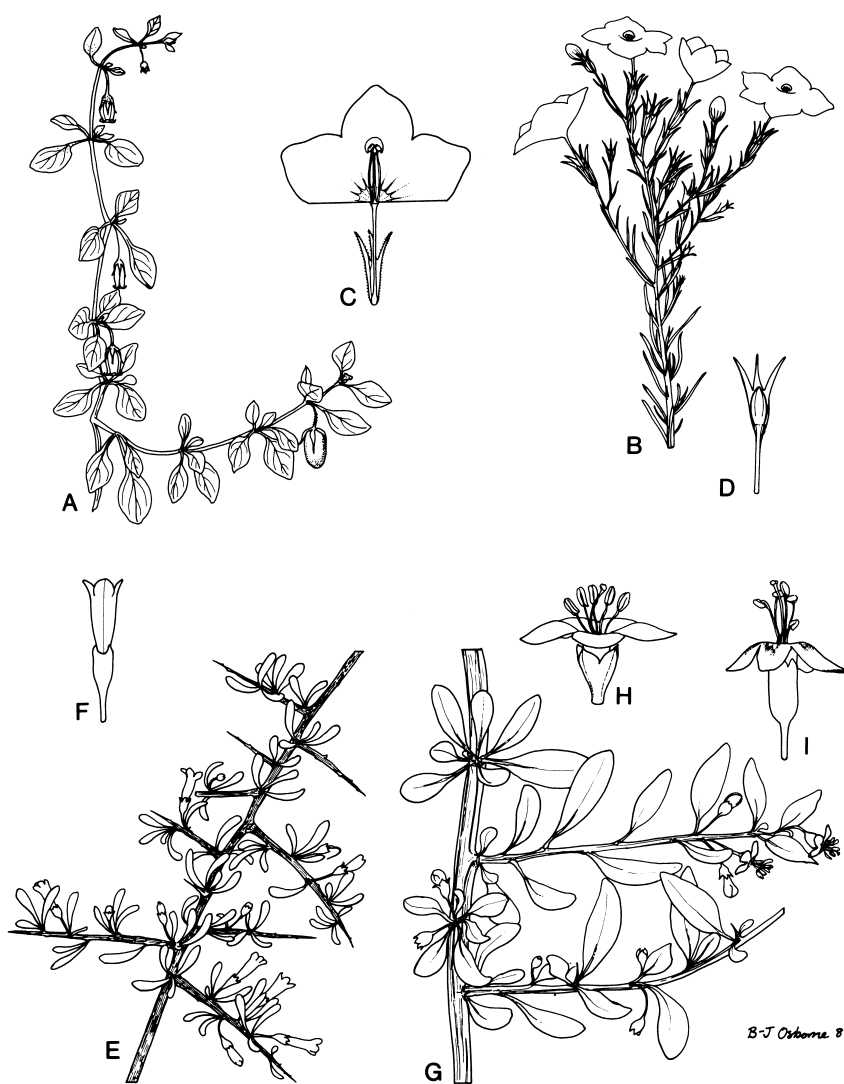
Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1080 (1957); N. T. Burbidge & M. Gray, *Fl. Austral. Cap. Terr.* fig. 324 (1970); B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 598 (1975); L. Haegi, *op. cit.*, fig. 2E–H.

An intricately branched shrub to 4 m with long, rigid branches; lateral branches leafy, ending in a stout spine. Leaves usually clustered, obovate to elliptic, to 40 mm long, slightly fleshy when fresh, green. Pedicels 5–16 mm long. Calyx more or less tubular, 4–7 mm long. Corolla 10–12 mm long, pale lilac or white towards limb, the lobes lilac in centre; limb strongly reflexed. Stamens 5, exerted for 2–4 mm. Pistil c. 10 mm long. Fruiting calyx split irregularly once or twice. Berry globose to broadly ovoid, 5–10 mm diam., dull orange-red, with 35–70 seeds. Seeds 2.5 mm long, 1.5 mm wide, dull yellow. *African Boxthorn*. Figs 23 I; 48.

Native to southern coastal region of South Africa. Introduced to Australia as a hedge plant in late 19th century, now naturalised in all States and widespread in south-eastern Australia; also on Lord Howe Is. A common weed in urban waste ground and agricultural and pastoral areas. In drier regions usually occurs near permanent or seasonal water supplies. Map 65.

W.A.: Forrest aerodrome, T. E. H. *Aplin 1709* (PERTH). S.A.: Mannum, L. *Haegi 599* (ADW). Qld: Dalby, Dec. 1926, W. J. *Winchester* (BRI). N.S.W.: near Nowra, 18 Dec. 1944, M. *Tindale* (NSW). Vic.: Brighton, 26 Dec. 1953, J. H. *Willis* (MEL).

Declared a noxious weed in most States.



**Figure 23.** A, *Salpichroa origanifolia* (D. E. Symon 11027, ADW),  $\times 0.5$ . B–D, *Nierembergia hippomanica*; (B–C, Cult. Adelaide, S.A., D. E. Symon, ADW; D, Delungra, N.S.W., D. S. Lloyd, NSW); B  $\times 0.5$ , C  $\times 1.2$ , D  $\times 1$ . E–F, *Lycium australe* (Port Augusta, S.A., D. E. Symon, ADW); E  $\times 0.5$ , F  $\times 1.2$ . G–H, *Lycium barbarum* (D. E. Symon 10567, ADW); G  $\times 0.5$ , H  $\times 1.5$ . I, *Lycium ferocissimum* (R. W. Purdie 2002, CANB),  $\times 1.5$ .

**3. \*Lycium barbarum L., *Sp. Pl.* 1: 192 (1753)**

T: 'Habitat in Asia, Africa?'; holo.: LINN *n.v.*, photo AD, *fide* N. Feinbrun & W. T. Stearn, *Israel J. Bot.* 12: 116 (1963).

[*L. chinense* auct. non Miller; G. Benth, *Fl. Austral.* 4: 467 (1869)]

Illustration: L. Haegi, *op. cit.*, 24: fig. 2 I–L.

Shrub to 2.5 m with weak, arching branches; lateral branches often few, reduced to short, leafless spines. Leaves ovate to elliptic, scarcely fleshy when fresh, green; clustered leaves to 25 mm long, single alternate leaves to 55 mm long, persistent, usually acute. Pedicels 6–15 mm long. Calyx campanulate to broadly ellipsoid, 3–4 mm long, sometimes 2-lipped. Corolla 10–12 mm long, pale mauve towards limb, the lobes deep mauve above; limb strongly reflexed. Stamens 5, exserted for 3–8 mm. Pistil 8–11.5 mm long. Fruiting calyx split deeply once or twice. Berry ellipsoid, 3–4 mm diam., red, with c. 20 seeds. Seeds 2 mm long, 1 mm wide, yellowish. *Chinese Boxthorn*. Fig. 23G–H.

Native to central China; introduced to Australia as a garden plant, possibly from Europe, and established in a few areas in coastal and near-coastal south-eastern Qld, N.S.W., Vic., eastern Tas. and south-eastern S.A. Map 66.

S.A.: Near Aldinga, *D. E. Symon 10567* (AD, ADW). Qld: Brisbane, *C. T. White 10227* (BRI). N.S.W.: Leumeah, *E. McBarron 122001* (NSW). Vic.: Sale, 5 Mar. 1978, *E. Lyndon* (MEL).

Difficult to distinguish from *L. ferocissimum* at flowering stage, but may be recognised by the shorter, leafless spines, and the persistent, ovate, acute leaves at the base of the leaf clusters.

**4. \*Lycium afrum L., *Sp. Pl.* 1: 191 (1753)**

T: 'Habitat in Africa'; holo.: BM *n.v.*, *fide* N. Feinbrun & W. T. Stearn, *Israel J. Bot.* 12: 119 (1963).

Illustration: L. Haegi, *op. cit.*, 24: fig. 2M–P.

Shrub to 2 m with rigid branches; lateral branches leafy, ending in a stout spine. Leaves usually clustered, very narrowly obovate to linear, to 24 mm long, slightly fleshy when fresh, green. Pedicels 5–8 mm long. Calyx campanulate, 4–5 mm long. Corolla 17–22 mm long, purplish to purplish-brown. Stamens 5, included. Pistil c. 12 mm long. Fruiting calyx split into two major lobes, one 3-toothed, the other 2-toothed. Berry globose to subglobose, c. 10 mm diam., purplish, with c. 20 seeds. Seeds 3 mm diam., dull yellow-brown. *Kaffir Boxthorn*.

Native to southern Africa. In Australian an uncommon hedge plant, established in a few areas in southern Vic. Map 67.

Vic.: Sorrento, Nov. 1940, *P. F. Morris* (MEL).

**Trib. VI. JABOROSEAE**

Trib. *Jaboroseae* Miers, *Ann. Mag. Nat. Hist.* Ser. 2, 3: 178 (1849).

Type genus: *Jaborosa* A. L. Juss.

Herbs or shrubs, sometimes trailing. Aestivation valvate, induplicate, plicate or conduplicate but not overlapping. Stamens 5, all fertile; filaments generally inserted near centre of anthers on dorsal face. Embryo strongly curved.

A tribe of four genera, three occurring in South America and a monotypic genus in Mexico; one genus naturalised in Australia.

## 14. SALPICHROA

*Salpichroa* Miers, *London J. Bot.* 4: 321 (1845); from the Greek *salpinx* (trumpet or tube) and *khroia* (skin or complexion), in reference to the form and texture of the flower.

Type species: *S. glandulosa* (Hook.) Miers; *Atropa glandulosa* Hook.

Scrambling or climbing perennial herbs, glabrous or pubescent with simple hairs. Leaves alternate, 1 or 2 per node (but not opposite) simple, entire, petiolate. Flowers solitary in leaf axils, bisexual, regular. Calyx deeply 5-lobed. Corolla urn-shaped, white or yellow; limb 5-lobed, the lobes reflexed, valvate in bud. Stamens 5, equal in height, inserted on corolla-tube; anthers bilocular, not cohering, dorsifixed, dehiscent by longitudinal slits. Ovary bilocular, an annular disc prominent at base; stigma capitate. Fruit a berry. Seeds disc-shaped.

A genus of 20–25 species native to South America. One species originally cultivated and now naturalised in southern Australia.

D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

### \**Salpichroa organifolia* (Lam.) Baillon, *Hist. Pl.* 9: 288 (1888)

*Physalis organifolia* Lam., *Tabl. Encycl.* 2: 28 (1794).

T: Not Australian; *n.v.*

*S. rhomboidea* (Hook.) Miers, *London J. Bot.* 4: 326 (1845); *Atropa rhomboidea* Hook., *Bot. Misc.* 1: 135; t. 37 (1829).

T: Not Australian; *n.v.*

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1076 (1957); W. T. Parsons, *Noxious Weeds Victoria*, fig. 248 (1973); B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 602 (1975).

Scrambling herb with stout rootstock and rhizome, sparsely to densely pubescent throughout. Older stems quadrangular. Leaves often 2 per node, unequal in size, ovate to ovate-rhomboid, the lamina usually about 15 mm long, 10 mm wide, but often larger; petiole 5–30 mm long. Flowers pendulous; pedicels usually 7–10 mm long. Calyx campanulate, 2–4 mm long; lobes narrowly triangular, 1–2.5 mm long. Corolla 6–8 mm long, white or cream; lobes triangular, 1.5–2 mm long. Disc annular, fleshy. Berry obtusely conical, 13–18 mm long, 7–8 mm wide, white to pale yellow, translucent. Seeds 1.5–2 mm diam., narrowly winged, pale yellow. *Pampas Lily of the valley*. Fig. 23A.

Probably native to temperate South America but naturalised in North America, Europe, Africa and Australia. Widespread in south-eastern Australia; occurs in all States but not N.T. Common in waste places, predominantly in urban areas. Map 68.

W.A.: Perth, 28 Mar. 1969, J. H. Paterson (PERTH). S.A.: Adelaide, D. E. Symon 11027 (ADW). A.C.T.: Canberra, E. D'Arnay 743 (BRI, CANB, NSW). Vic.: Melbourne, T. B. Muir 5496 (MEL). Tas.: Burnie, 29 Oct. 1951, A. H. Woodforde (HO).

A declared noxious weed in Vic., Tas., and S.A.; often difficult to eradicate because of extensive root system.

## Trib. VII. SOLANEAE

Type genus: *Solanum* L.

Herbs, shrubs, rarely small trees. Pedicels articulate. Corolla rotate, actinomorphic, rarely sub-zygomorphic; aestivation valvate, induplicate or plicate, never conduplicate contorted. Stamens 5; filaments attached to base of corolla-tube and inserted at base of anthers, shorter than the anthers; anthers dehiscent mostly by apical pores, rarely by short longitudinal slits; thecae adnate from base to apex. Ovary bilocular; disc absent. Fruit a berry, rarely sub-capsular or indehiscent; stone-cells present or absent; embryo strongly curved.

The largest tribe in the family with 18 genera and over 1200 species, best developed in South America but some genera very widespread. Represented in Australia by 6 genera including *Solanum*, which contains more than half the family's species here. Four genera naturalised in Australia.

## 15. CYPHOMANDRA

*Cyphomandra* C. Martius ex Sendtner, *Flora* 28: 162 (1845); from the Greek *kyphos* (curve) and *andra* (masculine) in reference to the hump-shaped anthers.

Type species: not designated.

Trees, shrubs, or (not in Australia) vines, pubescent with dendritic or simple and glandular hairs. Leaves alternate, simple or compound, entire or lobed, petiolate. Inflorescence raceme- or cyme-like, axillary or in branch forks. Flowers bisexual, actinomorphic. Calyx campanulate, 5-lobed. Corolla stellate, pink to purple; limb mostly deeply lobed, the lobes valvate in bud. Stamens equal in height, inserted near base of corolla-tube; filaments free or connate, produced into elaborate connectives at back of anthers; anthers bilocular, dehiscing by apical pores sometimes extending to longitudinal slits. Ovary bilocular; stigma terminal. Fruit a berry. Seeds flattened.

A genus of c. 40 species largely confined to tropical mountainous regions of South America but also in Central America. Fruits of several species edible. One species naturalised in Australia. The genus is not clearly distinguished from *Solanum* and needs revision.

D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

### \**Cyphomandra betacea* (Cav.) Sendtner, *Flora* 28: 172; t. 4, figs. 1–6 (1845)

*Solanum betaceum* Cav., *Icon.* 6: 15; t. 524 (1800).

T: Not Australian; ?MA *n.v.*

Small, malodorous tree, pubescent with simple glandular hairs. Leaves ovate, cordate at base with the lobes overlapping; lamina of the lower and juvenile ones to 35 cm long, 30 cm wide, others commonly c. 15 cm long, 12 cm wide, entire; petiole

5–15 cm long. Inflorescence pendulous, cyme-like; pedicels 10–20 mm long. Calyx c. 5 mm long, the lobes broad, rounded. Corolla c. 20 mm diam., pink, fleshy, scented. Filaments c. 2 mm long; anthers 4–5 mm long, the connective broad and thick. Ovary bluntly conical; style 5–6 mm long, stout. Berry ovoid, 5–7 cm long, dark red, dull. Seeds disc-shaped, 3.5–4 mm diam. with wing 0.25 mm wide, pale reddish-brown. *Tree Tomato, Tamarillo*.

Native to South America. Infrequent escape from cultivation in subtropical areas of eastern Qld and north-eastern N.S.W., found in rainforest. Map 69.

Qld: Bunya Mtns, *S. T. Blake 19692* (BRI); near Atherton, *V. K. Moriarty 1105* (CANB). N.S.W.: near Springwood, *L. Johnson 8350* (NSW).

Cultivated for its edible fruit in many parts of tropical America, Asia, New Zealand, the Pacific region and Australia. Garden-grown in all Australian States with commercial plantings in subtropical areas. Cultivation discussed by J. McD. Slack, Growing tamarillos (*Cyphomandra betacea*), *Agric. Gaz. New South Wales* 86: 2–4 (1976).

## 16. SOLANUM

*Solanum* L., *Sp. Pl.* 1: 184 (1753), & *Gen. Pl.* 5th edn, 85 (1754); from the Latin *solamen*(solace or comfort), possibly alluding to the reputed narcotic properties of the type species.

Type species: *S. nigrum* L.

Annual or perennial herbs, shrubs or small trees, sometimes trailing or climbing, many species spreading by means of suckers and thus forming colonies (clonal), pubescent with glandular or simple or stellate non-glandular hairs, rarely glabrous; prickles present or absent. Leaves usually alternate, sometimes paired, simple or pinnate, entire or lobed, petiolate. Inflorescence cyme-like, often scorpioid or becoming raceme-like, sub-umbellate or panicle-like, terminal, lateral, axillary, extra-axillary or leaf-opposed. Flowers usually bisexual, rarely male or female, actinomorphic or slightly zygomorphic. Calyx campanulate, rotate or cup-shaped, usually 5 (rarely 4–10)-lobed, sometimes enlarged in fruit. Corolla stellate and deeply incised to rotate, rarely campanulate, purple or blue, less often white or yellow, usually 5 (rarely 4–10)-lobed, the lobes folded in bud. Stamens 5, usually equal, inserted in throat of corolla; anthers bilocular, basifixed, cohering and cone-like around style or not cohering, dehiscent by terminal pores or slits, rarely by longitudinal slits. Ovary 2 (occasionally 3–4)-locular. Stigma terminal, capitate or bifid. Fruit a succulent, papery or bony berry, rarely sub-capsular, sometimes enclosed by inflated calyx. Seeds orbicular to sub-reniform.

A cosmopolitan genus of c. 1500 species, chiefly in tropical and sub-tropical Central and South America with secondary centres of speciation in Australia and Africa.

In Australia 117 species of which 94 are native and 87 endemic. Occurs in all except saline, alpine and aquatic habitats. Many species are weedy, some common after fire. The highest numbers of species occur in the tropics, but many of these are not well collected and hence are poorly known; their juvenile and mature plants are often morphologically very different. Many species occur in arid or semi-arid areas, often widespread, some with relict distributions. Dioecious species are confined mainly to tropical W.A. and N.T. Most species have a chromosome number of  $n=12$ , some  $n=23$ ; a few tetraploids and hexaploids occur.

The family contains the important food plants *S. tuberosum* L. (potato) and *S. melongena* L. (eggplant, aubergine, brinjal). Several species contain steroidal alkaloids and are poisonous or suspected of being toxic. A few, including two Australian species, *S. aviculare* G. Forster and *S. laciniatum* Aiton, are cultivated overseas for solasodine as a source of corticosteroid drugs. Several species are cultivated for decorative flowers and foliage.

Mature plants of many species show great variation, especially in leaf morphology, distribution of prickles and to a less extent indumentum. Juvenile leaves often differ from adult leaves. In the key below, leaf characters are derived mostly from the adult stage. Ripe fruit are needed for the determination of some species.

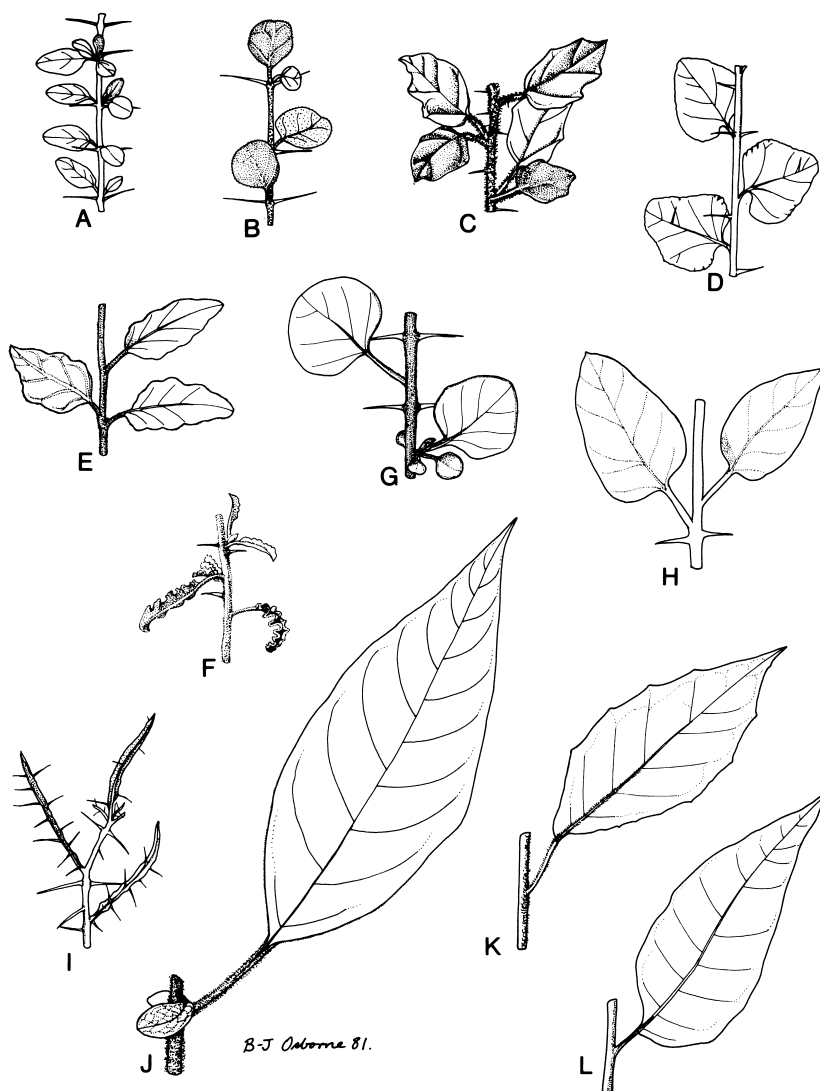
R. Brown, *Solanum*, *Prodr.* 444–447 (1810); F. Dunal, *Solanum*, in A. P. de Candolle, *Prodr.* 13(1): 27–387 (1852); G. Benthham, *Solanum*, *Fl. Austral.* 4: 442–465 (1868); K. Domin, *CLV. Solanum*, *Biblioth. Bot.* 89: 572–589 (1928–29); G. T. S. Baylis, A cytogenetical study of the *Solanum aviculare* species complex, *Austral. J. Bot.* 11: 168–177 (1963); R. J. F. Henderson, *Solanum nigrum* L. (Solanaceae) and related species in Australia, *Contr. Queensland Herb.* 16: 1–78 (1974); D. E. Symon, The genus *Solanum* in Australia, in J. G. Hawkes, R. N. Lester & A. D. Skelding (eds), The biology and taxonomy of the Solanaceae, *Linn. Soc. Symp. Ser.* 7: 125–130 (1979); N. Peterson, Aboriginal uses of Australian Solanaceae, in J. G. Hawkes et al., *op. cit.* 171–190; D. E. Symon, A revision of the genus *Solanum* in Australia, *J. Adelaide Bot. Gard.* 4: 1–367 (1981).

## KEY TO GROUPS

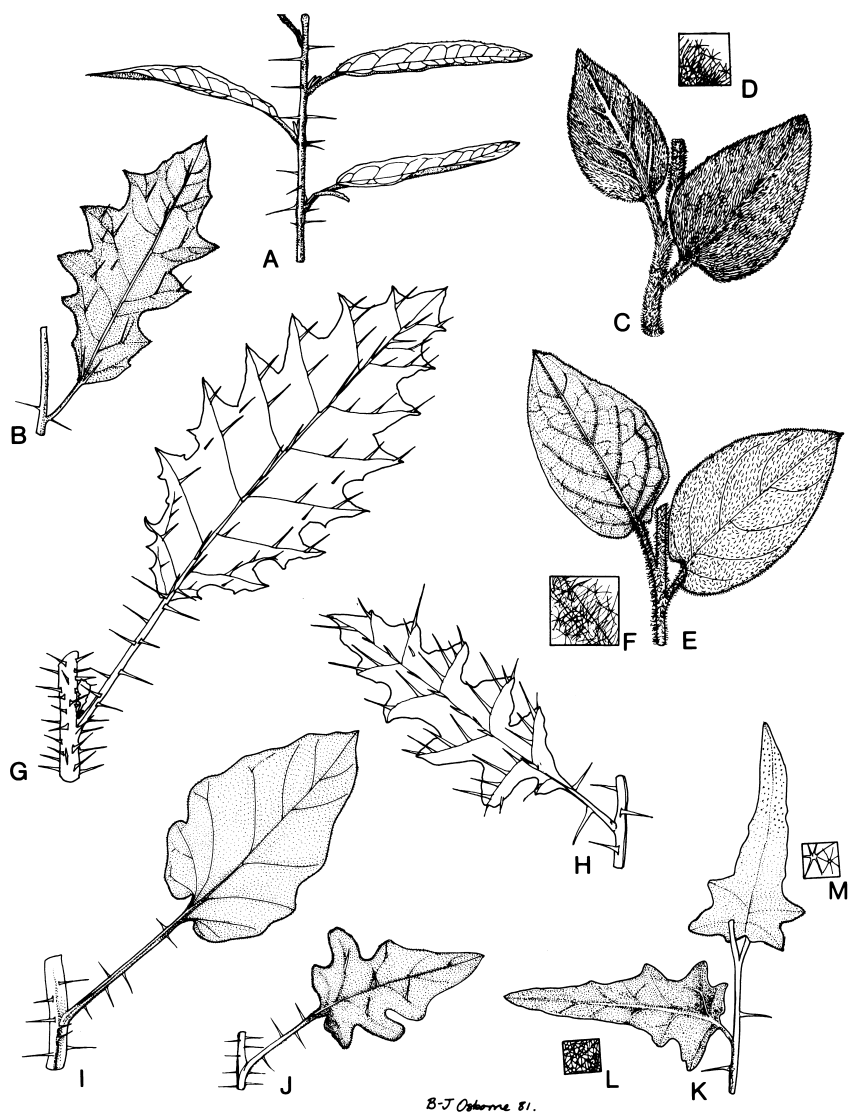
These groups are artificial and are used for convenience in the key. They have no taxonomic significance.

- |    |  |                            |
|----|--|----------------------------|
| 1  | Inflorescence branched; flowers usually more than 20   | <b>GROUP I</b> (page 74)   |
| 1: | Inflorescence simple or once-forked; flowers usually 1–20  |                            |
| 2  | Stellate hairs absent; prickles absent or rare   |                            |
| 3  | Climbing or scrambling perennials  | <b>GROUP II</b> (page 75)  |
| 3: | Annuals, herbaceous perennials or shrubs, not climbing   | <b>GROUP III</b> (page 76) |
| 2: | Stellate hairs and/or prickles present   |                            |
| 4  | Climbing, woody perennials; hairs simple; flowers 3–5 cm diam., rotate   | <b>S. wendlandii</b> †     |
| 4: | Woody perennials or herbs, not climbing; hairs various, present at least on shoots and/or inflorescence; flowers various |                            |
| 5  | Hairs predominantly simple or glandular  | <b>GROUP IV</b> (page 78)  |
| 5: | Hairs predominantly stellate   |                            |
| 6  | Prickles absent or rare  | <b>GROUP V</b> (page 79)   |
| 6: | Prickles present on stems, leaves, petioles and/or inflorescence   |                            |
| 7  | Flowers all male; fruits never present   | <b>GROUP VI</b> (page 83)  |
| 7: | At least basal flower bisexual; fruits, when present, one to several on each peduncle                                    |                            |

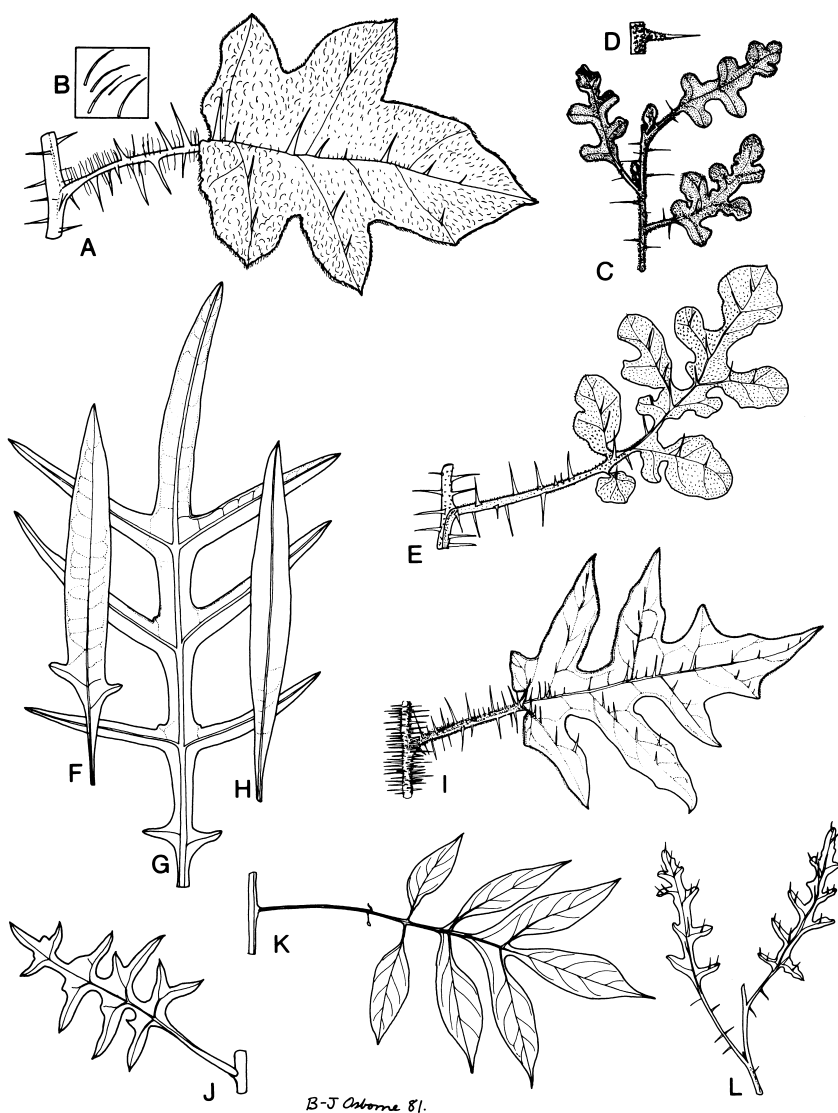




**Figure 24.** *Solanum* leaves. **A**, *S. elachophyllum* (Story & Yapp 174, CANB). **B**, *S. nummularium* (D. E. Symon 9910, CANB). **C**, *S. gilesii* (P. Latz 4035, CANB). **D**, *S. oligacanthum* (Cult. Adelaide ex D. E. Symon 9910, CANB). **E**, *S. oldfieldii* (D. E. Symon 4540, CANB). **F**, *S. plicatile* (D. E. Symon 5475, CANB). **G**, *S. orbiculatum* subsp. *orbiculatum* (D. E. Symon 5473, CANB). **H**, *S. orbiculatum* subsp. *macrophyllum* (R. Carolin 6122, ADW). **I**, *S. ferocissimum* (Cult. Canberra ex Cocopara, N.S.W., G. Butler 869, CBG). **J**, *S. mauritianum* (L. J. Webb 2000, CANB). **K**, *S. dallachii*, juvenile leaf (Curtain Fig Site, Qld, G. Tracey, CANB). **L**, *S. dallachii*, mature leaf (B. Hyland 7367, CANB). P, R  $\times 0.25$ , all others  $\times 0.5$ .



**Figure 25.** *Solanum* leaves. **A**, *S. parvifolium* (Cult. Canberra ex H. Streimann 721, CBG). **B**, *S. gabrielae* (D. E. Symon 5401, CANB). **C-D**, *S. densevestitum* (R. Henderson 2165, CANB); **D**-leaf margin. **E-F**, *S. pungetium* (Buchan, Vic., Shepherd & C. Totterdell, CANB); **F**-stem. **G**, *S. oedipus* (Cult. Adelaide ex W.A., D. E. Symon, CANB). **H**, *S. hystrix* (C. R. Alcock 2660, CANB). **I**, *S. lucani* (D. E. Symon 5216, CANB). **J**, *S. melanospermum* (D. E. Symon 5064, CANB). **K-M**, *S. chenopodium* (R. Perry 5420, CANB); **L**-lower leaf-surface; **M**-upper leaf-surface. **J**  $\times 0.25$ , all others  $\times 0.5$ .



**Figure 26.** *Solanum* leaves. A–B, *S. capsicoides* (V. K. Moriarty 1585, CANB); B–indumentum of leaf. C–D, *S. diversiflorum* (D. E. Symon 5370, CANB); D–prickle of stem. E, *S. rostratum* (C. R. Alcock 2609, CANB). F, *S. simile*, juvenile leaf (A. E. Orchard 4240, CANB). G–H, *S. vescum*; G–juvenile leaf, H–mature leaf (Shepherd, M. Gray & C. Totterdell 5626, CANB). I, *S. semiarmatum* (M.D. Crisp 3048, CBG). J, *S. triflorum* (R. W. Purdie 2003, CBG). K, *S. seaforthianum* (W.A., Thistle Stead CANB). L, *S. lacunarium* (D. E. Symon 6744, CANB). All  $\times 0.5$ .

- 8 Fruiting calyx surrounding or enclosing at least three-quarters of berry (berry sometimes visible between calyx lobes or splits in calyx-tube)
- 8: Fruiting calyx not enclosing berry

GROUP VII (page 84)

GROUP VIII (page 87)

## GROUP I

- 1 Plants glabrous or with simple or branched but not stellate hairs
- 2 Herbs or tuber-bearing herbaceous perennials usually less than 1 m tall, sometimes woody at base
- 3 Leaves 3–9 cm long, entire or almost so; corolla stellate; berry black (Vic., Tas.) **3. S. furcatum**
- 3: Leaves 10–20 cm long, deeply 5–9-lobed; corolla pentagonal-rotate; berry green **S. tuberosum** †
- 2: Perennial shrubs or woody climbers with branches to several metres long
- 4 Prickles present on stems and lower surface of leaves, sometimes few □
- 5 Perennial climber; leaves simple or pinnate; prickles hooked, scattered on midrib or stem **S. wendlandii** †
- 5: Clonal shrub; leaves lobed, angular; prickles straight, abundant on stems and calyx, scattered or absent elsewhere **108. S. oedipus**
- 4: Prickles absent
- 6 Leaves usually more than 10 cm long, simple or pinnate; flowers all male; corolla rotate, 3–5 cm diam. **S. wendlandii** †
- 6: Leaves usually less than 10 cm long, simple or lobed; flowers all bisexual; corolla stellate, 1–3 cm diam.
- 7 Leaves usually 3–9-lobed; berry 10–12 mm diam.; Seeds reddish-brown, shaggy-haired **14. S. seaforthianum**
- 7: Leaves entire, or some with 1–5 basal lobes or leaflets; berry 5–10 mm diam.; Seeds not reddish-brown, not hairy
- 8 Corolla purplish-blue, 10–12 mm diam.; berry bright red (Tas.) **10. S. dulcamara**
- 8: Corolla white or pale blue, c. 20 mm diam.; berry dark blue or black (Qld, N.S.W.) **13. S. jasminoides**
- 1: Plants with stellate hairs at least on young shoots and/or inflorescences
- 9 Prickles absent
- 10 Leaves glabrous on both surfaces or nearly so
- 11 Inflorescence compact; pedicels 5–8 mm long; mature berry orange-brown **32. S. dunalianum**
- 11: Inflorescence lax; pedicels 10–15 mm long; mature berry red **34. S. viride**
- 10: Leaves densely pubescent at least on lower surface
- 12 Clonal shrub; flowers all male; corolla 25–30 mm diam. **115. S. asymmetriphyllum**
- 12: Shrubs or small trees; flowers all bisexual; corolla 10–15 mm diam.

## SOLANACEAE

## *Solanum*

- 13 Leafy pseudo-stipules present at base of petiole; corolla violet **23. *S. mauritianum***
- 13: Leafy pseudo-stipules not present at base of petiole; corolla white **22. *S. erianthum***
- 9: Prickles present
- 14 Berries usually numerous, erect, 6–10 mm diam.; flowers all bisexual
- 15 Leaves discolorous; inflorescence several-branched; flowers numerous (c. 100), nodding ***S. giganteum* †**
- 15: Leaves concolorous; inflorescence 2-branched; flowers 15–20, erect (Qld) **32. *S. dunalianum***
- 14: Berries (if present) one to many, inclined or pendent, 8–30 mm diam.; flowers all bisexual, bisexual and male, or all male
- 16 Corolla stellate, white; berry yellow
- 17 Mature leaves with up to 7 broadly angular lobes, discolorous; stems green; corolla 25 mm diam. **31. *S. torvum***
- 17: Mature leaves with 7–13 triangular or lanceolate lobes, concolorous; stems often rusty; corolla 30–45 mm diam. **30. *S. hispidum***
- 16: Corolla stellate or rotate, purple; berry red, green, or black, occasionally yellow
- 18 Leaves sparsely pubescent to almost glabrous on both surfaces
- 19 Flowers all bisexual, 15–18 mm diam.; berries red when mature, not enclosed by calyx-lobes (Qld) **34. *S. viride***
- 19: Basal flower bisexual, 45–55 mm diam.; upper flowers male, 35–40 mm diam.; berry green when mature, partly enclosed by calyx-lobes (W.A.) **108. *S. oedipus***
- 18: Leaves densely pubescent on lower surface
- 20 Leaves entire, the upper surface densely pubescent (W.A.) **100. *S. beaugleholei***
- 20: Leaves entire or lobed, the upper surface sparsely pubescent
- 21 Flowers all bisexual; corolla 10–20 mm diam. (Qld, N.S.W.) **35. *S. semiarmatum***
- 21: Flowers all male; corolla 25–30 mm diam. (N.T.) **115. *S. asymmetriphyllum***

## GROUP II

- 1 Leaves usually more than 10 cm long; flowers all male; corolla rotate, 3–5 cm diam. ***S. wendlandii* †**
- 1: Leaves usually less than 10 cm long; flowers all bisexual; corolla stellate, 1–3 cm diam.
- 2 Leaves usually 3–9-lobed; berry 10–12 mm diam.; Seeds shaggy-haired (Qld, N.S.W.) **14. *S. seaforthianum***
- 2: Leaves entire, or some with 1–5 basal lobes or leaflets; berry 5–10 mm diam.; Seeds not hairy
- 3 Corolla purplish-blue, 10–12 mm diam.; berry bright red (Tas.) **10. *S. dulcamara***
- 3: Corolla white or pale blue, c. 20 mm diam.; berry dark blue or black (Qld, N.S.W.) **13. *S. jasminoides***

## GROUP III

- 1 Tuber-bearing stolons present **S. tuberosum** †
- 1: Tuber-bearing stolons absent
- 2 Corolla purple, rotate or rotate-stellate, 20–50 mm diam.; berry 15–30 mm long
- 3 Inflorescence a sub-umbellate cluster; berry heart-shaped, 25–28 mm diam. **S. rantonnei** †
- 3: Inflorescence usually cymose; berry not heart-shaped, to 25 mm diam.
- 4 Leaves mostly entire
- 5 Leaves linear, linear-lanceolate or narrowly elliptic; length : width usually over 10:1
- 6 Petioles 5–10 mm long, not decurrent along stem; corolla 20–30 mm diam.; berry conical, less than 10 mm wide **21. S. capsiciforme**
- 6: Petioles less than 5 mm long and slightly decurrent along stem, or absent; corolla 25–45 mm diam.; berry globular to ovoid, 15–25 mm diam.
- 7 Fruiting pedicels mostly less than 3 cm long; berry 15–20 mm diam., ochre-yellow with purple markings **17. S. linearifolium**
- 7: Fruiting pedicels mostly 3–5 cm long; berry 20–25 mm diam., greenish-ivory **18. S. vescum**
- 5: Leaves lanceolate or elliptic; length : width usually less than 10:1
- 8 Corolla 20–30 mm diam.; berry globular **19. S. simile**
- 8: Corolla 30–50 mm diam.; berry ellipsoid, ovoid or obovoid
- 9 Berry green or tinged with purple **20. S. symonii**
- 9: Berry yellow, orange or red
- 10 Corolla-lobes acute; berry orange-red to scarlet; stone-cell granules inconspicuous in pressed fruit **15. S. aviculare**
- 10: Corolla-lobes notched; berry orange-yellow; stone-cell granules giving pressed fruit a coarse, warted appearance **16. S. laciniatum**
- 4: Leaves mostly lobed or undulate
- 11 Leaves undulate to shallowly lobed; lobes bluntly triangular
- 12 Berry conical, less than 10 mm wide **21. S. capsiciforme**
- 12: Berry globular, ellipsoid or obovoid, 10–20 mm diam.
- 13 Leaves lobed only at base; corolla 20–30 mm diam.; berry globular **19. S. simile**
- 13: Leaves lobed throughout their length; corolla 30–40 mm diam.; berry ellipsoid or obovoid **20. S. symonii**
- 11: Leaves deeply lobed, often cut to within 1 cm of midvein; lobes linear, oblong or narrowly triangular
- 14 Berry orange-yellow, orange-red or scarlet
- 15 Corolla-lobes acute; berry orange-red to scarlet; stone-cell granules inconspicuous in pressed fruit **15. S. aviculare**
- 15: Corolla-lobes notched; berry orange-yellow; stone-cell granules giving pressed fruit a coarse, warted appearance **16. S. laciniatum**

- 14: Berry yellow or green, sometimes purplish in upper half
- 16 Fruiting pedicels mostly less than 3 cm long; berry 15–20 mm diam., ochre-yellow with purple markings **17. *S. linearifolium***
- 16: Fruiting pedicels mostly 3–5 cm long; berry 20–25 mm diam., greenish-ivory **18. *S. vescum***
- 2: Corolla white or tinged with purple, stellate, 5–20 mm diam.; berry 4–15 mm long
- 17 Plants prostrate; leaves deeply lobed
- 18 Leaves 3–lobed, the lobes entire; stems rooting at nodes; berry yellow-green, 4–5 mm diam. **11. *S. palitans***
- 18: Leaves 7–9–lobed, the lobes toothed; stems not rooting at nodes; berry marbled whitish-green, 8–12 mm diam. **12. *S. triflorum***
- 17: Plants erect or sprawling; leaves entire or shallowly lobed, rarely deeply lobed
- 19 Leaves usually 1–2 cm wide, hairs (if present) forked; berry bright orange-red, 1–2 on each peduncle **24. *S. pseudocapsicum***
- 19: Leaves 1–8 cm wide, hairs not forked; berry not bright orange-red, usually 2–10 on each peduncle
- 20 Shrubs to 3 m; leaves glabrous except for tufts of hairs in axils of veins on lower surface; berry bright orange-yellow **9. *S. callium***
- 20: Soft-wooded annual or short-lived perennial herbs, usually less than 1 m; leaves glabrous or with hairs not restricted to vein axils; berry purple-black, green or reddish
- 21 Fruiting peduncle sharply deflexed from its base
- 22 Leaves whitish on lower surface; mature berry 5–9 mm diam., blackish; fruiting calyx-lobes 3–4 mm long **4. *S. chenopodioides***
- 22: Leaves green on lower surface; mature berry 8–10 mm diam., green; fruiting calyx-lobes 1–2.5 mm long **2. *S. opacum***
- 21: Fruiting peduncle erect, ascending or curved downwards
- 23 Inflorescence forked **3. *S. furcatum***
- 23: Inflorescence simple
- 24 Plants sprawling; mature berry green
- 25 Indumentum of glandular hairs; fruiting calyx-lobes 2–4 mm long, 2–5 mm wide; berry 5–8 mm diam. **7. *S. sarrachoides***
- 25: Indumentum predominantly of non-glandular hairs; fruiting calyx-lobes 1–2.5 mm long, 1–2 mm wide; berry 8–10 mm diam. **2. *S. opacum***
- 24: Plants erect or almost so; berry black or red
- 26 Berry dull orange-red, slightly longer than wide, translucent; plant densely pubescent with erect, glandular hairs or sparsely pubescent with curved, simple hairs **8. *S. villosum***
- 26: Berry black or purple-black, globular, opaque; plants sparsely pubescent with appressed, simple hairs, or rarely with glandular hairs
- 27 Mature berry shiny; seeds usually more than 40 in each fruit

- 28** Berry 6–9 mm diam., usually 1–4 on each peduncle; Seeds 1–1.5 mm long **1. *S. americanum***
- 28:** Berry 10–15 mm diam., usually 4–10 on each peduncle; Seeds 2–2.8 mm long ***S. scabrum* †**
- 27:** Mature berry dull; seeds usually 20–40 in each fruit
- 29** Stigma 2–3 mm above anther tips; corolla 10–20 mm diam.
- 30** Corolla often flushed purple, 10–15 mm diam.; stone-cell granules less than 0.5 mm wide ***S. douglasii* †**
- 30:** Corolla white with yellow centre, 15–20 mm diam.; stone-cell granules 1–1.2 mm wide **3. *S. furcatum***
- 29:** Stigma not more than 1 mm above anther tips; corolla 8–12 mm diam.
- 31** Leaves concolorous, entire or shallowly lobed; fruiting axis with several short, distinct internodes **5. *S. nigrum***
- 31:** Leaves discolorous, distinctly lobed or toothed; fruiting axis with only one distinct internode **6. *S. retroflexum***

#### GROUP IV

- 1** Corolla stellate, deeply incised; leaves broadly ovate or orbicular; berry 20 mm or more diam., yellow, orange or red
- 2** Corolla white, 20–30 mm diam.; berry globular, 20–35 mm long; Seeds pale yellow or brown, with wing 1.5 mm wide **26. *S. capsicoides***
- 2:** Corolla pale purple, 30–40 mm diam.; berry with nipple-like apex and often with basal lobes, 30–60 mm long; Seeds dark purple, not winged ***S. mammosum* †**
- 1:** Corolla campanulate, stellate and shallowly incised, or rotate; leaves ovate or elliptic; berry 10–25 mm diam., usually green, yellow or white
- 3** Fruiting calyx largely enclosing berry, sometimes splitting
- 4** Berry enclosed by calyx-tube; plants sprawling, stems to 30 cm long
- 5** Leaves glabrous or nearly so **86. *S. hystrix***
- 5:** Leaves pubescent with glandular and simple, non-glandular hairs, denser on lower surface **87. *S. hoplopetalum***
- 4:** Berry enclosed by calyx-lobes; plants erect or sprawling, to 3 m tall
- 6** Flowers all bisexual; corolla 20 mm diam.; seeds 2–2.5 mm long, pale yellow (Qld) **84. *S. cookii***
- 6:** Basal flower bisexual, upper ones male; corolla 35–55 mm diam.; Seeds 4–4.5 mm long, black (W.A.) **108. *S. oedipus***
- 3:** Fruiting calyx not enclosing berry



## SOLANACEAE

## *Solanum*

- 7 Calyx with 1–2 large prickles on outer side of flower or fruit cluster; corolla campanulate, c. 10 mm diam.; seeds papery, 3–3.5 mm long **25. *S. pugiunculiferum***
- 7: Calyx without large prickles on outer side; corolla stellate and shallowly incised to pentagonal, 20–40 mm diam.; Seeds not papery, less than 3 mm long
- 8 Leaves glabrous or nearly so, lobed, the lobes cut more than two-thirds way to midvein **59. *S. papaverifolium***
- 8: Leaves pubescent, lobed, the lobes cut no more than two-thirds way to midvein
- 9 Leaves 8–15 cm long; flowering peduncle 15–20 mm long; pedicel 3–8 mm long **84. *S. cookii***
- 9: Leaves 3–6 cm long; flowering peduncle to 10 mm long; pedicel c. 2 cm long **60. *S. adenophorum***

## GROUP V

- 1 Flowers all male; fruit absent
- 2 Leaves entire
- 3 Leaves linear-lanceolate **116. *S. tudununggae***
- 3: Leaves lanceolate to elliptic or ovate
- 4 Leaves silvery or rusty
- 5 Leaves concolorous, ovate to elliptic, rusty or silvery, 1–5 cm wide **109. *S. dioicum***
- 5: Leaves discolorous, lanceolate-elliptic, rusty, 1–2 cm wide **110. *S. cunninghamii***
- 4: Leaves green
- 6 Leaves distinctly discolorous; calyx 2-lipped (N.T.) **115. *S. asymmetriphyllum***
- 6: Leaves concolorous or slightly discolorous; calyx not 2-lipped (W.A.) **117. *S. vansittartensis***
- 2: Leaves lobed
- 7 Lobes linear, cut almost to midvein (W.A.) **116. *S. tudununggae***
- 7: Lobes triangular, cut less than half way to midvein (N.T.) **115. *S. asymmetriphyllum***
- 1: At least the basal flower bisexual
- 8 Inflorescence forked
- 9 Mature leaves glabrous on both surfaces or with hairs along veins; berry orange-red or red
- 10 Flowering pedicels 5–8 mm long; corolla 20–30 mm diam.; berry orange-red **32. *S. dunalianum***
- 10: Flowering pedicels 10–15 mm long; corolla 15–20 mm diam.; berry red **34. *S. viride***
- 9 Mature leaves densely pubescent at least on lower surface; berry yellow

- 11 Scrambling shrub; upper leaf surface sparsely pubescent; pedicels with stellate and glandular hairs **31. S. torvum**
- 11: Erect shrubs, small trees or herbaceous perennials; upper leaf surface densely to moderately pubescent; pedicels with stellate hairs only
- 12 Clonal, herbaceous perennial; leaves lobed **46. S. dimidiatum**
- 12: Erect shrubs or small trees; leaves entire
- 13 Leaves with leafy pseudo-stipules at base; corolla violet **23. S. mauritianum**
- 13: Leaves without leafy pseudo-stipules at base; corolla white **22. S. erianthum**
- 8: Inflorescence simple
- 14 Lowest flower of inflorescence bisexual, the others male, or flowers solitary and bisexual
- 15 Berry more than 10 cm long, not enclosed by calyx **S. melongena** †
- 15: Berry less than 2 cm long, enclosed by enlarged calyx
- 16 Leaves mostly lobed
- 17 Leaves deeply lobed, the lobes linear, cut almost to midvein (W.A.) **116. S. tudununggae**
- 17: Leaves shallowly lobed, the lobes triangular, cut less than half way to midvein (N.T.) **115. S. asymmetriphyllum**
- 16: Leaves mostly entire
- 18 Leaves linear-lanceolate **116. S. tudununggae**
- 18: Leaves lanceolate to elliptic or ovate
- 19 Leaves 1–2 cm wide; corolla 20–30 mm diam. (W.A.) **110. S. cunninghamii**
- 19: Leaves 2–7 cm wide; corolla 40–60 mm diam. (N.T.) **115. S. asymmetriphyllum**
- 14: Flowers all bisexual, rarely lower ones bisexual and upper ones male
- 20 Berry enclosed by enlarged calyx-tube **73. S. karsensis**
- 20: Berry not enclosed by enlarged calyx-tube
- 21 Leaves sparsely pubescent or glabrous on upper surface
- 22 Leaves sparsely pubescent or glabrous on lower surface
- 23 Berry 15–20 mm diam.
- 24 Leaves elliptic; mature leaves glabrous except along veins **88. S. macoorai**
- 24: Leaves ovate; mature leaves with hairs sparsely scattered over both surfaces, rarely denser on lower surface **89. S. sporadotrichum**
- 23: Berry 5–10 mm diam.
- 25 Flowering pedicels 10–15 mm long; corolla 15–20 mm diam., 5-lobed **34. S. viride**
- 25: Flowering pedicels 4–8 mm long; corolla 20–30 mm diam., 4–5-lobed
- 26 Leaves broadly elliptic or ovate, the length less than twice the width; corolla white or pale blue (N.T.) **33. S. tetrandrum**
- 26: Leaves elliptic, the length more than twice the width; corolla violet (Qld) **32. S. dunalianum**
- 22: Leaves moderately or densely pubescent on lower surface

- 27 Berry red
- 28 Leaves with 2–4 basal lobes
- 29 Corolla 30 mm diam., purple or heliotrope; berry 10–15 mm diam. **44. *S. elegans***
- 29: Corolla 10–20 mm diam., pale lilac or white; berry 5–9 mm diam. **45. *S. chenopodium***
- 28: Leaves lobed throughout their length, or entire
- 30 Inflorescence usually opposite a leaf; lower flowers bisexual, upper ones male; seeds 4–5 mm long, hairy **40. *S. yirrkalensis***
- 30: Inflorescence usually from internode; flowers all bisexual; seeds 1.5–3.5 mm long, glabrous
- 31 Berry 10–15 mm diam.; lower leaf surface with minute, whitish or silvery, stellate hairs
- 32 Corolla deeply incised, 20 mm diam.; leaves elliptic **39. *S. corifolium***
- 32: Corolla shallowly incised, 25–30 mm diam.; leaves linear to lanceolate **44. *S. elegans***
- 31: Berry 5–10 mm diam.; lower leaf surface pubescent or woolly with brown, pale yellow or pale green stellate hairs
- 33 Leaves broadly elliptic or ovate, corolla usually 4-partite; pedicels 4–5 mm long at flowering, 7–13 mm at fruiting (N.T.) **33. *S. tetrandrum***
- 33: Leaves lanceolate-elliptic, corolla 5-partite; pedicels 10–20 mm long at flowering, 15–30 mm at fruiting (Qld, N.S.W.) **36. *S. stelligerum***
- 27: Mature berry yellow or green
- 34 Scrambling shrub; corolla white **31. *S. torvum***
- 34: Erect shrubs; corolla blue, purple-blue or deep purple
- 35 Lower flowers bisexual, upper ones male; berry broadly ovoid **91. *S. dallachii***
- 35: Flowers all bisexual; berry globular or depressed-globular
- 36 Lower leaf surface densely woolly-pubescent; Seeds 2.5–3.5 mm long **93. *S. brownii***
- 36: Lower leaf surface usually not pubescent, sometimes moderately woolly-pubescent; Seeds 1.5–3 mm long
- 37 Shrub to 2 m; leaf length less than 2.5 times the width, tomentum on lower surface bright yellow, rarely rusty **92. *S. furfuraceum***
- 37: Small shrub to 60 cm; leaf length more than 2.5 times the width, tomentum on lower leaf surface pale green or yellow-green **57. *S. tetrahecum***
- 21: Leaves densely to moderately pubescent on upper surface
- 38 Berry red, 5–8 mm diam.
- 39 Leaf length usually less than 2.5 times the width; fruiting pedicel 10–15 mm long, hirsute-villous **42. *S. densevestitum***
- 39: Leaf length usually at least 2.5 times the width; fruiting pedicel 6–10 mm long, woolly **43. *S. nemophilum***

- 38:** Berry variously coloured but not red, 5–20 mm diam.
- 40** Mature berry dry, brown or black
- 41** Plants rusty or yellow-green; leaves concolorous; dry berry brown, raisin-like **53. S. centrale**
- 41:** Plants silvery-green or grey-green; leaves discolorous; dry berry black, the skin brittle **71. S. sturtianum**
- 40:** Mature berry mucilaginous, yellow, green or orange-brown
- 42** Leaves orbicular **48. S. orbiculatum**
- 42:** Leaves not orbicular
- 43** Mature leaves plicately folded or distinctly lobed, the lobes cut at least a quarter of way to midvein
- 44** Leaves 5–8 mm wide, the margin plicately folded **51. S. plicatile**
- 44:** Leaves more than 10 mm wide, the margin lobed but not folded
- 45** Leaf lobes broadly triangular to oblong; axis of inflorescence 20–50 mm long; berry 15–20 mm diam. (Qld) **46. S. dimidiatum**
- 45:** Leaf lobes rounded; axis of inflorescence 5 mm long; berry 5–10 mm diam. (W.A.) **50. S. oldfieldii**
- 43:** Leaves entire or shallowly lobed, the lobes cut less than a quarter way to midvein
- 46** Leaves shallowly lobed
- 47** Corolla rotate-pentagonal, 30–40 mm diam.; young shoots usually rusty-green **50. S. oldfieldii**
- 47:** Corolla rotate-stellate, 15–30 mm diam.; young shoots usually grey-green or silvery-green
- 48** Leaves usually silvery-green; flowering peduncle less than 1 cm long; anthers 5–8 mm long **47. S. alaeagnifolium**
- 48:** Leaves usually grey-green; flowering peduncle 1–4 cm long; anthers 4–5 mm long **55. S. esuriale**
- 46:** Leaves entire or slightly undulate
- 49** Leaves ovate, mostly more than 2 cm wide
- 50** Herb to 10 cm; flowering pedicels 15–25 mm long **63. S. terraneum**
- 50:** Shrubs to 1.5 m; flowering pedicels up to 10 mm long
- 51** Leaves grey-green; berry 10–15 mm diam.; Seeds 2–3 mm long **48. S. orbiculatum**
- 51:** Leaves green or rusty-green; berry 5–10 mm diam.; Seeds 1–2 mm long **50. S. oldfieldii**
- 49:** Leaves lanceolate to oblong, less than 2 cm wide
- 52** Leaves usually silvery-green; anthers usually 5–8 mm long
- 53** Flowers 5-partite; lobes of flowering calyx awl-shaped; berry orange-brown **47. S. alaeagnifolium**
- 53:** Flowers 4- or 5-partite; lobes of flowering calyx triangular; berry yellow or yellow-brown **52. S. coactiliferum**

- 52:** Leaves grey-green, rusty-green or green; anthers 3–6 mm long
- 54** Leaves usually rusty-green, rarely green; seeds 1–2 mm long
- 55** Flowering calyx 6–10 mm long, lobes oblong to obovate; corolla rotate- pentagonal, 25–40 mm diam. **50. *S. oldfieldii***
- 55:** Flowering calyx 4–6 mm long, lobes bluntly triangular; corolla stellate, 20–25 mm diam. **54. *S. hesperium***
- 54:** Leaves grey-green or dark green; seeds 2–3 mm long
- 56** Small shrub to 60 cm; flowering peduncle up to 1 cm long; seeds light grey **57. *S. tetrathecum***
- 56:** Herbaceous perennial up to 30 cm; flowering peduncle 1–4 cm long; seeds yellow
- 57** Leaves oblong; flowering pedicel 10–15 mm long; calyx-lobes linear or narrow-triangular, 2–3 mm long **55. *S. esuriale***
- 57:** Leaves linear-oblong; flowering pedicel to 10 mm long; calyx-lobes triangular, 1–1.5 mm long **56. *S. tumulicola***

## GROUP VI

- 1** Leaves entire
- 2** Leaves linear-lanceolate or lanceolate, 8–15 mm wide
- 3** Leaves grey-green; corolla 15–20 mm diam., pale lavender **111. *S. petraeum***
- 3:** Leaves silvery; corolla 30–45 mm diam., purple **116. *S. tudununggae***
- 2:** Leaves lanceolate to elliptic or to ovate, 1–7 cm wide
- 4** Leaves rusty or silvery
- 5** Leaves ovate to elliptic, concolorous **109. *S. dioicum***
- 5:** Leaves lanceolate-elliptic, discolorous **110. *S. cunninghamii***
- 4:** Leaves green
- 6** Leaves distinctly discolorous; calyx 2-lipped (N.T.) **115. *S. asymmetriphyllum***
- 6:** Leaves concolorous or slightly discolorous; calyx not 2-lipped (W.A.) **117. *S. vansittartensis***
- 1:** Leaves lobed
- 7** Lobes cut almost to midrib
- 8** Lobes 3–5, oblong to broadly triangular (Qld) **113. *S. carduiforme***
- 8:** Lobes 4–14, linear (W.A.)
- 9** Leaves 9–25 cm long, silvery, the lobes 1–17 cm long, 5–10 mm wide **116. *S. tudununggae***
- 9:** Leaves 3–6 cm long, green, the lobes 2–20 mm long, 1–3 mm wide **112. *S. cataphractum***
- 7:** Lobes cut no more than half way to midrib

- 10 Leaves discolorous, with 5–7 broadly triangular lobes (N.T.)
- 10: Leaves concolorous, with 6–14 tooth-like or narrowly triangular lobes (W.A.)
- 11 Leaves pubescent with minute stellate and glandular hairs; lobes triangular
- 11: Leaves glabrous or nearly so; glandular hairs absent; lobes narrow-linear

115. *S. asymmetriphyllum*114. *S. leopoldensis*112. *S. cataphractum*

## GROUP VII

- 1 Berry mostly enclosed in or surrounded by lobes of persistent calyx
- 2 Berry red
  - 3 Corolla 35–50 mm diam., white or pale blue; berry 15–20 mm diam.; fruiting calyx prickly
  - 3: Corolla 20–30 mm diam., violet or purple; berry 5–8 mm diam.; fruiting calyx not prickly
  - 4 Leaves 3.5–12 cm long; length : width less than 2.5:1; fruiting pedicel 10–15 mm long; fruiting calyx-lobes 6–15 mm long
  - 4: Leaves 2–6 cm long; length : width over 2.5:1; fruiting pedicel 6–10 mm long; fruiting calyx-lobes 5–8 mm long
- 2: Berry green, yellow or white
  - 5 All parts pubescent with stellate and glandular hairs
  - 5: Glandular hairs absent or confined to calyx of bisexual flowers
  - 6 Flowers all bisexual; berry becoming hard and bony
    - 7 Leaves usually rusty-green, concolorous, undulate or shallowly lobed; inflorescence to 22-flowered
    - 7: Leaves usually grey-green, slightly to distinctly discolorous, shallowly to deeply lobed; inflorescence 3–10-flowered
  - 6: Basal flower bisexual, other flowers male; berry not becoming hard and bony
    - 8 Glandular hairs present on calyx of bisexual flower; berry 15–20 mm diam., slightly bilobed
    - 8: Glandular hairs usually absent; berry 20–40 mm diam., globular or ellipsoid
    - 9 Fruiting calyx-lobes triangular to broadly angular, 10–25 mm long
    - 9: Fruiting calyx-lobes narrowly triangular, linear, or triangular with a linear tip, 20–50 mm long
    - 10 Indumentum bright yellow-green; pedicel of bisexual flower 2.5–4 cm long; fruiting calyx-lobes finally becoming reflexed
    - 10: Indumentum usually grey-green; pedicel of bisexual flower 10–20 mm long; fruiting calyx-lobes never reflexed
    - 11 Bisexual flower 40–50 mm diam.; male flowers 30–40 mm diam.; fruiting pedicel to 2.5 cm long
    - 11: Bisexual flower 30–35 mm diam.; male flowers 20–25 mm diam.; fruiting pedicel 25–55 mm long
- 1: Berry mostly enclosed in enlarged calyx-tube

29. *S. sisymbriifolium*42. *S. densevestitum*53. *S. nemophilum*96. *S. campanulatum*75. *S. eardleyae*76. *S. petrophilum*108. *S. oedipus*100. *S. beaugleholei*104. *S. clarkiae*101. *S. phlomoides*102. *S. chippendalei*

- 12 Leaves lobed
- 13 Flowers yellow, zygomorphic; berry erect, dry and papery **28. *S. rostratum***
- 13: Flowers purplish, actinomorphic; berry usually pendant, not dry and papery
- 14 Flowers solitary, rarely numerous with basal one bisexual and upper ones male
- 15 Leaves lobed almost to midvein
- 16 Lobes 3–5, oblong to broadly triangular (Qld) **113. *S. carduiforme***
- 16: Lobes 4–14, linear (W.A.)
- 17 Leaves 3–6 cm long, green, the lobes 6–14, 2–20 mm long, 1–3 mm wide **112. *S. cataphractum***
- 17: Leaves 9–25 cm long, silvery, the lobes 4–8, 1–17 cm long, 5–10 mm wide **116. *S. tudununggae***
- 15: Leaves lobed no more than half way to midvein
- 18 Leaves green, concolorous, the lobes tooth-like or narrowly triangular
- 19 Leaves pubescent with minute stellate and glandular hairs, the lobes triangular **114. *S. leopoldensis***
- 19: Leaves glabrous or nearly so, without glandular hairs, the lobes narrowly linear **112. *S. cataphractum***
- 18: Leaves dull green or yellow-green, sometimes discolorous, the lobes broadly triangular
- 20 Inflorescence more than 1-flowered; basal flower bisexual, upper ones male; upper leaves sessile (W.A.)W.A.) **107. *S. heteropodium***
- 20: Flowers solitary; upper leaves petiolate (N.T.) **115. *S. asymmetriphyllum***
- 14: Flowers 1–15 on each peduncle but never regularly 1, usually all bisexual
- 21 Indumentum on stems, calyx and young shoots rusty-red or orange-brown **79. *S. gilesii***
- 21: Indumentum on all parts grey-green, yellow-green or purple-green
- 22 Stems prostrate or sprawling
- 23 Leaves distinctly discolorous; fruiting peduncle and axis 5–17 cm long; fruiting calyx 10–15 mm diam. **69. *S. lucani***
- 23: Leaves slightly discolorous; fruiting peduncle and axis 2–6 cm long; fruiting calyx 20–25 mm diam. **70. *S. seitheae***
- 22: Stems erect or almost so
- 24 Anthers opening by longitudinal slits; fruiting calyx 7–10 mm diam., prickles rare or absent **73. *S. karsensis***
- 24: Anthers opening by terminal pores; fruiting calyx 10–20 mm diam., prickles abundant
- 25 Indumentum yellow-green; stellate hairs frequently with glandular tips; fruiting calyx not woolly-pubescent **81. *S. gabrielae***
- 25: Indumentum usually grey-green or purplish; stellate hairs never with glandular tips; fruiting calyx woolly-pubescent **78. *S. lasiophyllum***
- 12: Leaves entire or slightly undulate

- 26** Flowers always solitary
- 27** Leaves usually 1–1.5 cm wide
- 28** Leaves concolorous, silvery green; 15–20 cm long; calyx with scattered prickles **116. S. tundununggae**
- 28:** Leaves discolorous, mostly 3–7 cm long; calyx densely prickly
- 29** Leaves usually rusty-green, lanceolate-elliptic; berry c. 20 mm diam. **110. S. cunninghamii**
- 29:** Leaves never rusty-green, lanceolate-elliptic; berry c. 20 mm diam. **111. S. petraeum**
- 27:** Leaves usually 2–7 cm wide
- 30** Fruiting pedicel up to 15 mm long, erect; fruit splitting around circumference to form a loose cap **117. S. vansittartensis**
- 30:** Fruiting pedicel 15–30 mm long, deflexed or nodding; fruit not splitting around circumference
- 31** Leaves rusty or silvery, concolorous; calyx densely prickly **109. S. dioicum**
- 31:** Leaves green, discolorous; calyx with scattercattered prickles **115. S. asymmetriphyllum**
- 26:** Flowers 2–15 on each peduncle
- 32** Stems prostrate or sprawling
- 33** Leaves distinctly discolorous; inflorescence 6–15-flowered; fruiting peduncle and axis 5–17 cm long, usually with 3–10 fruits **69. S. lucani**
- 33:** Leaves slightly discolorous; inflorescence 2–8-flowered; fruiting peduncle and axis 2–6 cm long, usually with 1–4 fruits
- 34** Leaves 1–4.5 cm wide, bright rusty-green or rarely grey-green; fruiting calyx 10–15 mm diam.; berry depressed-globular, squarish in outline **68. S. echinatum**
- 34:** Leaves 3–9 cm wide, grey-green; fruiting calyx 20–25 mm diam.; berry globular, round in outline **70. S. seitheae**
- 32:** Stems erect or almost so
- 35** Anthers opening by longitudinal slits; fruiting calyx 7–10 mm diam.; seeds 4–5 mm long **73. S. karsensis**
- 35:** Anthers opening by terminal pores; fruiting calyx 10–20 mm diam.; seeds less than 4 mm long
- 36** Indumentum bright rusty- or orange-brown
- 37** Inflorescence 2–5-flowered; peduncle too 4 cm long; berry depressed-globular, squarish in outline **68. S. echinatum**
- 37:** Inflorescence 1–2-flowered; peduncle to 5 mm long; berry globular, circular in outline **79. S. gilesii**
- 36:** Indumentum grey-green, yellow-green or white
- 38** Indumentum yellow-green, the hairs often glandular-stellate
- 39** All parts silky-pubescent; flowers all biisexual; fruiting calyx densely pubescent **81. S. gabrielae**
- 39:** All parts woolly-pubescent; lower flolowers bisexual, upper ones male; fruiting calyx sparsely pubescent **80. S. ashbyae**



- 38:** Indumentum grey-green or white, the stellate hairs not glandular
- 40** Indumentum white, densely woolly on all parts; corolla shallowly campanulate; fruiting peduncle and axis to 4 cm long
- 40:** Indumentum grey-green, dense but not woolly on all parts; corolla not shallowly campanulate; fruiting peduncle and axis 3–9 cm long
- 41** Leaves concolorous; berry globular or ovoid, rarely conical or ellipsoid, yellow
- 41:** Leaves slightly discolorous; berry depressed-globular, squarish in outline, pale green

**77. *S. lachnophyllum*****78. *S. lasiophyllum*****68. *S. echinatum*****GROUP VIII**

- 1** Berry red, orange-red or blackish-red
- 2** Inflorescence forked
- 3** Lower leaf-surface glabrous **34. *S. viride***
- 3:** Lower leaf-surface densely pubescent
- 4** Large shrub or small tree; prickles 2–5 mm long, stout and conical ***S. giganteum* †**
- 4:** Clonal shrub; prickles to 15 mm long, slender and straight **35. *S. semiarmatum***
- 2:** Inflorescence simple
- 5** Leaves linear or nearly so, 2–14 mm wide
- 6** Leaves concolorous or slightly discolorous, usually prickly, often with 2 basal lobes **38. *S. ferocissimum***
- 6:** Leaves distinctly discolorous, with few or no prickles, rarely with basal lobes
- 7** Corolla deeply incised, 10–15 mm diam.; berry 5–8 mm diam. **37. *S. parvifolium***
- 7:** Corolla shallowly stellate, 25–30 mm diam.; berry 10–15 mm diam. **44. *S. elegans***
- 5:** Leaves lanceolate, elliptic or ovate, 1–14 cm wide
- 8** Stems densely to moderately prickly
- 9** Stems often almost obscured by prickles; berry 8–12 mm diam.; corolla 10–20 mm diam. **35. *S. semiarmatum***
- 9:** Stems never obscured by prickles; berry 10–20 mm diam.; corolla usually 20–35 mm diam.
- 10** Pedicels and calyx with stellate, simple and glandular hairs **90. *S. inaequilaterum***
- 10:** Pedicels and calyx with stellate hairs only
- 11** Leaves ovate **89. *S. sporadotrichum***
- 11:** Leaves elliptic
- 12** Stellate hairs on lower surfaces of mature leaves sparse or confined to veins; fruiting pedicels 20–30 mm long, distinctly thickened **88. *S. macoorai***
- 12:** Stellate hairs on lower surfaces of mature leaves dense; fruiting pedicels 10–15 mm long, not distinctly thickened

- 13 Corolla deeply incised, about 20 mm diam., white or violet **39. S. corifolium**
- 13: Corolla shallowly incised, 25–30 mm diam., purple or heliotrope **44. S. elegans**
- 8: Stems with scattered prickles
- 14 Leaves discolorous, usually with 2–4 basal lobes
- 15 Corolla 30 mm diam., purple or heliotrope; berry 10–15 mm diam. **44. S. elegans**
- 15: Corolla 10–20 mm diam., pale lilac or white; berry 5–9 mm diam. **45. S. chenopodium**
- 14: Leaves concolorous or discolorous, entire or lobed throughout
- 16 Leaves concolorous, usually sparsely pubescent or glabrous on both surfaces
- 17 Pedicel and calyx with stellate, simple and glandular hairs **90. S. inaequilaterum**
- 17: Pedicel and calyx with stellate hairs only
- 18 Berry 10–15 mm diam.; lower flowers bisexual, upper male **41. S. discolor**
- 18: Berry 15–20 mm diam.; flowers all bisexual
- 19 Leaves elliptic; mature leaves glabrous except along veins **88. S. macoorai**
- 19: Leaves ovate; mature leaves sparsely pubescent on both surfaces, sometimes densely so on lower surface **89. S. sporadotrichum**
- 16: Leaves slightly to distinctly discolorous, at least the lower surface densely pubescent
- 20 Leaves slightly discolorous, densely pubescent on upper surface; berry 5–8 mm diam. **43. S. nemophilum**
- 20: Leaves distinctly discolorous, sparsely pubescent on upper surface; berry 5–15 mm diam.
- 21 Inflorescence usually opposite a leaf; lower flowers bisexual, upper male; seeds 4–5 mm long, hairy (N.T.) **40. S. yirrkalensis**
- 21: Inflorescence usually from internode; all flowers bisexual; seeds 1.5–3.5 mm long, glabrous (Qld, N.S.W.)
- 22 Berry 5–10 mm diam.; hairs on lower leaf-surface often woolly, brown **36. S. stelligerum**
- 22: Berry 10–15 mm diam.; hairs on lower leaf-surface minute, white, pale yellow or silvery
- 23 Corolla deeply incised, about 20 mm diam.; leaves elliptic **39. S. corifolium**
- 23: Corolla shallowly incised, 25–30 mm diam.; leaves linear to lanceolate **44. S. elegans**
- 1: Berry green, yellow or purple, often drying to brown or black
- 24 Inflorescence forked
- 25 Clonal perennial herbs; corolla purple; berry 15–30 mm diam.

- 26 Stems with few prickles; leaves lobed; flowers all bisexual; berry 15–20 mm diam. (Qld) **46. *S. dimidiatum***
- 26: Stems with abundant prickles; leaves entire; basal flower bisexual, the others male; berry 30 mm diam. (W.A.) **100. *S. beaugleholei***
- 25: Large shrubs or small trees; corolla white; berry 10–15 mm diam.
- 27 Mature leaves discolorous, up to 7-lobed; flowers 25 mm diam.; pedicels with stellate and glandular hairs **31. *S. torvum***
- 27: Mature leaves concolorous, 7–13-lobed; flowers 30–45 mm diam.; pedicels with stellate hairs only **30. *S. hispidum***
- 24: Inflorescence simple
- 28 Leaves usually 10–30 cm wide; corolla white; berry densely hairy **27. *S. ferox***
- 28: Leaves usually 1–10 cm wide, if wider then corolla usually purple; berry glabrous
- 29 Berry 3–10 cm diam.
- 30 Berry usually more than 10 cm long, purple ***S. melongena* †**
- 30: Berry 3–4 cm diam., yellow
- 31 Leaves at least 6 cm wide, with distinctive white indumentum along margins of upper surface (S.A., Vic., Tas.) **98. *S. marginatum***
- 31: Leaves 1.5–4.5 cm wide, densely pubescent on upper surface, grey-green (W.A.) **101. *S. phlomoides***
- 29: Berry usually up to 3 cm diam.
- 32 Inflorescence with one bisexual flower at base, male flowers above; berry 1.5–3 cm diam, always solitary.; seeds black
- 33 Leaves deeply lobed, cut more than half way to midvein
- 34 Fruiting calyx-lobes broadly triangular, appressed **105. *S. diversiflorum***
- 34: Fruiting calyx-lobes narrow, triangular to elliptic, not appressed
- 35 Bisexual flower 40–45 mm diam.; fruiting calyx strongly reflexed at maturity **103. *S. melanospermum***
- 35: Bisexual flower 30–35 mm diam.; fruiting calyx never reflexed
- 36 Lower lobes of leaf often cut 2–3 mm from midvein; flowering calyx to 10 mm long; fruiting calyx-lobes 1–1.5 cm long **106. *S. eburneum***
- 36: Lower lobes of leaf rarely cut 2–3 mm from midvein; flowering calyx 10–30 mm long; fruiting calyx-lobes 2–2.5 cm long **102. *S. chippendalei***
- 33: Leaves entire, shallowly lobed or with several basal lobes
- 37 Mature fruiting calyx strongly reflexed
- 38 Indumentum rusty-green; stems with scattered prickles; fruiting calyx-lobes ovate-lanceolate or elliptic, 1–1.5 cm long **103. *S. melanospermum***
- 38: Indumentum yellow-green; stems with abundant prickles; fruiting calyx-lobes more or less linear, 2.5–5 cm long **104. *S. clarkiae***
- 37: Mature fruiting calyx loosely appressed to or raised from berry, never reflexed

- 39** Fruiting calyx-lobes triangular to broadly angular; leaves entire **100. *S. beaugleholei***
- 39:** Fruiting calyx-lobes narrowly triangular or broadly triangular with linear apex; leaves entire or shallowly lobed
- 40** Leaves elliptic to ovate-elliptic, entire; bisexual flower 40–50 mm diam., male flowers 30–40 mm diam.; fruiting pedicel to 2.5 cm long **101. *S. phlomoides***
- 40:** Leaves ovate, entire or shallowly lobed; bisexual flower 30–35 mm diam.; male flowers 20–25 mm diam.; fruiting pedicel 2.5–5.5 cm long **102. *S. chippendalei***
- 32:** Flowers all bisexual, rarely lower ones bisexual, upper ones male; berry usually less than 15 mm diam.; Seeds not black
- 41** Leaves orbicular, broadly ovate or ovate-elliptic, usually up to 30 mm long
- 42** Leaves orbicular
- 43** Leaves 4–15 mm diam., petiole 2–4 mm long, often with a pair of spines at base **49. *S. nummularium***
- 43:** Leaves 15–35 mm diam., petiole 5–10 mm long, usually without paired spines at base **48. *S. orbiculatum***
- 42:** Leaves broadly ovate or ovate-elliptic
- 44** Leaves ovate-elliptic; corolla stellate, deeply incised; berry 10–15 mm diam. **58. *S. elachophyllum***
- 44:** Leaves broadly ovate; corolla rotate; berry 4–10 mm diam. **72. *S. oligacanthum***
- 41:** Leaves not orbicular, broadly ovate or ovate-elliptic, or if so, more than 30 cm long
- 45** Scrambling or sprawling shrubs, rarely erect, to 5 m; prickles on stems usually distinctly recurved
- 46** Inflorescence a corymb, more than 12-flowered; fruiting pedicels 1–2 cm long; berry 10–15 mm diam. **31. *S. torvum***
- 46:** Inflorescence a cyme, less than 12-flowered; fruiting pedicels 2–4 cm long; berry 15–35 mm diam.
- 47** Rampant scrambling shrub; stellate hairs on lower leaf-surface yellow, in one layer **94. *S. hamulosum***
- 47:** Erect or sprawling shrub; stellate hairs on lower leaf-surface white, in several layers **95. *S. dimorphispinum***
- 45:** Shrubs to 3 m, often clonal but not scrambling; prickles on stems straight, rarely slightly curved
- 48** Corolla campanulate
- 49** Corolla deeply campanulate; indumentum, if present, of similar density on both leaf-surfaces
- 50** Indumentum moderately dense; berry 20–25 mm diam. **96. *S. campanulatum***
- 50:** Indumentum sparse or absent; berry 15 mm diam. **82. *S. prinophyllum***
- 49:** Corolla shallowly campanulate; indumentum sparse on upper leaf-surface, denser on lower surface

- 51** Berry 25–30 mm diam., yellow; inflorescence a cluster of 1–3 flowers **85. *S. pungetium***
- 51:** Berry 15–20 mm diam., dark brown; inflorescence a 3–7-flowered cyme **97. *S. cinereum***
- 48:** Corolla rotate or stellate
- 52** Leaves plicately folded, or distinctly lobed usually at least a quarter way to midvein
- 53** Leaves 5–10 mm wide, margins plicately folded **51. *S. plicatile***
- 53:** Leaves usually more than 10 mm wide, margins lobed
- 54** Lower leaf-surface sparsely pubescent or almost glabrous
- 55** Anthers 2–2.5 mm long; berry 15 mm diam., green or purple **82. *S. prinophyllum***
- 55:** Anthers 5–6 mm long; berry 20–30 mm diam., brown or black **99. *S. hermanni***
- 54:** Lower leaf-surface densely to moderately pubescent
- 56** Hairs sparse on upper leaf-surface
- 57** Berry 20–30 mm diam.; leaves concolorous or slightly discolorous
- 58** Berry yellow; inflorescence a 1–3-flowered cluster; **85. *S. pungetium***
- 58:** Berry brown or black; inflorescence a 1–6-flowered raceme **99. *S. hermanni***
- 57:** Berry 10–25 mm diam.; leaves usually distinctly discolorous
- 59** Prickles bright red or orange-red; flowering calyx-lobes 1–1.5 mm long; berry 10–15 mm diam. **62. *S. lacunarium***
- 59:** Prickles pale yellow or pale orange; flowering calyx-lobes 2.5–5 mm long; berry 15–25 mm diam.
- 60** Lower leaf-surface densely woolly-pubescent; flowering calyx-lobes triangular **93. *S. brownii***
- 60:** Lower leaf-surface not woolly-pubescent; flowering calyx-lobes usually linear **97. *S. cinereum***
- 56:** Hairs dense to moderately dense on upper leaf-surface
- 61** Berry hard and bony, the fruiting calyx-lobes firmly appressed to it **76. *S. petrophilum***
- 61:** Berry mucilaginous, the fruiting calyx-lobes not firmly appressed to it
- 62** Plant pubescent with stellate and glandular hairs
- 63** Leaves green; glandular hairs abundant; inflorescence to 2 cm long **60. *S. adenophorum***
- 63:** Leaves rusty-green; glandular hairs not abundant; inflorescence 2–6 cm long **61. *S. eremophilum***

- 62:** Plants pubescent with stellate hairs only
- 64** Leaf-lobes broadly triangular to oblong; axis of inflorescence 2–5 cm long; berry 15–20 mm diam. (Qld) **46. *S. dimidiatum***
- 64:** Leaf-lobes rounded; axis of inflorescence 0.5 cm long; berry 5–10 mm diam. (W.A.) **50. *S. oldfieldii***
- 52:** Leaves entire or shallowly lobed
- 65** Leaves shallowly lobed
- 66** Lower leaf-surface sparsely pubescent; flowering peduncle 2–4 cm long **83. *S. multiglochidiatum***
- 66:** Lower leaf-surface densely to moderately pubescent; flowering peduncle usually less than 2 cm long
- 67** Leaves often distinctly discolorous, upper surface sparsely pubescent
- 68** Corolla deeply incised; lower flowers bisexual, upper ones male; berry broadly ovoid **91. *S. dallachii***
- 68:** Corolla rotate or shallowly incised; all flowers bisexual; berry globular or depressed-globular
- 69** Lower leaf-surface densely woolly-pubescent, the hairs pale yellow or pale green; Seeds 2.5–3.5 mm long **93. *S. brownii***
- 69:** Lower leaf-surface moderately woolly-pubescent or not woolly, the hairs bright yellow or rusty; Seeds 1.5–2 mm long **92. *S. furfuraceum***
- 67:** Leaves concolorous or slightly discolorous, the upper surface densely pubescent
- 70** Berry hard and bony, the calyx-lobes firmly appressed to it **76. *S. petrophilum***
- 70:** Berry not hard or bony, the calyx-lobes not firmly appressed to it
- 71** Stems sprawling; berry pale yellow-green or slightly purplish
- 72** Corolla pale lavender, 10–15 mm diam., or often not opening; berry 10–13 mm diam. **66. *S. cleistogamum***
- 72:** Corolla purple 15–20 mm diam., always opening; berry 15–20 mm diam. **67. *S. horridum***
- 71:** Stems erect; berry orange-brown, yellow-brown or yellow
- 73** Corolla rotate-pentagonal; young shoots and inflorescence usually rusty-green **50. *S. oldfieldii***
- 73:** Corolla rotate-stellate; young shoots usually grey-green or silvery-green
- 74** Prickles usually red; leaves silvery-green; flowering peduncle to 1 cm long; anthers 5–8 mm long **47. *S. elaeagnifolium***
- 74:** Prickles never red; leaves grey-green or pale green; flowering peduncle 1–4 cm long; anthers 4–5 mm long **55. *S. esuriale***

- 65:** Leaves entire or slightly undulate
- 75** Upper leaf-surface sparsely pubescent or glabrous
- 76** Lower leaf-surface sparsely pubescent **83. *S. multiglochidiatum***
- 76:** Lower leaf surface densely to moderately pubescent
- 77** Leaves oblong or lanceolate, the length more than 2.5 times the width
- 78** Leaves lanceolate, the lower surface densely woolly-pubescent; berry 15–20 mm diam. **93. *S. brownii***
- 78:** Leaves oblong or ovate-oblong, the lower surface not woolly-pubescent; berry 10–15 mm diam. **57. *S. tetrathecum***
- 77:** Leaves broadly lanceolate or ovate to elliptic, the length less than 2.5 times the width
- 79** Indumentum on lower leaf-surface bright yellow or rusty; inflorescence 1 cm long, opposite a leaf; fruiting calyx-lobes usually 10–14 mm long **92. *S. furfuraceum***
- 79:** Indumentum on lower leaf-surface green or pale yellow; inflorescence 2–5 cm long, from internode; fruiting calyx-lobes about 5 mm long **91. *S. dallachii***
- 75:** Upper leaf-surface densely pubescent
- 80** Berry dry, yellow, finally brown or black
- 81** Plants pale or rusty yellow-green; leaves concolorous; berry brown, raisin-like; Seeds pale brown **53. *S. centrale***
- 81:** Plants silvery-green or grey-green; leaves discolorous; berry brown-black, the skin brittle; Seeds black **71. *S. sturtianum***
- 80:** Berry bony or mucilaginous, yellow, green, purple or orange-brown
- 82** Berry hard and bony, the lower half enclosed by calyx **74. *S. quadriloculatum***
- 82:** Berry succulent, the lower half not enclosed by calyx
- 83** Berry yellow-green, green or flushed with purple; stems sprawling or prostrate
- 84** Fruiting pedicels usually to 1.5 cm long
- 85** Stems with scattered prickles; corolla deeply incised, white or pale lavender; seeds light brown (Qld) **65. *S. dianthophorum***
- 85:** Stems densely prickly; corolla rotate, purple; Seeds dark grey-brown (W.A.) **67. *S. horridum***
- 84:** Fruiting pedicels usually 1.5–3 cm long

- 86** Stems to 10 cm long; corolla stellate; berry 8–10 mm diam. **63. *S. terraneum***
- 86:** Stems usually more than 10 cm long; corolla rotate to rotate-pentagonal or not opening; berry 10–20 mm diam.
- 87** Corolla always opening, 20–30 mm diam., purple; berry 15–20 mm diam. **64. *S. ellipticum***
- 87:** Corolla 10–15 mm diam. or not opening, pale lavender; berry 10–13 mm diam. **66. *S. cleistogamum***
- 83:** Berry yellow, yellow-brown or orange-brown; stems usually erect, rarely sprawling
- 88** Prickles usually scattered on leaves and petioles
- 89** Leaves silvery-green or rusty-green; flowering calyx-lobes awl-shaped; fruiting pedicels 2–3 cm long **47. *S. elaeagnifolium***
- 89:** Leaves dark green or grey-green; flowering calyx-lobes triangular; fruiting pedicels to 15 mm long
- 90** Prickles to 2 mm long; flowering calyx 2–3 mm long; seeds yellow **56. *S. tumulicola***
- 90:** Prickles to 10 mm long; flowering calyx 5–7 mm long; Seeds light grey **57. *S. tetrathecum***
- 88:** Prickles absent from leaves and petioles
- 91** Leaves ovate, more than 2 cm wide
- 92** Leaves grey-green; berry 10–15 mm diam.; Seeds 2–3 mm long **48. *S. orbiculatum***
- 92:** Leaves green or rusty-green; berry 5–10 mm diam.; Seeds 1–2 mm long **50. *S. oldfieldii***
- 91:** Leaves lanceolate to oblong, less than 2 cm wide
- 93** Leaves dark- or rusty-green; berry not more than 10 mm diam.; Seeds 1–2 mm diam.
- 94** Prickles to 8 mm long; calyx-lobes oblong-ovate **50. *S. oldfieldii***
- 94:** Prickles 2–3 mm long; calyx-lobes obtusely triangular **54. *S. hesperium***
- 93:** Leaves usually grey-, silvery- or pale-green; berry usually 10–15 mm diam., Seeds 2–3 mm diam.
- 95** Calyx 2–3 mm long; stellate hairs on the foliage minute **56. *S. tumulicola***
- 95:** Calyx 4–8 mm long; stellate hairs not minute



- 96** Peduncle 10–40 mm long; berry ovate, obovate or almost globular, the apex acute **55. *S. esuriale***
- 96:** Peduncle to 10 mm long; berry globular or depressed-globular
- 97** Prickles 2–5 mm long; pedicels 10–15 mm long; Seeds pale brown **52. *S. coactiliferum***
- 97:** Prickles to 10 mm long; pedicels usually 5–10 mm long; Seeds light grey **57. *S. tetrathecum***

† Primarily a cultivated species, except *S. douglasii* which is inadequately known in Australia; not treated further in this work.

### Sect. I. Solanum

Annuals, herbaceous perennials or short-lived shrubs, pubescent with glandular or simple, non-glandular hairs; prickles absent. Leaves simple, entire or lobed. Inflorescence a condensed, sub-umbellate cyme. Flowers usually small. Corolla stellate, white, often tinged with lavender or purple. Anthers oblong, dehiscing by terminal pores which may develop into short slits. Berry succulent, green, yellow, reddish or purple-black. Stone-cell granules sometimes present.

#### 1. *Solanum americanum* Miller, *Gard. Dict.* 8th edn, no. 5 (1768)

T: Cultivated Chelsea Physic Garden, origin Virginia, North America, *Miller s.n.*; lecto: BM, *fide* J. M. Edmonds, *J. Arnold Arbor.* 52: 634 (1971), photo ADW.

*S. nodiflorum* Jacq., *Collectanea* 2: 288 (1789) & *Icon. Pl. Rar.* 2: 11; t. 326 (1789).

T: Cultivated Vienna, origin Mauritius, Herb. Jacquin; lecto: BM, *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 28 (1974).

*S. nodiflorum* subsp. *nutans* R. Henderson, *Contr. Queensland Herb.* 16: 30; t. 2 (1974).

T: Indooroopilly, Qld, Apr. 1969, *R. J. F. Henderson* 518; holo: BRI 86633; iso: K, MEL, NSW.

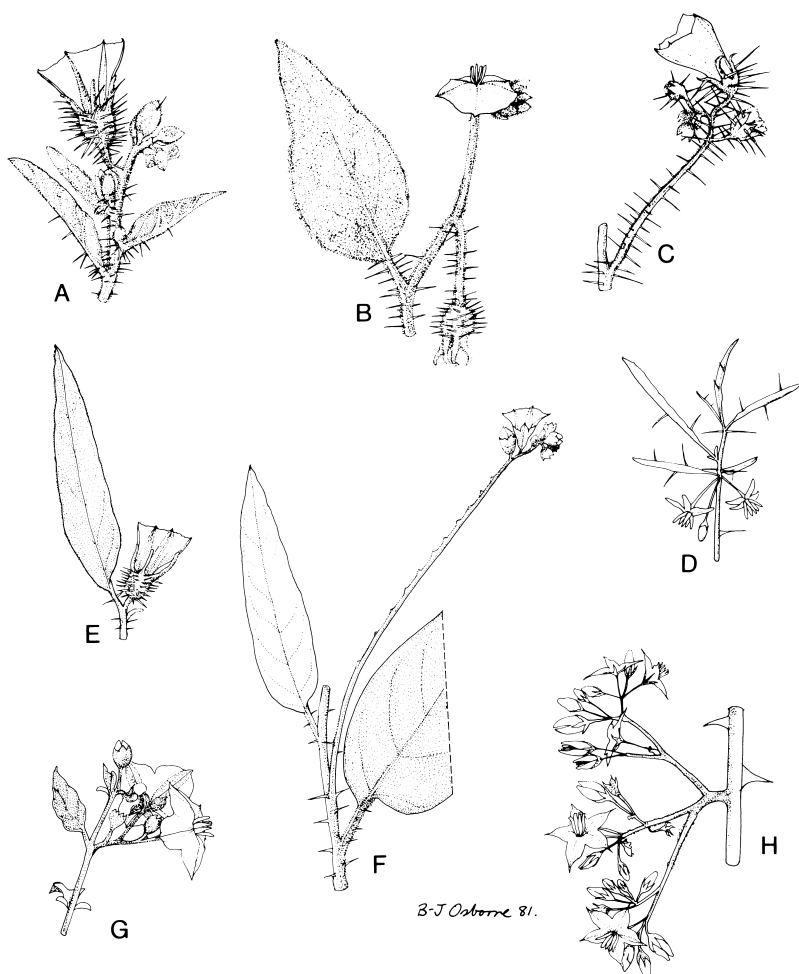
[*S. nigrum* auct. non L.; G. Bentham, *Fl. Austral.* 4: 446 (1869) *p.p.*]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 1 (1981).

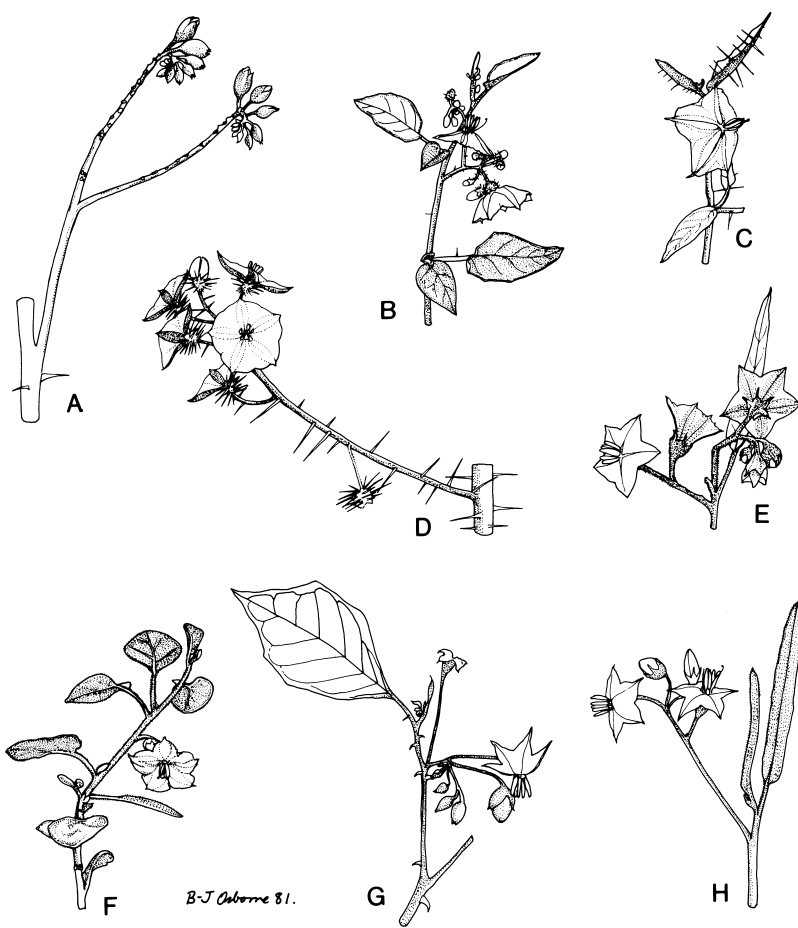
Erect or spreading herb or short-lived perennial shrub to 1.3 m, glabrous or sparsely pubescent with simple hairs, green or the stems and leaves often purplish; prickles absent. Stems often angled or narrowly winged. Leaves ovate or ovate-lanceolate; lamina 2–12 cm long, 1–7 cm wide, concolorous, entire or shallowly lobed; petiole 1–4 (occasionally to 9) cm long. Inflorescence short, 4–12-flowered; peduncle to 25 mm long, lengthening to 45 mm in fruit; pedicels 5–8 mm long. Calyx 1–2 mm long; lobes rounded, 0.4–1.2 mm long. Corolla deeply incised, usually 8–9 mm diam., white or flushed purple with yellow-green centre. Anthers 1.5–2 mm long. Berry globular, 6–9 mm diam., purple-black. Seeds 1–1.5 mm long, light fawn or purplish; stone-cell granules, if present, c. 0.5 mm diam. *n*=12. *Glossy Nightshade*.

A variable cosmopolitan weed in tropical and warm temperate regions. Occurs mainly in coastal areas of eastern Qld and N.S.W., where possibly indigenous or of pre-European introduction, and in scattered localities in Vic., W.A. and N.T. where naturalised from later introductions. Also on Lord Howe Is. Usually grows in disturbed habitats associated with human activities. Map 70.

W.A.: South Perth, *R. D. Royce* 8408 (PERTH). N.T.: Adelaide River, 22 Nov. 1972, *J. Holmes* (DNA, NT). Qld: Belmont, *S. L. Everist* 5606 (BRI). N.S.W.: Kogarah, *E. F. Constable* 5633 (NSW). Vic.: E of Marlo, 7 Feb. 1972, *J. H. Willis* (MEL).



**Figure 27.** *Solanum* inflorescences. **A–B**, *S. phlomoides*: 1 bisexual flower at base, upper flowers male; **A**–young inflorescence (D. E. Symon 10077, CANB); **B**–older inflorescence (D. E. Symon 10029, CANB). **C**, *S. campanulatum* (Cult. Adelaide ex Budgewoi, N.S.W., D. E. Symon, ADW). **D**, *S. ferocissimum* (Cult. Canberra ex G. Butler 869, CBG). **E–F**, *S. dioicum*: **E**–female, 1-flowered inflorescence (D. E. Symon 10161, CANB); **F**–male inflorescence (D. E. Symon 5335, CANB). **G**, *S. oldfieldii* (D. E. Symon 5450, CANB). **H**, *S. torvum* (C. J. Shepherd 731, CANB). All  $\times 0.5$ .



**Figure 28.** *Solanum* inflorescences. **A–C**, *S. asymmetriphyllum*; **A**–old, forked, male inflorescence (D. E. Symon 7173, CANB); **B**–young, unbranched male inflorescence (I. R. Telford 7638 & J. W. Wrigley, CBG); **C**–female, 1-flowered inflorescence, (I. R. Telford 7975 & J. W. Wrigley, CBG). **D**, *S. lucani* (W. Leutert 23, CANB). **E**, *S. brownii* (Walker, ANU 1111, CANB). **F**, *S. orbiculatum* subsp. *orbiculatum* (I. R. Telford 6666, CBG). **G**, *S. dimorphispinum* (V. K. Moriarty 1590, CANB). **H**, *S. esuriale* (Adams 1394, CANB). **B, C**  $\times 0.25$ , others  $\times 0.5$ .

There is still some disagreement as to the correct name; previously called *S. nodiflorum* Jacq. in much Australian literature.

**2. *Solanum opacum* A. Braun & Bouché, *Index Sem. Hort. Berol.* App. 8: 18, no. 39 (1853)**

T: Cultivated at Berlin Botanical Gardens from seeds from Australia, *Listeman*; holo: B, destroyed; Broad Sound, Sept. 1802, *R. Brown*; neo: NSW 125341; iso: K, MEL, *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 39 (1974).

[*S. nigrum* auct. non L.; G. Benth, *Fl. Austral.* 4: 446 (1869) *p.p.*]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 2 (1981).

Sprawling, almost prostrate annual herb to 1 m diam., green, pubescent with minute glandular and simple non-glandular hairs; prickles absent. Leaves ovate-lanceolate; lamina 3–6 cm long, usually 1–2 cm wide, concolorous, usually shallowly lobed; petiole 1–4 cm long. Inflorescence 2–5-flowered; peduncle 15–20 mm long; rachis 2–3 cm long; pedicels 7–10 mm long. Calyx 2–3 mm long; lobes rounded or broadly triangular, to 1 mm long. Corolla stellate, 8–12 mm diam., white. Anthers 1.5–2 mm long. Berry globular, 8–10 mm diam., green when ripe. Seeds 1.8–2.2 mm long, pale fawn tinged with green. Stone-cell granules 0.8 mm diam. *n*=36. *Green-berry Nightshade*.

Occurs in eastern Australia from northern Qld to Tas. and south-eastern S.A. Also in P.N.G. Grows in wetter areas along creeks, rainforest clearings and open eucalypt woodland, usually in red earths and shales. Map 71.

S.A.: Upper Murray River, *D. E. Symon 11586* (ADW). Qld: Brisbane, 24 Jan. 1965, *H. E. Kleinschmidt* (BRI). N.S.W.: Griffith district, Apr. 1943, *L. Fraser* (NSW). Vic.: near Tubbut, *A. C. Beaglehole 33110* (MEL). Tas.: near Bell Bay, *R. C. Gunn 51/1842* (HO).

**3. \**Solanum furcatum* Dunal ex Poiret, *Encycl. Suppl.* 3: 750 (1814)**

T: Peru, *Dombey*; holo: P *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 3 (1981).

Straggling perennial herb with stems to 1 m long, green or purplish-green, sparsely pubescent with minute simple hairs; prickles absent. Leaves ovate-lanceolate; lamina 3–10 cm long, 2–5 cm wide, slightly discolorous, entire or shallowly lobed; petiole 1–3 cm long, usually winged in upper part. Inflorescence usually forked, to 24-flowered; peduncle 10–25 mm to first fork; pedicels 1 cm long. Calyx 2–3 mm long; lobes broadly triangular or rounded, 1–1.5 mm long. Corolla stellate, 15–20 mm diam., white with yellow centre. Anthers 2.3–3.3 mm long. Berry globular, 6–9 mm diam., purplish-black. Seeds 2 mm long, light brown. Stone-cell granules to 1.2 mm long. *n*=24.

Native to South America. Possibly naturalised in Vic. and Tas. but known from only a few collections. Map 72.

Vic.: Mornington Peninsula, 24 Feb. 1963, *J. H. Willis* (MEL). Tas.: near Smithton, May 1947, *W. M. Curtis* (HO).

**4. \**Solanum chenopodioides* Lam., *Tabl. Encycl.* 2: 18 (1794)**

T: Mauritius; holo: P, Herb. Lam., *n.v.*, *fide* C. D. Morton, *Revision Argentine Sp. Solanum* 145 (1976), photo ADW.

*S. gracile* Dunal, in DC., *Prodr.* 13(1): 54 (1852), non *S. gracile* Sendtner, in Martius, *Fl. Bras.* 10:

13 (1846); *S. gracilius* Herter, *Rev. Sudam. Bot.* 7: 226 (1943), based on *S. gracile* Dunal.

T: Rio de Janeiro, Brazil, *Gaudichaud* 520; syn: G-DC, P n.v., *fide* J. M. Edmonds, *J. Arnold Arbor.* 52: 226 (1971); Buenos-Aires, Argentina, *Commerson*; syn: P n.v., *fide* J. M. Edmonds, *loc. cit.*; Montevideo, Uruguay, *Commerson & Gay*; syn: P n.v., *fide* J. M. Edmonds, *loc. cit.*; cultivated Montpellier; lecto: G-DC n.v., *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 46 (1974), *Austrobaileya* 1: 20 (1977).

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 4 (1981).

Sprawling perennial herb to 1 m, green or grey-green, pubescent with simple hairs; prickles absent. Leaves ovate to lanceolate, the lamina usually 4–7 cm long, and 2–4 cm wide, discolourous, entire or shallowly lobed; petiole to 5 cm long. Inflorescence short, 5–10-flowered; peduncle 1–2 cm long, slightly longer in fruit; pedicels 5–8 mm long. Calyx 1–3.5 mm long; lobes rounded, 0.5–1.5 mm long. Corolla deeply incised, 12–20 mm diam., white. Anthers 2.5–3.5 mm long. Berry globular, 5–9 mm diam., black. Seeds 1–1.8 mm long, light brownish-yellow. *n*=12. *Whitetip Nightshade*. Fig. 29A.

Native to Argentina; naturalised in North America, Europe, Australia and N.Z. Occurs in coastal and subcoastal areas of south-eastern Qld, N.S.W. and eastern Vic. Grows in gullies and on river banks. Map 73.

Qld: Brisbane, *R. Henderson* 301 (BRI). N.S.W.: near Bodalla, *L. Haegi* 1756 (ADW, NSW); near Nelligen, *R. Pullen* 3964 (CANB). Vic: East Gippsland, *A. C. Beauglehole* 37803 (MEL).

## 5. \**Solanum nigrum* L., *Sp. Pl.* 1: 186 (1753)

T: Central Asia, Herb. Linnaeus no. 248.18; lecto: LINN n.v., *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 25 (1974), microfiche AD.

*S. nigrum* subsp. *schultesii* (Opiz) Wessely, *Repert. Spec. Nov. Regni Veg.* 63: 311 (1960); *S. schultesii* Opiz, in Bercht., *Oekon.-techn. Fl. Bähm.* 3: 20 (1843).

T: Hb. Opiz no. 8188; holo: PR n.v.

[*S. opacum* auct. non A. Br. & Bouché; E. Cheel, *Proc. Linn. Soc. New South Wales* 42: 595 (1917)]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 5 (1981).

Herb or short-lived perennial shrub, dark green or purple-green, pubescent with glandular and simple, non-glandular hairs; prickles absent. Leaves ovate, the lamina up to 13 cm long and 7 cm wide, concolorous, entire or shallowly lobed; petiole 1–3 (occasionally to 7) cm long, narrowly winged in upper portion. Inflorescence short, 4–12-flowered; peduncle 1–2 cm long; pedicels c. 7 mm long. Calyx 1.5–2.2 mm long; lobes triangular, 0.3–1.2 mm long. Corolla stellate, 8–12 mm diam., white. Anthers 2 mm long. Berry globular, 6–8 (sometimes to 11) mm diam., dull black or purple-black; fruiting peduncle sharply deflexed. Seeds 1.8–2.2 mm long, fawn. *n*=36. *Black-berry Nightshade*.

Cosmopolitan weed, naturalised in all Australian States; most common in settled areas with winter rainfall but extending to arid and wet-tropical areas. Also on Lord Howe Is. Map 74.

W.A.: Kalbarri National Park, *P. G. Wilson* 6754 (PERTH). S.A.: Yorketown, *N. N. Donner* 725 (AD). N.S.W.: 58 km NNW of Wilcannia, *B. G. Briggs* 2724 (NSW). Vic.: Rickett's Point, Port Phillip Bay, *H. I. Aston* 937 (MEL). Tas: Pittwater, 19 Aug. 1951, *W. M. Curtis* (HO).

Reportedly toxic, but often confused with other species and identity of toxic plants uncertain. Very variable species with many varieties and forms described overseas.

**6. \*Solanum retroflexum** Dunal, in DC., *Prodr.* 13(1): 50 (1852)

T: 'In promont. Bonae Spei, in 1838, (*Drège* 7864); in Arabiâ circa Taifa (a Mus. Paris, mihi comm. n. 29)'; syn: G–DC *n.v.*, *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 60 (1974), microfiche AD.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 6 (1981).

Spreading, rounded annual herb, bright green, pubescent with simple hairs; prickles absent. Leaves ovate to ovate-lanceolate, the lamina 4–8 cm long, 2–5 cm wide, slightly discoloured, lobed; petiole to 4 cm long. Inflorescence short, 3–6-flowered; peduncle to 13 mm long; pedicels 4–6 mm long. Calyx 2–5.5 mm long; lobes triangular, 1–1.5 mm long. Corolla stellate, 12–14 mm diam., white. Anthers 1.5 mm long. Berry globular, 6–9 mm diam., occasionally smaller, dull black. Seeds 1.8–2 mm long, light brownish-yellow or purple. *n*=24.

Originally from South Africa. Sparingly naturalised on Eyre Peninsula and north end of Yorke Peninsula, S.A. Map 75.

S.A.: Pillie Waterhole, Eyre Peninsula, *C. R. Alcock* 1268 (AD), and 2099 (ADW).

**7. \*Solanum sarrachoides** Sendtner, in Martius, *Fl. Bras.* 10: 18 (1846)

T: Southern Brazil, *Sellow s.n.*; holo: B destroyed, *fide* C. V. Morton, *Revision Argentine Sp. Solanum* 122 (1976); syn: P *n.v.*, *fide* J. M. Edmonds, *Kew Bull.* 27: 102 (1972); Chile, *Pâppig s.n.*, *n.v.*

*S. nitidibaccatum* Bitter, *Repert. Spec. Nov. Regni Veg.* 11: 208 (1912), based on *S. sarrachoides* p.p.

T: Chile, *Pâppig* ?538; ?iso: F *n.v.*, *fide* J. M. Edmonds, *loc. cit.*; ?iso: A, W *n.v.*, *fide* R. J. F. Henderson, *Contr. Queensland Herb.* 16: 50 (1974); iso: W *n.v.*, *fide* C. V. Morton, *op. cit.* 124.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 7 (1981).

Sprawling annual herb to 50 cm, pale green to dark green, pubescent with glandular hairs; prickles absent. Leaves ovate, the lamina to 6 cm long, commonly c. 3 cm, 2–4 cm wide, slightly discoloured, entire or shallowly lobed; petiole 5–15 mm long. Inflorescence short, 2–7-flowered; peduncle 1 cm long; pedicels 5–7 mm long. Calyx 1.5–2.5 mm long, enlarged in fruit; lobes narrowly triangular, 1–2 mm long. Corolla stellate, 12–14 mm diam., white. Anthers 1.5–2 mm long. Berry globular, 5–8 mm diam., green to purplish-green when ripe. Seeds 1.8–2 mm long, light brown. Stone-cell granules 0.5–0.8 mm diam. *n*=12.

Native to warm temperate areas of South America; naturalised in North America, Europe and Australia. Sparingly established in south-eastern Qld, central coast and tablelands of N.S.W., Vic., Tas. and southern S.A. Weed of cultivation. Map 76.

Qld: Near Stanthorpe, *R. J. Henderson & J. W. Parham* 1241 (BRI). N.S.W.: Cowra, Jan. 1960, *K. Green* (NSW). Vic.: Creswick, 30 Mar. 1964, *J. H. Willis* (MEL). Tas.: National Park, ?Hobart, Apr. 1952, *R. Cock* (HO).

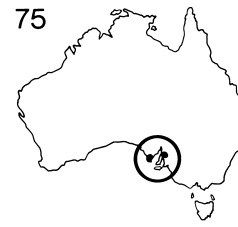
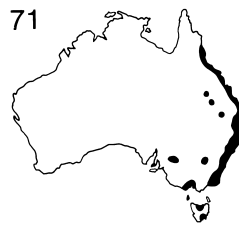
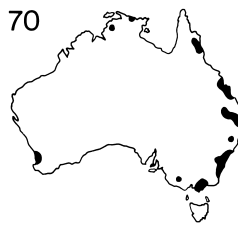
The correct name of this species is uncertain.

**8. \*Solanum villosum** Miller, *Gard. Dict.* 8th edn, no. 2 (1768)

T: Cultivated Chelsea Physic Garden, origin Barbados, *Miller*; lecto: BM *n.v.*, *fide* J. M. Edmonds, *Bot. J. Linn. Soc.* 78: 219 (1979), photo ADW.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 9 (1981).

Herb, usually annual, to 70 cm, green, slightly to densely pubescent with glandular or simple, non-glandular hairs; prickles absent. Leaves ovate, the lamina up to 8 cm long, commonly c. 4 cm, 3–6 cm wide, concolorous, entire or shallowly lobed; petiole



61. *Petunia axillaris*  
 64. *Lycium australe*  
 67. *Lycium afrum*  
 70. *Solanum americanum*  
 73. *Solanum chenopodioides*

62. *Petunia parviflora*  
 65. *Lycium ferocissimum*  
 68. *Salpichroa organifolia*  
 71. *Solanum opacum*  
 74. *Solanum nigrum*

63. *Nierembergia hippomanica*  
 66. *Lycium barbarum*  
 69. *Cyphomandra betacea*  
 72. *Solanum furcatum*  
 75. *Solanum retroflexum*

to 4.5 cm long. Inflorescence short, 3–8-flowered; peduncle and pedicels c. 1 cm long. Calyx 1.2–2 mm long; lobes semi-elliptic, 1 mm long. Corolla shallowly incised, 8–15 mm diam., white. Anthers 1.5–2.2 mm long. Berry almost globular, 5–9 mm diam., dull orange-red. Seeds 1.7–2.3 mm long, pale yellow.  $n=24$ . *Woolly Nightshade*.

Widespread weed in Europe, Mediterranean countries, northern Africa and North America. Sparingly naturalised in Qld, S.A. and W.A. A weed of tobacco crops in Qld. Map 77.

S.A.: Strathalbyn, 13 Apr. 1961, *D. L. Manisty* (ADW). Qld: Near Mareeba, *R. J. Henderson* 1573 (BRI).

## Sect. II. *Leiodendra*

*Solanum* sect. *Leiodendra* Dunal, *Solan. Syn.* 20 (1816)

Type species: *S. nudum* Dunal

Shrubs or small trees, glabrescent or pubescent with simple or branched hairs; prickles absent. Leaves simple, usually entire. Inflorescence a condensed cluster or scorpioid cyme, sub-axillary. Corolla stellate, often white. Anthers oblong, dehiscing by terminal pores. Berry succulent, orange-red or black.

## 9. *Solanum callium* C. White ex R. Henderson, *Austrobaileya* 1: 13 (1977)

T: c. 35 km NW of Kyogle, N.S.W., Dec. 1968, *R. J. F. Henderson* H489; holo: BRI 178893; iso: BRI, CANB, K, NSW.

Illustrations: *R. J. F. Henderson*, *op. cit.* 14; t.1, 2; *D. E. Symon*, *J. Adelaide Bot. Gard.* 4: fig. 10 (1981).

Shrub to 3 m, green, glabrous except for simple hairs mainly in tufts in axils of main veins of lower leaf-surface; prickles absent. Leaves lanceolate-elliptic; lamina 7–18 cm long, 2–2.5 cm wide, concolorous, entire; petiole 1–2.5 cm long, grooved above, narrowly winged almost to base. Inflorescence short, 5–10 (occasionally to 30)-flowered; peduncle 2–10 mm long; pedicels 10–15 mm long, slightly longer in fruit. Calyx 2–3 mm long; lobes rounded, 0.5–1 mm long. Corolla deeply incised, to 15 mm diam., white. Anthers 2–3 mm long. Berry globular, 10–15 mm diam., bright orange-yellow. Seeds 3–4 mm long, light yellow-brown, the margin slightly thickened.  $n=24$ .

Occurs in far south-eastern Qld and north-eastern N.S.W. in basaltic soil, on tracks, roads and clearings in rainforest. Possibly introduced to Australia but origin unknown. Map 78.

Qld: near Rathdowney, *V. K. Moriarty* 1680 (BRI, CANB). N.S.W.: Tweed district, *A. G. Floyd* 384 (NSW); Toonumbar State Forest, *R. Henderson* 1259 & *J. W. Parham* (ADW).

## Sect. III. *Dulcamara*

*Solanum* sect. *Dulcamara* Dumort., *Fl. Belg.* 39 (1827)

Type species: *S. dulcamara* L.

Perennial climbers, herbaceous or somewhat woody, glabrescent or pubescent with simple hairs; prickles absent. Leaves simple, entire to deeply lobed. Inflorescence panicle-like. Corolla stellate. Anthers oblong, dehiscing by terminal pores. Berry succulent, red. Seeds pale buff.



**10. \**Solanum dulcamara* L., *Sp. Pl.* 1: 185 (1753)**

T: Habitat in Europe; LINN 248.7 *n.v.*, microfiche AD.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 11 (1981).

Scrambling perennial shrub, green, slightly to densely pubescent with glandular or simple, non-glandular hairs; prickles absent. Leaves broadly ovate to ovate-lanceolate; lamina 5.5–8 cm long, 3–4 cm wide, concolorous, entire or upper leaves lobed at base; petiole to 15 mm long. Inflorescence branched, to 20-flowered; peduncle up to 3 cm long to first fork; pedicels 5–10 mm long. Calyx 2–3 mm long; lobes short. Corolla stellate, 10–12 mm diam., bluish. Anthers 4–4.5 mm long. Berry ovoid, 5–8 mm diam., bright red. Seeds 2 mm long, pale straw-coloured. *Bittersweet*, *Woody Nightshade*.

Known from only a few collections in Tas. Map 79.

Tas.: Hobart, 20 Jan. 1943, W. M. Curtis (HO).

Cultivated in eastern Europe as possible source of alkaloid and steroid drugs. Known to be toxic to stock in Europe and North America; no known cases of poisoning recorded in Australia.

**11. \**Solanum palitans* Morton, *Revision Argentine Sp. Solanum* 92; fig. 7E–H, fig. 8 (1976)**

T: Yerba Buena, Tucuman Province, Argentina, 19 Jan. 1919, *Venturi* 159; US 1548805 *n.v.*; iso: BA, LIL, SI, LP *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 12 (1981).

Sprawling annual or perennial herb with stems sometimes to 2 m long, frequently rooting at nodes, green, almost glabrous to sparsely pubescent with glandular and simple, non-glandular hairs; prickles absent. Leaves ovate; lamina 3–5 cm long, 1–2 cm wide, concolorous, deeply 3-lobed; lobes elliptic-obovate; petiole 10–15 mm long. Inflorescence 4–10-flowered; peduncle c. 1 cm long; rachis to 1 cm long; pedicels 5 mm long. Calyx 2–3 mm long; lobes 1 mm long. Corolla stellate, to 10 mm diam., white. Anthers 1.5 mm long. Berry globular, 4–5 mm diam., dull yellow-green. Seeds 1–1.5 mm long, pale buff. *n*=12.

Native to Argentina. Naturalised in central-coastal N.S.W. Map 80.

N.S.W.: Burragorang Lookout, *E. F. Constable* 6738 (ADW, CANB, NSW); Millfield, *R. Coveny* 6512 & *J. Powell* (BRI, NSW).

**12. \**Solanum triflorum* Nutt., *Gen. N. Amer. Pl.* 1: 128 (1818)**

T: Near Fort Mandan, North Dakota, U.S.A.; ?BM *n.v.*

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1066 (1957); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 13 (1981).

Sprawling annual herb, green, sparsely pubescent with simple hairs; stems to 1 m long, sometimes rooting at nodes; prickles absent. Leaves ovate or elliptic; lamina 2–4 cm long, 1–2.5 cm wide, concolorous, shallowly lobed or dentate to deeply lobed; margin recurved and thickened; petiole 5–10 mm long. Inflorescence short, 1–3-flowered, with small terminal leaflet; peduncle 10–30 mm long; pedicels 3–5 mm long. Calyx 3–5 mm long; lobes lanceolate to narrowly triangular, 1.5–2 mm long, slightly larger and becoming reflexed in fruit. Corolla stellate, 5–6 mm diam., white or rarely pale lavender. Anthers 2.5 mm long. Berry globular, 8–12 mm diam.,

whitish-green, marbled. Seeds 1–2 mm long, light brownish-yellow. Stone-cell granules c. 1 mm diam.  $n=12$ . Figs 26J; 29C; 34. *Three-flowered Nightshade*.

Native to North America, locally naturalised in north-western Europe. In Australia naturalised in cool temperate areas of south-eastern Qld, N.S.W., Vic., south-eastern S.A. and south-western W.A. Map 81.

W.A.: Wickpin area, 29 Mar. 1978, V. M. Leeson & Son (PERTH). S.A.: c. 80 km NW of Bordertown, 12 Feb. 1963, I. R. Fry (AD). Qld: near Ballandean, 20 Feb. 1974, I. F. Swan (BRI). N.S.W.: Finley, D. E. Symon 9807 (ADW, NSW). Vic.: Tambo River, T. B. Muir 2789 (MEL).

Suspected of poisoning sheep and cattle. Specimens with shallowly lobed leaves approach the European *S. triflorum* var. *ponticum* (Prodan) Borza.

### Sect. IV. Jasminosolanum

*Solanum* sect. *Jasminosolanum* Bitter ex Seithe, *Bot. Jahrb. Syst.* 81: 291 (1962)

Type species: *S. jasminoides* Paxton

Climbers or lianes, glabrescent or pubescent with simple or branched hairs; prickles absent. Leaves simple, entire to deeply lobed or pinnate with a single terminal leaflet; petiole sometimes twining. Inflorescence terminal or lateral, panicle-like; flowers several to many. Corolla stellate, sometimes shallowly incised. Anthers oblong, dehiscent by terminal pores and lateral slits. Berry succulent, bright red to purple-black.

### 13. \**Solanum jasminoides* Paxton, *Mag. Bot.* 8: t. 5 (1841)

T: cultivated material possibly collected from Rio Grande do Sul, Brazil, *Tweedie*; lecto: J. Paxton, *loc. cit.*, t. 5, *fide* R. M. Harley, *Bot. Mag.* 177: t. 568 (1970).

*S. dietrichiae* Domin, *Biblioth. Bot.* 89: 576 (1929).

T: Qld, A. Dietrich 2789; holo: PR 530859, photo ADW.

Illustrations: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 14 (1981); J. Paxton, *loc. cit.*

Perennial climber, green, glabrous except for simple hairs in tufts in leaf axils and axils of larger veins on lower leaf-surface; prickles absent. Leaves ovate to ovate-lanceolate, usually simple, sometimes with 2 small leaves in axil; lamina 3–5 cm long, 1.5–2.5 cm wide, concolorous; petiole 1–2 cm long, often twining; juvenile leaves up to 7 cm long and 6 cm wide, deeply lobed, the lobes lanceolate. Inflorescence branched, c. 20-flowered; peduncle to 35 mm long up to first fork; pedicels 10–15 mm long; fruiting pedicel to 4 mm diam. below calyx. Calyx 2–3 mm long; lobes acuminate, 1–1.5 mm long. Corolla shallowly incised, 20 mm diam., white or pale blue. Anthers 2–4 mm long. Berry globular or slightly ovoid, 7–9 mm diam., dark blue to shiny black. Seeds 2–3 mm long, grey with pale margin.  $n=12$ . *Potato Climber*, *Jasmine Nightshade*.

Native to South America. Widely grown as an ornamental in Australia, sparingly naturalised around Brisbane, Qld, and Sydney, N.S.W. Map 82.

N.S.W.: Minnamurra Reserve, 1954, H. K. Judd (NSW).

**14. \*Solanum seaforthianum** Andrews, *Bot. Repos.* 8: t. 504 (1808)

T: cultivated in Britain from material introduced from the West Indies by *Seaforth*; holo: H. Andrews, *loc. cit.*, t. 504, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 67 (1981).

Illustrations: H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland*, 267 (1979); D. E. Symon, *op. cit.* fig. 15.

Sprawling perennial shrub or climber, green; simple, non-glandular hairs on leaf margins, veins of lower leaf-surface and corolla margins and tips; glandular hairs on peduncles and pedicels; prickles absent. Leaves ovate; lamina 4–13 cm long, 4–11 cm wide, concolorous, deeply lobed, the lobes often cut to midrib; petiole 2–4 cm long. Inflorescence few–50-flowered; peduncle 1–6 cm long; rachis to 10 cm long; pedicels 10–15 mm long. Calyx 1.5–2.5 mm long; lobes broad, very short. Corolla deeply incised, 20–30 mm diam., mauve-blue. Anthers 2.5–4 mm long. Berry globular, 8–12 mm diam., bright red. Seeds 2–3 mm long, reddish-brown, hairy. *Brazilian Nightshade*. Fig. 26K.

Native to West Indies; widely cultivated and naturalised in South and Central America and other tropical areas. In Australia occasionally cultivated as an ornamental in southern States; naturalised in Qld and N.S.W. in moist gullies and disturbed rainforest. Map 83.

Qld: Yarraman, V. K. Moriarty 888 (BRI); Tolga scrub, D. E. Symon 4754 (ADW, CANB). N.S.W.: near Alstonville, S. Clark, J. Pickard & R. Coveny 1259 (NSW).

Berries reported poisonous to poultry, pigs, cattle, sheep and children.

**Sect. V. Archaesolanum**

*Solanum* sect. *Archaesolanum* (Bitter ex Marz.) Danert, *Kulturpflanze* 18: 267, 268 (1970)

*Solanum* subgen. *Archaesolanum* Bitter ex Marz., in Hegi, *Fl. Mittel-Europa* 5: 2583 (1927)

Type species: *S. aviculare* G. Forster

Short-lived shrubs, glabrous except for glandular or simple, non-glandular, usually minute hairs on seedlings, young growth, calyx, and corolla tips; prickles absent. Leaves very variable; juvenile leaves often large, simple, shallowly to deeply lobed; mature leaves smaller, entire. Inflorescence scorpioid, cyme-like, often in branch fork; flowers rarely solitary. Corolla rotate to rotate-stellate, purple, reddish or blue-violet, rarely white. Anthers oblong. Berry succulent, variously coloured. Stone-cell granules present, often conspicuous.

Ser. I. **Avicularia** Herasim., *Nov. Syst. Pl. Vasc. Leningrad* 7: 270 (1970)

Leaf apex long-acuminate. Corolla stellate; lobes keeled, fringed. Seeds 7–20 times as many as stone-cell granules.

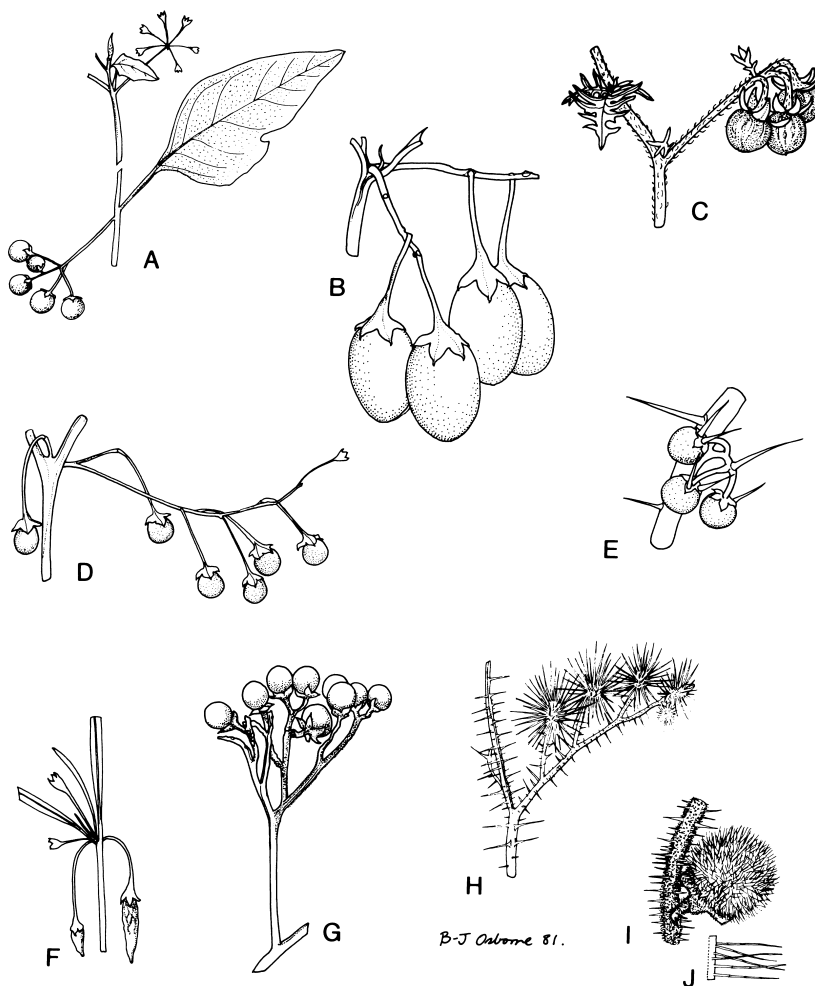
**15. Solanum aviculare** G. Forster, *Pl. Esc.* 42 (1786)

T: Queen Charlotte Sound, New Zealand; lecto: BM, *fide* G. T. S. Baylis, *Trans. Roy. Soc. New Zealand* 82: 641 (1954).

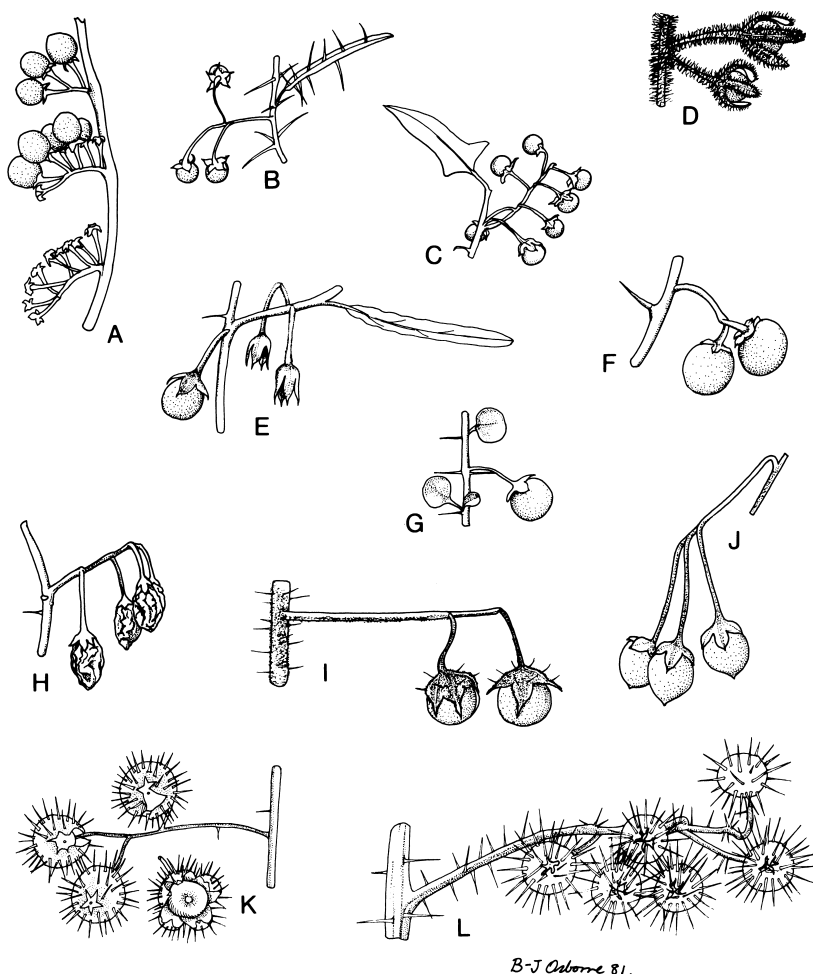
*S. aviculare* var. *typicum* Domin, *Biblioth. Bot.* 89: 574 (1928), *nom. illeg.*

*S. brisbanense* (Herasim.) Herasim., *Nov. Syst. Pl. Vasc. Leningrad* 7: 273 (1970); *S. aviculare* var. *brisbanense* Herasim., *Bjull. Glavn. Bot. Sada* 59: 72 (1965).

T: cultivated in Moscow area from seed from Brisbane; ?LE, *n.v.*

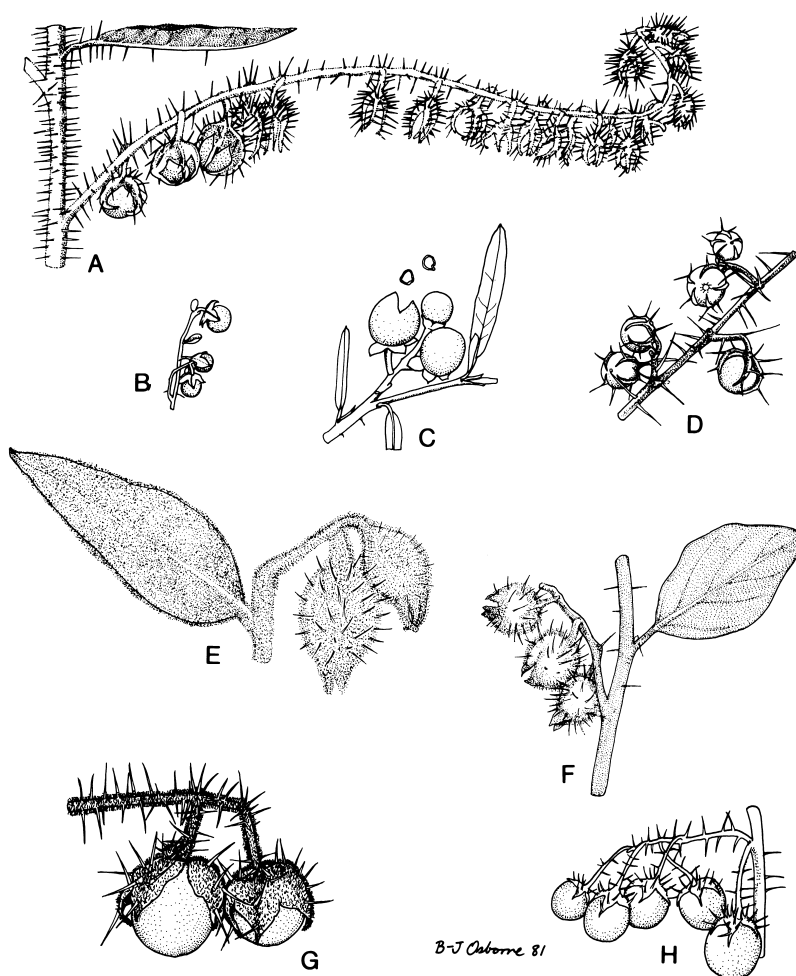


**Figure 29.** *Solanum* fruits. **A**, *S. chenopodioides* (M. D. Crisp 2494, I. R. Telford & R. Ellyard, CBG). **B**, *S. laciniatum* (Cult. Canberra ex Salt Ck., S.A., J. W. Wrigley, CBG). **C**, *S. pugiunculiferum* (Elsey Stn., N.T., G. Chippendale, ADW). **F**, *S. capsiciforme* (D. E. Symon 8320, CANB). **G**, *S. mauritianum* (Waterfall Gully, S.A., D. E. Symon, CANB). **H**, *S. rostratum* (Qld., N. H. Shaw, CANB). **I–J**, *S. ferox*; **J**—indumentum of berry; (Cult. Brisbane ex V. K. Moriarty 1683, CANB). C  $\times 0.75$ ; D  $\times 0.25$ ; others  $\times 0.5$ .

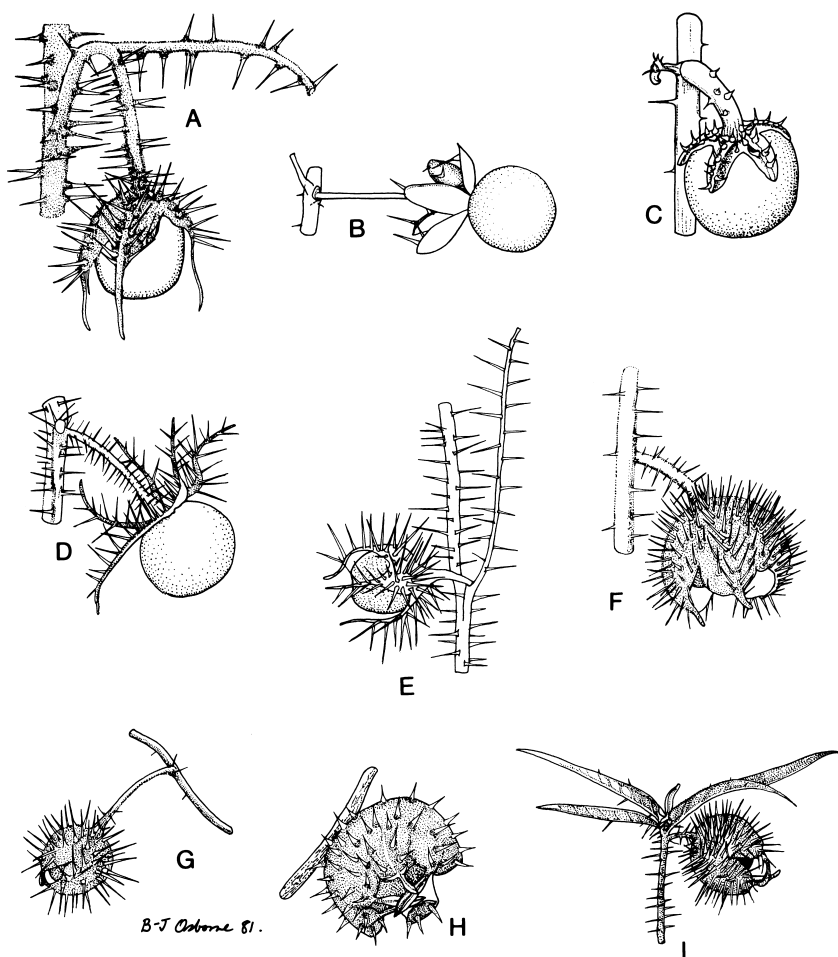


B-J Osborne 81.

**Figure 30.** *Solanum* fruits. **A**, *S. tetrandrum* (D. E. Symon 7774, ADW). **B**, *S. ferocissimum* (Cult. Adelaide ex D. E. Symon 4698, ADW). **C**, *S. chenopodium* (D. E. Symon 8010, CANB). **D**, *S. densevestitum* (J. G. Tracey & V. K. Moriarty 1640, ADW). **E**, *S. coactiliferum* (I. R. Telford 3871, CBG). **F**, *S. orbiculatum* subsp. *orbiculatum* (D. E. Symon 3420, CANB). **G**, *S. nummularium* (R. J. Chinnock 997, CANB). **H**, *S. centrale* (D. E. Symon 6897, ADW). **I**, *S. ellipticum* (D. E. Symon 6003, CANB). **J**, *S. esuriale* (C. R. Dunlop 966, ADW). **K**, *S. echinatum* (L. A. Craven 2372, CANB). **L**, *S. lucani* (W. Leutert 23, CANB). D  $\times 1$ ; others  $\times 0.5$ .



**Figure 31.** *Solanum* fruits. **A**, *S. eardleyae* (composite — Beaglehole 22854, CANB; and Ernabella, S.A., P. D. Symon, ADW). **B**, *S. oligacanthum* (M. Lazarides 8372, CANB). **C**, *S. sturtianum* (B. Crisp 431, CBG). **D**, *S. petrophilum* (D. E. Symon 8058, ADW). **E**, *S. lachnophyllum* (N. H. Speck 1484, CANB). **F**, *S. lasiophyllum* (D. E. Symon 9911, CANB). **G**, *S. campanulatum* (Cult. Adelaide ex Budgewoi, N.S.W., Whitehead, ADW). **H**, *S. cinereum* (N. T. Burbidge 6576, CANB). H  $\times 0.25$ ; others  $\times 0.5$ .



**Figure 32.** *Solanum* fruits. **A**, *S. chipendalei* (P. K. Latz 6601, CANB). **B**, *S. melanospermum* (D. E. Symon 5064, CANB). **C**, *S. marginatum* (Cult. Adelaide ex Nuriootpa, S.A., D. E. Symon, CANB). **D**, *S. clarkiae* (D. E. Symon 5156, CANB). **E**, *S. oedipus* (D. E. Symon 10188, ADW). **F**, *S. dioicum* (D. E. Symon 5280, CANB). **G**, *S. cunninghamii* (D. E. Symon 5345, CANB). **H**, *S. asymmetriphyllum* (I. R. Telford 8032 & J. W. Wrigley, CBG). **I**, *S. petraeum* (D. E. Symon 10182, ADW). C  $\times 0.25$ ; others  $\times 1$ .

Illustrations: G. T. S. Baylis, *Austral. J. Bot.* 11: t. 1, figs 1-2; t. 2, figs 1-2 (1963); S. L. Everist, *Poison. Pl. Austral.* t.(col.) 52 (1974); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 18 (1981).

Erect shrub to 4 m, dark green, glabrous except for glandular and minute, simple, non-glandular hairs on young growing points and corolla apices; stems angular with raised lines; prickles absent. Lobed leaves broadly elliptic to obovate; lamina 15–30 cm long, concolorous, the lobes 1–10 cm long, 0.5–2 cm wide; petiole to 4 cm long. Entire leaves lanceolate-elliptic, the lamina 8–25 cm long, 1–3.5 cm wide, concolorous; petiole 1–2 cm long. Inflorescence up to 10-flowered; peduncle to 35 mm long; rachis to 15 cm long, often forked at base; pedicels 15–20 mm long. Calyx 5–6 mm long; lobes triangular, 1.5–3 mm long. Corolla rotate-stellate, 25–40 mm diam., blue-violet; lobes acute. Anthers 3.5–4.5 mm long. Berry ovoid to ellipsoid, 10–15 mm diam., bright orange-red to scarlet. Seeds 1–1.5 mm long, light brown or reddish-brown. Stone-cell granules usually 1–1.5 mm long.  $n=23$ . *Kangaroo Apple*.

Occurs mainly in eastern Qld, N.S.W. and Vic., with locally naturalised populations in S.A. and W.A. Also occurs in P.N.G., Lord Howe Is., Norfolk Is., New Caled. and N.Z. Map 84.

S.A.: Coultas, 13 Jan. 1972, *H. Holden* (AD). N.S.W.: SE of Berrico, *B. G. Briggs* 2341 (BRI, NSW); near Aberdeen, *R. Story* 7206 (CANB, NSW). Vic.: S of Dargo, *L. Haegi* 151 (ADW, NSW); near Healesville, 14 Apr. 1967, *J. H. Willis* (MEL).

Cultivated in U.S.S.R., eastern Europe and N.Z. as source of solasodine for cortisone and other steroid drugs. Ripe berries eaten by Aborigines in Lake Condah area. Closely related to *S. laciniatum* Aiton, *S. linearifolium* Herasim. and *S. vescum* F. Muell. from which distinguished by ripe fruit colour and smaller seeds.

Ser. II. **Laciniata** Herasim., *Nov. Syst. Pl. Vasc. Leningrad* 7: 273 (1970)

Type species: *S. laciniatum* Aiton

Leaf apex shortly acuminate. Corolla rotate; lobes shortly notched. Seeds more than 5 times as many as stone-cell granules.

## 16. *Solanum laciniatum* Aiton, *Hort. Kew.* 1: 247 (1789)

*S. aviculare* var. *laciniatum* (Aiton) Domin, *Biblioth. Bot.* 89: 574, fig. 183 (1928); *S. pinnatifolium* Salisb., *Prodr.* 133 (1796); *nom. illeg.*, based on *S. laciniatum* Aiton.

T: Native to New Zealand, *J. Banks* s.n.; lecto: *Bot. Mag.* 10: t. 349 (1796), *vide* G. T. S. Baylis, *Trans. Roy. Soc. New Zealand* 82: 642 (1954).

Illustrations: G. T. S. Baylis, *Austral. J. Bot.* 11: t. 1, figs 1-2; t. 2, figs 1-2 (1963); J. H. Willis, B. Fuhrer & E. R. Rotherham, *Field Guide Fl. & Pl. Victoria*, t. 204 (1975); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 19 (1981).

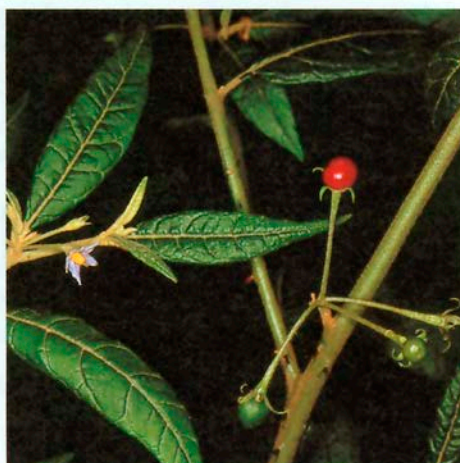
Shrub to 3 m, green, the stems often purplish, glabrous except for minute glandular hairs on young growing tips and buds, and simple hairs on seedlings and young leaves; prickles absent. Lobed leaves broadly ovate; lamina 9–38 cm long, concolorous, deeply lobed; lobes 2–13 cm long, 0.3–2 cm wide; petiole 1–4 cm long. Entire leaves lanceolate; lamina 5–20 cm long, 1–4 cm wide, concolorous; petiole 5–10 mm long. Inflorescence up to 10-flowered; peduncle to 4 cm long; rachis 5–15 cm long, often forked; pedicels 1.5–3 cm long. Calyx 4–6 mm long; lobes triangular, 2–3 mm long, slightly enlarged in fruit. Corolla rotate, 30–50 mm diam., deep purple-blue; lobes notched. Anthers 3–4 mm long. Fruiting axis 10–20 cm long. Berry ellipsoid to ovoid, 15–20 mm diam., yellow to orange-yellow. Seeds 2–2.5 mm





**Figure 33.** *Solanum laciniatum*.  
Photograph — N. Lamb.

**Figure 34.** *Solanum triflorum*.  
Photograph — M. Fagg.



**Figure 35.** *Solanum linearifolium*.  
Photograph — M. Fagg.

**Figure 36.** *Solanum stelligerum*.  
Photograph — M. Fagg.

long, reddish-brown. Stone-cell granules usually 2–2.5 mm long. *n*=46. *Kangaroo Apple*. Figs 29B, 33.

Occurs mainly in south-eastern Australia, in southern N.S.W., Vic., Tas. and S.A., with localised populations in W.A. Also native to N.Z. Associated with stabilised sand dunes, creek lines, and road verges in scrub and woodland. Map 85.

W.A.: Perth, 22 Jan. 1969, *R. Brown* (PERTH). S.A.: c. 22 km N of Beachport, *J. Carrick* 2190 (AD). N.S.W.: Inverell, 29 June 1910, *D. V. Johnson* (NSW). Vic.: 55 km NW of Bairnsdale, *M. G. Corrick* 6166 (MEL). Tas.: Huon Rd, Tas., Sept. 1894, *L. Rodway* (HO).

Cultivated in U.S.S.R., eastern Europe and N.Z. as source of solasodine for corticosteroid drugs; several cultivated forms recognised, but best treated, according to Symon, *op. cit.* 81 (1981), under the *International Code of Nomenclature of Cultivated Plants*. Often confused with *S. aviculare* G. Forster; distinguished by the rotate corolla with notched lobes, the yellowish fruit and larger seeds. Ripe fruit formerly eaten by Aborigines in Tas.

**17. *Solanum linearifolium*** Herasim. ex Symon, *J. Adelaide Bot. Gard.* 4: 81, fig. 20 (1981)

T: Lake George, N.S.W., 20 Mar. 1964, *M. Gray & E. D'Arny* 5445; holo: CANB, iso: ADW, OTA.

Illustrations: N. T. Burbidge & M. Gray, *Fl. Austral. Cap. Terr.* fig. 325 (1970); D. E. Symon, *loc. cit.*

Erect shrub to 4 m, green, sparsely pubescent with minute, simple and glandular hairs on leaves, growing points, calyx and corolla apices; prickles absent. Lobed leaves broadly elliptic to ovate; lamina 15–40 cm long, concolorous, deeply lobed; lobes 2–12 cm long, 0.5–1 cm wide; petiole up to 15 mm long. Entire leaves narrowly elliptic to linear, mostly 5–10 cm long, 5–10 mm wide, concolorous; petiole short, decurrent as raised line. Inflorescence up to 10-flowered; peduncle absent or to 8 mm long; rachis up to 10 cm long, occasionally forked at base; pedicels 2–4 cm long. Calyx 3–5 mm long; lobes triangular, 1–2 mm long. Corolla broadly rotate-stellate to pentagonal, 25–45 mm diam., intense purple-violet. Anthers 3 mm long. Berry globular to slightly ovoid, 1.5–2 cm diam., ochre-yellow and reddish-purple in upper half. Seeds 2–2.5 mm long, pale buff to light grey. Stone-cell granules 2–4 mm long. *n*=23. *Mountain Kangaroo Apple*, *Kangaroo Apple*. Fig. 35.

Occurs in south-eastern N.S.W. and eastern Vic. on coastal ranges and tablelands, often in disturbed habitats along forest margins, tracks and road verges, rocky outcrops, creeks and river gorges. Map 86.

N.S.W.: Burragorang Lookout, *E. F. Constable* 5672 (BRI, NSW); Lake George, *M. Gray & B. Gray* 3938 (CANB). Vic.: East Gippsland, *A. C. Beaglehole* 37202 & *K. C. Rogers* (MEL).

**18. *Solanum vescum*** F. Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1: 69 (1855), & *Hooker's J. Bot. Kew Gard. Misc.* 7: 237 (1855)

*S. aviculare* var. *vescum* (F. Muell.) Ewart, *Victorian Naturalist* 24: 59 (1907).

T: Lake Wellington, Gippsland, coll. unknown; syn: K, MEL; mouth of Snowy River, 1855, *F. Mueller s.n.*; lecto: MEL 11429, iso: MEL, *fide* Symon, *J. Adelaide Bot. Gard.* 4: 83 (1981); the Tambo, coll. unknown; *n.v.*; Nicholson's River; *n.v.*; Clifton's Morass; *n.v.*; Latrobe River; *n.v.*; near the Buchan River; *n.v.*

Illustrations: G. T. S. Baylis, *Austral. J. Bot.* 11: t. 1, figs 1–2; t. 2, figs 1–3 (1963); D. E. Symon, *op. cit.* fig. 21.

Erect or spreading shrub to 2 m, green, glabrous except for minute, simple and glandular hairs on corolla, calyx apices, seedlings and young shoots; prickles absent. Lobed leaves broadly ovate; lamina 10–50 cm long, concolorous, deeply lobed; lobes mostly 5–10 cm long, 8–12 mm wide, sometimes smaller; petiole to 3 cm long. Entire leaves linear-lanceolate, the lamina 5–15 cm long, 5–13 mm wide, sometimes larger, concolorous; petiole short or absent, often decurrent as narrow wing. Inflorescence many-flowered; peduncle absent or up to 7 cm long; rachis 1–5 cm long; pedicels 2–3 cm long, becoming longer in fruit. Calyx 3–5 mm long; lobes triangular, 2–3 mm long. Corolla rotate-stellate, 35–40 mm diam., sometimes smaller, violet. Anthers 3–4 mm long. Fruiting axis to 15 cm long, the pedicels 2.5–5 cm long. Berry globular or slightly ovoid, 20–25 mm diam., greenish-ivory. Seeds 2–3 mm long, greyish-brown. Stone-cell granules 1–2(3) mm long. *n*=23. *Kangaroo Apple*. Fig. 26G-H.

Occurs in south-eastern Qld, eastern N.S.W., eastern Vic. and Tas., usually in coastal and near-coastal areas, on consolidated coastal dunes, stream banks, and margins of forest and woodland. Map 87.

N.S.W.: Mittagong, *J. Thompson* 2870 (ADW, NSW); Sussex Inlet, *L. G. Wright, M. Gray & C. Totterdell* 5689 (ADW, CANB). Vic.: near Myrtleford, 12 Feb. 1965, *C. J. Shepherd* (MEL). Tas.: Harford, *H. S. Hamilton* 84 (HO).

Narrow-leaved specimens approach *S. linearifolium* Herasim ex Symon. Two cultivated varieties recognised, but best treated, according to D. E. Symon, *op. cit.* 85, under the *International Code of Nomenclature of Cultivated Plants*. Fruit formerly eaten by Aborigines in Tasmania.

Ser. III. **Similia** Herasim., *Nov. Syst. Pl. Vasc. Leningrad* 7: 274 (1970)

Type species: *S. simile* F. Muell.

Leaf apex obtuse. Corolla rotate, the lobes shortly notched. Seeds as many as stone-cell granules.

## 19. *Solanum simile* F. Muell., *Trans. Philos. Soc. Victoria* 1: 19 (1855)

*S. simile* var. *typicum* Domin, *Feddes Repert. Spec. Nov. Regni Veg.* 12: 130 (1913), *nom. illeg.*

T: Angas River, S.A., *F. Mueller s.n.*; syn: MEL; Spencer's Gulf, S.A., *F. Mueller s.n.*; syn: K; St Vincent's Gulf, S.A., *F. Mueller s.n.*; lecto: MEL 12328; iso: L, MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 86 (1981); Kangaroo Island, S.A., March, 1847, ?*Waterhouse s.n.*; syn: MEL; S.A., *F. Mueller s.n.*; syn: CGE, E, L.

Illustrations: G. T. S. Baylis, *Austral. J. Bot.* 11: t. 1, figs 1-2; t. 2, figs 1-3 (1963); D. E. Symon, *op. cit.* fig. 22.

Erect shrub to 2 m, green, glabrous except for minute hairs on petal apices; prickles absent. Leaves elliptic to lanceolate; lamina 3–8 cm long, 1–2 cm wide, sometimes larger, concolorous, usually entire; petiole to 1 cm long. Juvenile leaves up to 19 cm long and 9 cm wide, shallowly lobed towards base. Inflorescence up to 12-flowered; rachis to 5 cm long; peduncle absent or to 1 cm long; pedicels to 25 mm long. Calyx 3–5 mm long; lobes broadly triangular, 2–3 mm long. Corolla rotate, 20–30 mm diam., violet; lobes notched. Anthers 2–2.5 mm long. Berry globular, 10–15 mm diam., green or tinged purple. Seeds 2–2.5 mm long, greyish to dark brown. Stone-cell granules 1–3 mm diam. *n*=23. *Oondoroo*. Fig. 26F.

Occurs in drier regions of southern Australia, in south-western W.A., southern S.A., north-western Vic., and central N.S.W. Usually grows in sandy, often alkaline, soils, at base of dunes, disturbed roadside areas, and alluvial gravels and terraces of

seasonally flooded creeks. Often associated with mallee eucalypt woodlands; abundant after fire. Map 88.

W.A.: SW of Coolgardie, A. S. *George* 8031 (PERTH). S.A.: Gammon Ranges, *Hj. Eichler* 12852 (AD); Monarto, D. E. *Symon* 9700 (ADW). N.S.W.: 28 km W of West Wyalong, D. E. *Symon* 9868 (CANB). Vic.: NW of Dergholm, 10 Jan. 1972, J. H. *Willis* (MEL).

Aboriginal food plant in S.A. Closely related to *S. symonii* H. Eichler; distinguished by the globular fruit and smaller flowers.

## 20. *Solanum symonii* H. Eichler, *Taxon* 12: 296 (1963)

*S. fasciculatum* F. Muell., *Fragm. Phytogr. Austral.* 1: 123 (1859) *nom. illeg.*; non *S. fasciculatum* Vell., *Fl. Flumin* 1: 85 (1825); *S. simile* var. *fasciculatum* Domin, *Biblioth. Bot.* 89: 575 (1929), and as *S. simile* var. *fastigiatum* Domin, *Feddes Repert. Spec. Nov. Regni Veg.* 12: 130 (1913) (orthographic error)

T: Phillips River, south-western New Holland ?*Maxwell*; lecto: MEL 12398; iso: MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 88 (1981).

Illustrations: G. T. S. Baylis, *Austral. J. Bot.* 11: t. 1, figs 1-2; t. 2, figs 1-3 (1963); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 23 (1981)

Erect shrub to 2 m, green, glabrous except for minute simple and glandular hairs on growing points, calyx and corolla apices, and occasional stout conical hairs on lower mid-veins of younger leaves. Prickles absent. Lobed leaves ovate-lanceolate; lamina 10–18 cm long, 3–8 cm wide, concolorous, shallowly lobed; petiole 2–3 cm long. Entire leaves lanceolate to elliptic, the lamina 3–12 cm long, 5–16 mm wide, concolorous; petiole 10–15 cm long. Inflorescence 2–6-flowered; peduncle absent or up to 3 cm long; rachis to 5 cm long; pedicels 1–2 cm long. Calyx 4–5 mm long; lobes broadly triangular, 1.5–3 mm long. Corolla rotate, 30–40 mm diam., pale lavender-purple; lobes notched. Anthers 2–3 mm long. Berry ellipsoid to obovoid, 1–1.5 cm diam., green or tinged purple. Seeds 2 mm diam., greyish or reddish-brown. Stone-cell granules to 2 mm diam. *n*=46

Occurs in coastal regions from Geraldton, W.A., to tip of Yorke Peninsula, S.A. Often on stabilised dunes, in sandy soil over limestone, or in gypseous soil. Map 89.

W.A.: 2 km E of Eucla, M. D. *Crisp* 955 (PERTH). S.A.: Head of Great Australian Bight, B. *Copley* 2729 (AD); 19 km E of Ceduna, D. E. *Symon* 4485 (ADW, BIRM, CANB, K, NSW, PERTH)

Closely related to *S. vescum* F. Muell. and to *S. simile* F. Muell. with which it is often confused

## 21. *Solanum capsiciforme* (Domin) Baylis, *Austral. J. Bot.* 11: 168 (1963)

*S. simile* var. *capsiciforme* Domin, *Feddes Repert. Spec. Nov. Regni Veg.* 12: 130 (1913).

T: Near Lake Gillies, S.A., *Burkett s.n.*; holo: K.

[*S. simile* F. Muell. var. *fasciculatum* (F. Muell.) J. Black, *Fl. S. Austral.* 4: 497 (1926), *nom. illeg.*]

Illustrations: G. T. S. Baylis, *op. cit.* t. 1, figs 1, 3; t. 2, fig. 3; B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 599 (1975); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 24 (1981).

Erect, short-lived shrub to 1 m, green, glabrous except for minute glandular and simple hairs on young growth, and calyx and corolla apices; prickles absent. Leaves linear-lanceolate; lamina 3–10 cm long, 3–10 mm wide, concolorous, entire; petiole 5–10 mm long. Juvenile leaves oblong-lanceolate, undulate or shallowly lobed.

Inflorescence short, 1–6-flowered; peduncle absent or up to 10 mm long; pedicels 10–20 mm long. Calyx 2–4 mm long; lobes triangular, 1–1.5 mm long. Corolla rotate, 20–30 mm diam., violet. Anthers 2–3 mm long. Berry conical, 15–30 mm long, green when ripe. Seeds 1.5 mm long, brown or grey-brown. Stone-cell granules 1–1.5(2) mm long.  $n=23$ . *Native Pepper*. Fig. 29F.

Occurs in southern S.A. and south-western W.A., usually in disturbed sites in sandy soil or sand over limestone. Map 90.

W.A.: About 12 km S of Lake Grace, *S. Paust* 867 (PERTH). S.A.: Hambidge Reserve, *D. E. Symon* 4272 (ADW, CANB); 16 km SW of Buckleboo, *D. J. Whibley* 307 (AD).

## Sect. VI. Brevantherum

*Solanum* sect. *Brevantherum* Seithe, *Bot. Jahrb. Syst.* 81: 297 (1962)

Type species: *S. verbascifolium* auct. non L. = *S. erianthum* D. Don

Shrubs or small trees, often densely pubescent with stellate to echinoid hairs; prickles absent. Leaves simple, entire. Inflorescence condensed, the cymes branched and paniculate. Corolla stellate. Anthers oblong, dehiscing by terminal pores. Ovary pubescent. Berry succulent or mucilaginous, sometimes pubescent, often yellow. Seeds pale buff.

### 22. *Solanum erianthum* D. Don, *Prodr. Fl. Nepal.* 96 (1825)

T: Valley in Nepal near Kalamanda, 1821, *Wallich Herb.* 2616C; lecto: K, *fide* K. E. Roe, *Brittonia* 19: 359 (1967).

[*S. verbascifolium* auct. non L.; G. Bentham, *Fl. Austral.* 4: 449 (1869)]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 25 (1981).

Shrub or small tree to 8 m, often with flattened, spreading crown, green or grey-green, densely pubescent with stellate hairs; prickles absent. Leaves ovate-elliptic; lamina 8–24 cm long, 4–15 cm wide, slightly discoloured, entire; petiole 1–10 cm long. Inflorescence branched, many-flowered; peduncle to first fork 3–8 cm long; pedicels 5–10 mm long. Calyx 4–7 mm long; lobes triangular, 1–2.5 mm long. Corolla stellate, 13–19 mm diam., white. Anthers 2.5–3 mm long. Berry globular, 10 mm diam., dull yellow, pubescent. Seeds 1.5–2 mm long, dull yellow. *Potato Tree*, *Tobacco Tree*.

Originally from tropical Central America, and now widespread in south-east Asia and to a less extent in west tropical Africa. Occurs in near-coastal eastern Australia in Qld and north-eastern N.S.W. Usually associated with disturbed habitats in high rainfall areas. Generally considered native to Australia but may have been a pre-European settlement introduction. Map 91.

Qld: N of Boonah, *L. W. Jessup & M. Olsen* 263 (BRI); Pine Mt, *W. T. Jones* 276 (CANB). N.S.W.: Whian Whian State Forest, *H. C. Hayes, J. Turner, D. J. McGillivray* 2599 (NSW).

### 23. \**Solanum mauritianum* Scop., *Delic. Insub.* 3: 16, t. 8 (1788)

T: Based on plants cultivated in Italy from seed from Mauritius; holo: *loc. cit.* t. 8, *fide* K. E. Roe, *Brittonia* 24: 254 (1972).

*S. auriculatum* Aiton, *Hort. Kew.* 1: 246 (1789).

T: *L'Héritier* Herb.; holo: G-DC, *n.v.*, *fide* K. E. Roe, *op. cit.* 253, microfiche AD.

Illustrations: H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 332 (1979); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 26 (1981).

Shrub or small tree to 4 m, green or grey-green, densely pubescent with stellate hairs; hairs loose and tufted on young growth, sparse on upper leaf-surface, dense on lower surface; prickles absent. Leaves elliptic; lamina 9–30 cm long, 3.5–14 cm wide, slightly discoloured, entire to slightly undulate; petiole 3–9 cm long, with 1–2 small sessile leaves in axil except on smaller twigs. Inflorescence branched, many-flowered; peduncle 3–15 cm long to first fork; pedicels 2–3 mm long. Calyx 4–6 mm long; lobes triangular, 1.5–3 mm long, slightly enlarged in fruit. Corolla stellate, 15–25 mm diam., violet. Anthers 2–3 mm long. Berry globular, 10–15 mm diam., dull yellow, pubescent, becoming glabrous with age. Seeds 1.5–2 mm long, light brown or yellowish. *n*=12. *Wild Tobacco Tree*. Figs 24J; 29G.

Native to South America, introduced and now widespread in many tropical countries. Naturalised in sub-coastal areas of N.S.W. and Qld, and locally in S.A. Usually associated with disturbed habitats in higher rainfall regions. Map 92.

S.A.: Waterfall Gully, Apr. 1974, *T. O. Browning* (ADW); Waterfall Gully, *B. Cumberland* 62 (AD). Qld: Evelyn, *D. J. Collins* C74-10 (BRI). N.S.W.: 55 km SW of Grafton, *L. Haegi* 1414 (NSW).

Reported poisonous to pigs and cattle. Declared a noxious weed in Qld.

## Sect. VII. *Pseudocapsica*

*Solanum* sect. *Pseudocapsica* Roemer & Schultes, *Syst. Veg.* 4: 569, 584 (1819)

Type species: *S. pseudocapsicum* L.

Shrubs, glabrescent or pubescent with simple or branched hairs; prickles absent. Leaves simple, entire. Inflorescence few-flowered, extra-axillary. Corolla stellate, white or mauve. Anthers oblong, dehiscing by terminal pores and longitudinal slits. Berry fleshy, yellow, orange or bright red. Seeds flattened, slightly twisted, pale.

### 24. \**Solanum pseudocapsicum* L., *Sp. Pl.* 1: 184 (1753)

T: Madeira LINN 248.4, *n.v.*, *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 60: 714 (1973) microfiche AD.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 27 (1981).

Shrub to 2 m, green, glabrous or sparsely pubescent on young twigs and new growth; prickles absent. Leaves oblong-lanceolate; lamina 4–10 cm long, 1–3 cm wide, concolorous, slightly undulate; petiole 5–15 mm long. Inflorescence short, 1–several-flowered; peduncle absent or up to 1 cm long; pedicels c. 1 cm long. Calyx 4–5 mm long; lobes narrowly triangular, 2–3 mm long. Corolla deeply stellate, 10–15 mm diam., white. Anthers 2–3 mm long. Berry globular, 10–15 mm diam., bright orange-red. Seeds 3–4 mm long, pale buff or yellow, the margin thickened. *n*=12. *Madeira Winter Cherry*, *Jerusalem Cherry*.

Widespread weed in tropical regions of many countries. Common decorative shrub, naturalised chiefly in eastern Australia from south-eastern Qld to Vic.; also present in S.A. and W.A. Common in disturbed, wet areas. Map 93.

W.A.: Bencubbin, 1968, *G. M. Sachse* (PERTH). S.A.: near Port Lincoln, *C. R. Alcock* 2681 (AD, ADW, CANB). Qld: Mt Glorious, *V. K. Moriarty* 871 (BRI). N.S.W.: Thirroul, 1 May



76. *Solanum sarrachoides*  
 79. *Solanum dulcamara*  
 82. *Solanum jasminoides*  
 85. *Solanum laciniatum*  
 88. *Solanum simile*

77. *Solanum villosum*  
 80. *Solanum palitans*  
 83. *Solanum seaforthianum*  
 86. *Solanum linearifolium*  
 89. *Solanum symonii*

78. *Solanum callium*  
 81. *Solanum triflorum*  
 84. *Solanum aviculare*  
 87. *Solanum vescum*  
 90. *Solanum capsiciforme*

1957, *E. F. Constable* (NSW). Vic.: Mallacoota Inlet, *A. C. Beauglehole* 32963 & *E. W. Finck* (MEL).

### Sect. VIII. *Pugiunculifera*

*Solanum* sect. *Pugiunculifera* Symon, *J. Adelaide Bot. Gard.* 4: 99 (1981)

Type species: *S. pugiunculiferum* C. T. White.

Annuals, glabrous; prickles present. Leaves simple, lobed. Inflorescence a reduced cyme. Corolla campanulate, pale lavender. Anthers oblong, dehiscing by terminal pores. Berry firm-fleshed, green or flushed with purple. Seeds thin, papery.

### 25. *Solanum pugiunculiferum* C. T. White, *Proc. Roy. Soc. Queensland* 53: 225 (1942)

T: Settlement Creek, Burke District, Qld, Nov. 1922, *L. J. Brass* 244; holo: BRI; iso: CANB, K; Burketown, near the old meat works, 26 May 1919, *P. G. Higgins*; *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 28 (1981).

Erect or spreading annual herb to 50 cm, grey-green, glabrous except for minute glandular hairs on young growing points; prickles to 2 cm long, scattered on most parts. Leaves ovate; lamina 3–7 cm long, 2.5–5 cm wide, concolorous, lobed; lobes triangular; petiole 10–25 mm long. Inflorescence short, 3–6-flowered; peduncle absent or to 5 mm long; pedicels c. 5 mm long. Calyx 3 mm long, frequently with 1 or 2 large prickles on outer side; lobes triangular, 1 mm long. Corolla campanulate, c. 10 mm diam., pale lavender. Anthers 1.5–2 mm long. Berry depressed globular, 10 mm diam., green, finally light brown, the skin brittle. Seeds 3–3.5 mm long, light brown, winged. *n*=12. Fig. 29E.

Known only from north-western Qld and N.T. Grows in heavy soil on margins of seasonally flooded flats and lagoons. Map 94.

N.T.: Legune Stn, 24 July 1971, *J. Aldrick* (ADW, DNA, NT). Qld: Karumba, *L. Pedley* 2103 (BRI, NSW); near Burketown, *D. E. Symon* 5000 (AD, CANB, NSW).

### Sect. IX. *Acanthophora*

*Solanum* sect. *Acanthophora* Dunal, *Hist. Nat. Solanum* 131, 218 (1813)

Type species: *S. mammosum* L.

Herbs or shrubs, pubescent with simple or small stellate hairs; prickles present. Leaves simple, shallowly to deeply lobed. Inflorescence cyme-like, condensed, unbranched, few-flowered. Corolla stellate, deeply incised. Anthers lanceolate, dehiscing by small terminal pores. Berry firm-fleshed, yellow to bright red or black, sometimes with crisp, white mesocarp. Seeds sometimes narrowly winged.

### 26. \**Solanum capsicoides* All., *Auct. Syn.* 12 (1773)

T: Described from material cultivated at Turin, origin unknown; ? TO, *n.v.*

*S. aculeatissimum* Jacq., *Collectanea* 1: 100 (1787), & *Icon. Pl. Rar.* 1: t. 41 (1786)

T: Jacquin s.n.; W, *n.v.*, *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 60: 711 (1973).

Illustration: D. E. Symon, *op. cit.* fig. 29.



Annual or short-lived perennial shrub to 1 m, green, sparsely pilose with long simple and minute glandular hairs; prickles to 12 mm long, scattered to common on most parts. Leaves broadly ovate, the lamina up to 15 cm long and wide, but usually smaller, concolorous, lobed; petiole to 8 cm long. Flowers 1–3; peduncle 2–4 mm long; pedicels 10–25 mm long. Calyx 4–6 mm long; lobes lanceolate, 2–3 mm long. Corolla stellate, deeply incised, 20–30 mm diam., white. Anthers 5–7 mm long. Berry depressed globular, 20–35 mm diam., bright orange-scarlet, flesh white. Seeds 4–6 mm diam., pale yellowish or light brown, winged.  $n=12$ . *Devil's Apple*. Fig. 26A–B.

Originally from tropical Central America, now widespread in warmer regions of the world. Possibly originally grown as ornamental in Australia; now naturalised in high rainfall, near-coastal areas of Qld and N.S.W. Common in disturbed areas in clearings, along creeklines and forest margins. Map 95.

Qld: Mt Mellum, 1967, *S. L. Everist* (BRI, CANB); near Nambour, *J. M. Swan 61* (ADW). N.S.W.: Byron Bay - Ballina area, *R. Coveny 9384* (ADW, BRI, NSW).

Berries reported poisonous to calves.

### Sect. X. *Lasiocarpum*

*Solanum* sect. *Lasiocarpum* (Dunal) D'Arcy, *Ann. Missouri Bot. Gard.* 59: 270 (1972)

*Solanum* [subser.] *Lasiocarpa* Dunal, in DC., *Prodr.* 13: 30, 252 (1825)

Type species: *S. lasiocarpum* Dunal.

Shrubs or small trees, pubescent with stellate or reduced stellate hairs; hairs sometimes glandular; prickles present. Leaves simple, shallowly or deeply lobed. Inflorescence cyme-like, congested, unbranched, with several bisexual flowers below a few male flowers. Corolla stellate, often white. Anthers dehiscing by terminal pores. Ovary densely pubescent. Berry usually yellow to orange, pubescent. Seeds pale buff.

### 27. \**Solanum ferox* L., *Sp. Pl.* 2nd edn, 1: 267 (1762)

T: Described from Madras area, India; LINN, microfiche AD.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 32 (1981).

Shrub to 3 m, yellowish or rusty-green, densely hirsute-villous with long stellate hairs; prickles to 6 mm long, abundant on stems and petioles, less common elsewhere. Leaves often in unequal-sized pairs, ovate to ovate-elliptic; lamina up to 18 cm long and 15 cm wide, discolorous, lobed, the lobes triangular; petiole 5–8 cm long. Juvenile leaves broadly ovate, up to 30 cm wide, lobed. Inflorescence short, densely hairy, 1–6-flowered; peduncle short; pedicels 5–10 mm long. Calyx 6–8 mm long; lobes broadly triangular, short. Corolla stellate, to 40 mm diam., white. Anthers to 8 mm long. Berry globular, 15–30 mm diam., yellowish, densely hairy. Seeds 2–2.5 mm long, pale yellow. Fig. 29I–J.

A poorly known species in Australia, recorded only from extreme tip of Cape York Peninsula, Qld, where found in basaltic soil in a forest opening. Also occurs in P.N.G. and Malesia. Only recently recorded in Australia, but possibly an early introduction from Central America. Map 96.

Qld: Cult. Brisbane, *V. K. Moriarty 1683* (ADW, BRI, CANB).

**Sect. XI. Androceras**

*Solanum* sect. *Androceras* (Nutt.) Bitter ex Marz., in Hegi, *Fl. Mittel-Europa* 5: 2585 (1927)

*Androcera* Nutt., *Gen. Amer.* 1: 129 (1818)

Type species: *Androcera lobata* Nutt. = *S. rostratum* Dunal

Annuals, rarely herbaceous perennials, pubescent with stellate hairs, occasionally with glandular hairs; prickles present. Leaves simple, deeply lobed. Inflorescence a cyme, unbranched. Corolla yellow, blue or white. Anthers lanceolate, heteromorphic, sometimes one much larger than the others and differently coloured, dehiscing by small terminal pores. Berry dryish, sub-capsular, often dark brown, enclosed in calyx or nearly so. Seeds often dark grey to black.

**28. \**Solanum rostratum* Dunal, *Hist. Nat. Solanum* 234, t. 24 (1813)**

T: Described from material cultivated in Montpellier, France; G, G-DC, MPU, P; n.v., *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 61: 858 (1974).

Illustrations: G. H. Clarke, *Dept. Agric. S. Austral. Bull.* 406: 88 (1949); W. T. Parsons, *Noxious Weeds Victoria* fig. 253 (1973); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 33 (1981).

Annual herb to c. 1 m, green or grey-green, pubescent with stellate and minute glandular hairs; prickles to 1 cm long, abundant on most parts. Leaves ovate or ovate-oblong; lamina 2–10 cm long, 1–8 cm wide, concolorous, lobed; lobes obovate, the lower ones often forming leaflets; petiole to 5 cm long, decurrent. Inflorescence few–10-flowered; peduncle 15–30 mm long; rachis up to 6 cm long, pedicels 5–10 mm long. Calyx 6–10 mm long, enlarged in fruit; lobes narrowly triangular, 3–5 mm long. Corolla irregularly rotate, 30–40 mm diam., bright yellow. Four anthers 6–8 mm long, straight, the fifth 10 mm long, curved. Berry globular, 10 mm diam., drying blackish, skin papery. Seeds 2–2.5 mm long, dark brownish or black.  $n=12$ . *Buffalo Burr, Pincushion Nightshade.* Figs 26E; 29H.

Native to northern Mexico and the plains of southern U.S.A., now widespread in U.S.A. and naturalised in Europe, South Africa, West Indies and Australia. Occurs in cereal-growing areas in Qld, N.S.W., Vic., S.A. and W.A., usually in disturbed habitats. Map 97.

W.A.: West Wagin, Mar. 1965, A. J. McKenzie (PERTH). S.A.: near Virginia, B. Copley 1865 (AD). Qld: Jandowae, Nov. 1961, F. Sperling (BRI). N.S.W.: Yanco, 10 Jan. 1945, J. L. Green (NSW). Vic.: near Doon, 1 Mar. 1960, J. H. Willis (MEL).

A noxious weed in Vic., S.A. and parts of N.S.W. Roots reported poisonous to pigs, foliage to stock. The only yellow-flowered *Solanum* species naturalised in Australia.

**Sect. XII. Cryptocarpum**

*Solanum* sect. *Cryptocarpum* Dunal, *Hist. Nat. Solanum* 134, 232 (1813)

Type species: *S. balbisii* Dunal, (? = *S. sisymbriifolium* Lam.)

Annuals or soft-wooded shrubs, pubescent with stellate and often glandular hairs; prickles present. Leaves simple, deeply lobed. Inflorescence cyme-like, unbranched; lower flowers bisexual, upper flowers sometimes male. Corolla rotate or shallowly incised. Anthers lanceolate, dehiscing by small terminal pores. Berry succulent, bright red, partly enclosed by enlarged calyx.

**29. \*Solanum sisymbriifolium** Lam., *Tabl. Encycl.* 2: 25 (1794)

T: Described from ?Argentina, *Commerson*; P-LA (photo ADW), MPU, *n.v.*, *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 61: 859 (1974).

[*S. aculeatissimum* auct. non Jacquin, C. A. Gardner, *Journ. Roy. Soc. W. Austral.*; 11: 69 (1924-5)]

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 602 (1975); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 34 (1981).

Erect annual or short-lived perennial herb to 1.5 m, green, pubescent with glandular and stellate hairs; prickles to 13 mm long, abundant on most parts. Leaves ovate-lanceolate; lamina 5–14 cm long, 4–10 cm wide, concolorous, lobed; lower lobes often forming leaflets; petiole to 4 cm long. Inflorescence up to 12-flowered; peduncle to 45 mm long; rachis up to 15 cm long; pedicels 10–15 mm long, elongated slightly in fruit. Calyx 6–12 mm long, enlarged in fruit; lobes lanceolate, 4–7 mm long. Corolla stellate, 35–50 mm diam., white or pale blue. Anthers 8–10 mm long. Berry globular, 15–20 mm diam., bright red. Seeds 2–2.5 mm diam., pale buff. *n*=12.

Native to warm temperate South America, widely cultivated as an ornamental and occurring as a weed in many countries. Locally naturalised in Qld, N.S.W. and W.A. Map 98.

W.A.: Bayswater, *J. M. Graham* 3 (PERTH). Qld: Toowoomba, *S. L. Everist* 7772 (BRI). N.S.W.: Gulargambone, Oct. 1972, *D. Smith* (NSW).

**Sect. XIII. Torva**

*Solanum* sect. *Torva* Nees, *Trans. Linn. Soc. London* 17: 51 (1834)

Type species: *S. torvum* Sw.

Large shrubs or small trees, pubescent with stellate hairs; prickles present, often recurved. Leaves simple, entire to deeply lobed. Inflorescence cyme-like, branched, the branches short distal flowers sometimes male. Corolla stellate, often white. Anthers lanceolate, dehiscing by terminal pores. Berry firm and mucilaginous, yellow.

**30. \*Solanum hispidum** Pers., *Syn. Pl.* 1: 228 (1805),

*S. hispidum* Pers, based on *S. stellatum* Ruíz, Lopez & Pavón, *Fl. Peru* 2: 40, t. 176, fig. b (1799); non *S. stellatum* Jacq., *Collectanea* 3: 254 (1791)

T: Described from Huanuco, Panao & Pillao, Peru, *Ruíz & Pavón*; ?MA *n.v.*, *fide* J. F. McBride, *Fl. Peru* 13: 252 (1962).

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 35 (1981).

Shrub or small tree to 4 m, green, pubescent with stellate hairs, the stems rusty; prickles 2–6 mm long, usually sparse on petioles and leaf veins. Leaves broadly ovate, the lamina up to 40 cm long and 30 cm wide, commonly c. 25 x 20 cm, lobed; petiole to 18 cm long. Inflorescence branched, up to 50-flowered; peduncle 1–2 cm long to first fork; pedicels 10–15 mm long. Calyx 7–10 mm long; lobes acuminate, 4–6 mm long. Corolla stellate, 30–45 mm diam., white. Anthers 7–9 mm long. Fruiting pedicel up to 5 mm diam. below calyx. Berry globular, 10–15 mm diam., yellow or orange-yellow, drying brown. Seeds 2 mm diam., light brown. *n*=12. *Giant Devil's Fig*.

Native to tropical Central America. Sparingly naturalised in disturbed sites in Brisbane area, south-eastern Qld. Map 99.

Qld: Brisbane, 26 Nov. 1934, *C. T. White* (BRI).

A declared noxious weed in Qld.

### 31. *\*Solanum torvum* Sw., *Nov. Gen. Sp. Pl. Prodr.* 47 (1788)

T: Jamaica, Swartz *s.n.*; ?S *n.v.*, *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 61: 860 (1974).

*S. largiflorum* C. White, *Queensland Agric. J.* 2nd ser., 8: 170; t. 22 (1917).

T: Kin Kin, Qld, Mar. 1916, C. T. White & W. D. Francis *s.n.*; syn: MEL, NSW.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 35 (1981).

Spreading or scrambling shrub to 3 m, dark green, pubescent with stellate hairs; hairs dense on lower leaf-surface, sparser on upper surface; glandular hairs on pedicels; prickles 3–7 mm long, scattered on stems and leaf-surfaces, sparse to absent on mature growth. Leaves broadly oval-ovate; lamina mostly 10–15 cm long, 8–10 cm wide, discolorous, lobed; lobes broadly triangular; petiole usually 2–5 cm long. Inflorescence usually branched, 50–100-flowered, the upper and late-season flowers often male; peduncle to first fork 10–25 mm long; pedicels 5–10 mm long, slightly longer in fruit. Calyx 3–5 mm long; lobes apiculate, 2–3 mm long. Corolla stellate, deeply incised, 20–25 mm diam., white. Anthers 5–7.5 mm long. Berry globular, 10–15 mm diam., drab yellow, drying black. Seeds 1.5–2 mm long, yellow or drab brown. *n*=24. *Devil's Fig.* Fig. 27H.

Native to the West Indies, now a weed in tropical areas of many countries. Naturalised along coastline of eastern Qld in disturbed areas. Map 100.

Qld: 36 km S of Cooktown, C. H. Gittins 2169 (NSW); 20 km S of Mackay, T. J. McDonald & G. N. Batianoff 1804 (BRI); near Helenvale, V. K. Moriarty 1094 (CANB); near Euramo, D. E. Symon 4744 (ADW).

A noxious weed in Qld. Suspected of poisoning stock. Still some confusion as to application of species name.

## Sect. XIV. *Irenosolanum*

*Solanum* sect. *Irenosolanum* Seithe, *Bot. Jahrb. Syst.* 81: 301 (1962)

Type species: *S. woahense* Dunal

Shrubs or small trees, glabrescent or pubescent with sparse, minute, stellate hairs; prickles usually absent from mature plants, sometimes present on stems of young plants. Leaves simple, entire. Inflorescence a simple or little-branched compact cyme, rarely panicle-like. Corolla usually stellate. Anthers lanceolate, dehiscing by terminal pores. Berry succulent, red.

### 32. *Solanum dunalianum* Gaudich., in Freycinet, *Voy. Uranie* 448 (1830); t. 58 (1828)

T: Pisang Island, Moluccas, Dec. 1818; P *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 38 (1981).

Shrub or small tree to several metres, deep green; young shoots and inflorescence pubescent with minute stellate hairs, the mature twigs and leaves glabrous except leaf axils; prickles absent or 1–2 mm long. Upper leaves usually in unequal-sized pairs; larger leaf elliptic, the lamina up to 30 cm long and 15 cm wide, concolorous, entire; petiole 20–35 mm long; smaller leaf similar, the lamina up to 15 cm long and 5 cm wide; petiole 5–10 mm long. Inflorescence often forked, 10–20-flowered; peduncle to first fork c. 10 mm long; rachis 5–10 mm long; pedicels 5–8 mm long, elongated in

fruit. Calyx 2–3 mm long; lobes triangular, short. Corolla stellate, deeply incised, 20–30 mm diam., 4–5-lobed, violet. Anthers 4–5 mm long. Berry globular, 8–10 mm diam., orange or orange-red; fruiting pedicels 1–1.5 cm long. Seeds 3 mm long, colour not known.

In Australia known only from two collections from the far north of Cape York Peninsula and Thursday Island, Qld. Extends from Malesia through P.N.G. to western Pacific islands. Map 101.

Qld: Embley River, *J. M. Swan 141* (ADW, BRI, CANB).

### 33. *Solanum tetrandrum* R. Br., *Prodr.* 445 (1810)

T: Cotton Is. and Pobassoo Is., Arnhem Bay, N.T., *R. Brown s.n.*; lecto: BM; iso: K, MEL; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 122 (1981).

*S. tetrandrum* var. ? *floribundum* Benth., *Fl. Austral.* 4: 449 (1868).

T: 'From Leichhardt's collection', not traced, *fide* D. E. Symon, *loc. cit.*

Illustration: D. E. Symon, *op. cit.* fig. 39.

Shrub to 3 m, grey-green, pubescent with stellate hairs; hairs scattered on upper leaf-surface, denser on lower surface, the older leaves almost glabrous; prickles absent. Leaves broadly elliptic or ovate; lamina 5–10 cm long, 3.5–6 cm wide, sometimes larger, slightly discolorous, entire, or juvenile leaves slightly sinuate; petiole usually 1–3 cm long. Inflorescence 5–20-flowered; peduncle to 5 mm long; rachis 5–15 mm long; pedicels 4–5 mm long. Calyx 4–5 mm long; lobes lanceolate, 2–3 mm long. Corolla stellate, deeply incised, 25 mm diam., usually 4-lobed, white or pale blue. Anthers 4–5 mm long. Berry globular, 5–7 mm diam., bright red, drying brownish-orange. Seeds 2–2.5 mm diam., pale yellow or light grey. *n*=12. Fig. 30A.

Restricted to the coastline of northern N.T. and adjacent islands, occurring on margins of rainforest scrub on coastal sands. Also occurs in western Pacific to New Caledonia. Map 102.

N.T.: Humpty Doo, *J. L. McKean 409* (ADW, CANB, DNA, NT); Bathurst Is., *P. Stevenson 139* (DNA).

Plants deciduous, often almost leafless in dry season.

### 34. *Solanum viride* R. Br., *Prodr.* 445 (1810)

T: Coast between Curtis Is. and Broad Sound, Qld, *R. Brown s.n.*; lecto: BM; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 124 (1981).

*S. viridifolium* Dunal, in DC., *Prodr.* 13(1): 73 (1852).

T: Near Cape Grafton (Qld), *J. Banks s.n.*; holotype: BM.

Illustration: D. E. Symon, *op. cit.* fig. 40.

Erect shrub or small tree to 5 m, green, the young shoots and corolla lobes very sparsely pubescent with minute stellate hairs; prickles present on stems of young plants, absent from mature twigs. Leaves ovate or elliptic; lamina 7–15 cm long, 3–6 cm wide, concolorous, entire; petiole 1–2 cm long. Inflorescence often branched, 10–50-flowered; peduncle 1–2 cm long to first fork, sometimes longer; rachis 2–4 cm long; pedicels 1–1.5 cm long, slightly longer in fruit. Calyx 3–5 mm long; lobes triangular with slender apices, 1–3 mm long. Corolla stellate, deeply incised, 15–18 mm diam., dark or pale purple. Anthers 3–5 mm long. Berry globular, 7–10 mm diam., orange-yellow to red. Seeds 2.5–3 mm long, light grey-brown or yellow. *n*=12.

Occurs along coast of eastern Qld, on rainforest margins and disturbed areas. Grows in soils ranging from basaltic or granitic to sandy coastal dunes. Map 103.

Qld: Pascoe River, *L. J. Brass 19589* (BRI, CANB); Bingil Bay, *L. J. Webb & J. G. Tracey 8351* (ADW).

### Sect. XV. Graciliflorum

*Solanum* sect. *Graciliflorum* (Dunal) Seithe, *Bot. Jahrb. Syst.* 81: 302 (1962)

*Solanum* [ser.] *Graciliflora* Dunal, in DC., *Prodr.* 13(1): 29 (1852).

Type species: *S. graciliflorum* Dunal

Shrubs, pubescent with stellate hairs; prickles present. Leaves simple, entire or at least the juvenile ones shallowly lobed. Inflorescence a simple or rarely branched cyme; flowers usually few. Corolla stellate. Anthers lanceolate, dehiscing by terminal pores. Berry succulent, red.

### 35. *Solanum semiarmatum* F. Muell., *Fragm. Phytogr. Austral.* 2: 163 (1861)

T: Clarence River, N.S.W., *Beckler s.n.*; holotype: MEL 12130; isotype: K, NSW.

*S. mitchellianum* Domin, *Repert. Spec. Nov. Regni Veg.* 12: 131 (1913).

T: Subtropical New Holland, 1846, *Mitchell s.n.*; lectotype: K; isotype: BM, L; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 125 (1981).

Illustrations: D. E. Symon, *op. cit.* figs 41, 42.

Erect clonal shrub to 2 m, dark green, pubescent with stellate and minute glandular hairs; hairs sparse on upper leaf-surface, dense on lower surface; prickles to 15 mm long, abundant on stems, petioles and lower peduncle, usually less common elsewhere. Leaves mostly discolorous, variable; lower, deeply lobed leaves ovate, the lamina 10–20 cm long, 6–15 cm wide; petiole to 8 cm long; upper, entire to shallowly lobed leaves elliptic-lanceolate, the lamina mostly 6–9 cm long, 2–5 cm wide, sometimes larger; petiole to 3 cm long. Inflorescence 5–30-flowered; peduncle 1.5–6 cm long to first fork; rachis often branched, to 5 cm long; pedicels 3–10 mm long. Calyx 4–7 mm long; lobes narrowly triangular, 2–3 mm long. Corolla stellate, deeply incised, 1–2 cm diam., bluish-purple. Anthers 3–4.5 mm long. Berry globular, 8–12 mm diam., dark red to black. Seeds 2–2.5 mm long, pale brown. *n*=12. Fig. 26 I; frontispiece.

Widespread in south-eastern Qld and far north-eastern N.S.W. Common on rainforest margins, along creek banks in vine and wet sclerophyll forests, often in basaltic soils. Map 104.

Qld: 80 km SW of Rolleston, *M. D. Crisp 3084* (ADW, BRI); Glen Morgan, *D. M. Gordon 8001* (CANB). N.S.W.: Tooloom Range, Dec. 1907, *J. H. Maiden* (NSW).

A variable species, with specimens showing a range in the degree of prickliness and pubescence, complexity of inflorescence and colour of fruit.

### 36. *Solanum stelligerum* Smith, *Exotic Bot.* 2: 57; t. 88 (1805)

T: Described from N.S.W.; LINN.

*S. magnifolium* F. Muell., *Fragm. Phytogr. Austral.* 6: 27 (1867).

T: Near Rockingham Bay, Qld, *Dallachy s.n.*; isotype: K.

*S. stelligerum* var. *magnifolium* Benth., *Fl. Austral.* 4: 451 (1868).

T: Murray R., Rockingham Bay, *Dallachy s.n.*; synonym: K; Moreton Bay, Qld, *Leichhardt s.n.*; *n.v.*

*S. lucorum* Domin, *Repert. Spec. Nov. Regni Veg.* 12: 130 (1913).

T: Araucaria Ranges, Burnett River, *F. Mueller s.n.*; K, MEL.

*S. accedens* Domin, *loc. cit.*

T: Rockhampton, Qld, *Dallachy s.n.*; K, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 128 (1981).

*S. stelligerum* var. *procumbens* C. White, *Proc. Roy. Soc. Queensland* 55: 72 (1944).

T: Lamington National Park, Qld, 27 Nov. 1942, *C. T. White 11889*; holo: BRI.

Illustration: D. E. Symon, *op. cit.* fig. 43.

Erect, sparingly clonal, woody shrub to 2 m, dark green, pubescent with stellate hairs; hairs sparse to absent on upper leaf-surface except along veins, dense on lower surface; prickles to 12 mm long, usually scattered on stems, less common or absent elsewhere. Leaves lanceolate-elliptic; lamina 3–7 cm long, 1–2.5 cm wide, sometimes larger, discolorous, entire or margin irregular; petiole 5–20 mm long. Inflorescence 1–10-flowered; peduncle to 2 cm long; rachis up to 2 cm long; pedicels 1–2 cm long, slightly longer in fruit. Calyx 6–8 mm long; lobes narrowly triangular, 3–6 mm long. Corolla stellate, deeply incised, 20–25 mm diam., pale lilac to almost white. Anthers 4–5 mm long. Fruiting calyx-lobes 7–8 mm long. Berry globular, 5–10 mm diam., bright red. Seeds 1.5–2 mm long, usually pale yellow. *n*=12. *Devil's Needles*.

Occurs along the eastern coast of Qld and N.S.W. on coastal sand dunes, in Eucalypt forest and on rainforest margins. Grows mainly in sandy loam, dune sand and basaltic soil, occasionally in clay. Map 105.

Qld: D'Aguilar Range, *V. K. Moriarty 1209* (ADW, CANB); near Canungra, 19 Nov. 1972, *K. Williams* (BRI). N.S.W.: Ulladulla, 12 Dec. 1950, *E. F. Constable* (NSW).

A variable species, particularly in south-eastern Qld. Closely related to *S. corifolium* F. Muell. with which it may hybridise; distinguished by more erect habit, denser tomentum, leaf shape and smaller fruit. Fruits eaten by Aborigines in coastal N.S.W.

### 37. *Solanum parvifolium* R. Br., *Prodr.* 446 (1810)

T: Broad Sound, *R. Brown s.n.*; lecto: BM; iso: K, MPU; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 132 (1981).

*S. angustum* Domin, *Biblioth. Bot.* 89: 588; fig. 190 (1929).

T: Walsh River, near Chillagoe, North Qld, Feb. 1910, *Domin 8310*; holo: PR, photo ADW.

Illustration: D. E. Symon, *op. cit.* fig. 44.

Erect woody shrub, dark green, pubescent with minute stellate hairs; hairs sparse or absent on upper leaf-surface, dense on lower surface; prickles 4–10 mm long, scattered to abundant on stems, rare or absent elsewhere. Leaves linear-oblong; lamina mostly 3–6 cm long, 6–10 mm wide, discolorous, entire; petiole 3–5 mm long, sometimes longer. Inflorescence short, 1–5-flowered; peduncle to 6 mm long; pedicels 5–10 mm long, lengthened in fruit. Calyx 3–4 mm long; lobes oblong or triangular, 1–2 mm long. Corolla stellate, deeply incised, 10–15 mm diam., pale blue or white. Anthers 3–5 mm long. Berry globular, 5–8 mm diam., bright red; fruiting pedicels 1.2–2 cm long. Seeds 2–2.5 mm long, pale yellow or brown. Fig. 25A.

Occurs predominantly in south-eastern Qld and north-eastern N.S.W. in red or dark clay and loam. Map 106.

Qld: Benandri, *S. L. Everist 7153* (ADW, CANB); Moura, *R. Henderson 203* (BRI). N.S.W.: Warrumbungle Mtns, 23 May 1948, *E. F. Constable* (NSW); Warrumbungle National Park, 13 May 1969, *J. H. Willis* (MEL).

Closely related to *S. ferocissimum* Lindley and *S. stelligerum* Smith; distinguished from the former by discolorous leaves and fewer prickles, and from the latter by smaller leaves and fruit.

**38. *Solanum ferocissimum*** Lindley, in Mitchell, *Three Exped. Interior Eastern Austral.* 2: 58 (1838)

*S. ferocissimum* var. *typicum* Domin, *Biblioth. Bot.* 89: 580 (1929), *nom. illeg.*

T: Near 'Burradorgang', interior of New Holland, 28 Apr. 1836, *J. Richardson s.n.*; holo: CGE; iso: K, MEL.

*S. leptophyllum* F. Muell., *Fragm. Phytogr. Austral.* 2: 164 (1861).

T: Near Mackenzie and Suttor Rivers, *F. Mueller s.n.*; *n.v.*; near Castlereagh River, *Bowman s.n.*; *n.v.*; near Warwick, Barrier Range, *Beckler s.n.*; *n.v.*; near Mt Murchison, *Dallachy s.n.*; syn: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 134 (1981).

*S. ferocissimum* var. *hastilobum* Domin, *op. cit.* 581.

T: Mt Murchison, N.S.W., *Dallachy s.n.*; syn: K; Mt Ilbillie, S.A., 4 June 1891, *R. Helms s.n.*; syn: AD, K, NSW; *fide* D. E. Symon, *loc. cit.*

*S. ferocissimum* var. *rectispineum* Domin, *op. cit.* 580.

T: Dividing Range near Jericho, Qld, Mar. 1910, *Domin*; syn: PR; Peels Range, N.S.W., *Fraser*; syn: BM, K, OXF; Peels Range, N.S.W., *A. Cunningham*; syn: BM; *fide* D. E. Symon, *loc. cit.*

Illustration: D. E. Symon, *op. cit.* fig. 45.

Erect, intricate, clonal shrub to 1 m, green; leaves, young stems and calyx variably pubescent with stellate and some minute glandular hairs; hairs sparse on upper leaf-surface, denser on lower surface; prickles 5–10 mm long, usually abundant on stems, leaves and peduncles, absent elsewhere. Leaves linear or linear-hastate; lamina 3–6 cm long, 2–7 mm wide, sometimes larger, concolorous to slightly discolorous, entire or with 1–2 basal lobes; petiole 5–15 mm long. Inflorescence short, 3–6-flowered; peduncle absent or to 3 mm long; pedicels to 12 mm long. Calyx 2–4 mm long; lobes triangular, 1–3 mm long. Corolla stellate, deeply incised, 15–20 mm diam., white or pale blue. Anthers 1–3.5 mm long. Berry globular, 5–8 mm diam., shiny red to almost black. Seeds 2–4 mm long, pale yellowish or light grey-brown. *n*=12, 24. Figs 24 I, 27D, 30B.

A species of disjunct distribution. Occurs mainly in southern Qld and central and western N.S.W. in red loamy soil, and in northern S.A. and southern N.T. in sandy soil, frequently in shelter of other trees or shrubs. Scattered collections from creeklines in W.A. Map 107.

W.A.: Hamersley Range National Park, *G. W. Carr* 4908 & *A. C. Beaglehole* 48686 (PERTH). N.T.: c. 24 km SW of Alice Springs, *P. K. Latz* 121 (NT). S.A.: 16 km E of Teyon Homestead, *E. A. Shaw* 458 (AD, ADW). Qld: near Westmar, *L. Pedley* 743 (BRI). N.S.W.: 28 km W of Brewarrina, *D. F. Blaxell* 415 (NSW).

Closely related to *S. parvifolium* R. Br.; distinguished by more copious prickles and concolorous to slightly discolorous leaves.

**39. *Solanum corifolium*** F. Muell., *Fragm. Phytogr. Austral.* 2: 166 (1861)

T: Araucaria Ranges, Moreton Bay, Qld; lecto: MEL, iso: K, TCD; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 135 (1981).

*S. ×shirleyanum* Domin, *Biblioth. Bot.* 89: 578 (1929).

T: Tambourine Mtns, southern Qld, Mar. 1910, *Domin s.n.*; syn: PR *n.v.*

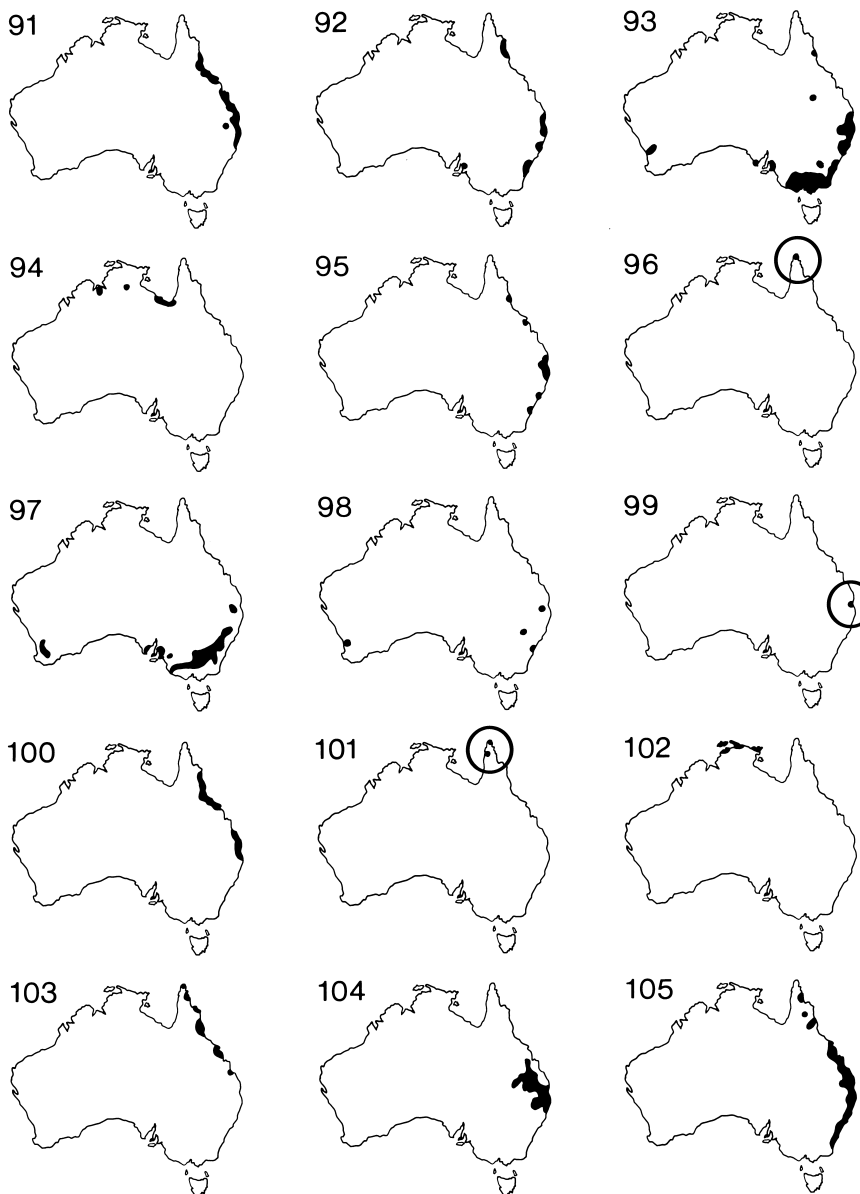
*S. discolor* var. *procumbens* C. White, *Proc. Roy. Soc. Queensland* 55: 71 (1944).

T: Upper Teviot, Darling Downs District, Qld, *B. Scortechini s.n.*; holo: MEL; Kin Kin, Wide Bay, Jan. 1917, *C. T. White s.n.*; *n.v.*

Illustration: D. E. Symon, *op. cit.* fig. 46.

Erect or sprawling shrub to 1.5 m, dark green, pubescent with stellate hairs; hairs dense on lower leaf-surface, absent or confined to veins on upper surface; prickles to 1 cm long, scattered to abundant on stems, few or absent elsewhere. Leaves elliptic;





91. *Solanum erianthum*  
 94. *Solanum pugiunculiferum*  
 97. *Solanum rostratum*  
 100. *Solanum torvum*  
 103. *Solanum viride*

92. *Solanum mauritanium*  
 95. *Solanum capsicoides*  
 98. *Solanum sisymbriifolium*  
 101. *Solanum dunalianum*  
 104. *Solanum semiarmatum*

93. *Solanum pseudocapsicum*  
 96. *Solanum ferox*  
 99. *Solanum hispidum*  
 102. *Solanum tetrandrum*  
 105. *Solanum stelligerum*

lamina 5–10 cm long, 2–5 cm wide, sometimes larger, discolorous, the lower ones shallowly lobed, upper ones entire or almost so; petiole 5–10 mm long. Inflorescence few–12-flowered; peduncle c. 5 mm long; rachis up to 10 mm long; pedicels 10–12 mm long. Calyx 4–6 mm long; lobes oblong, 2–3 mm long. Corolla stellate, deeply incised, 20 mm diam., white or violet. Anthers 4–5 mm long. Berry globular, 10–15 mm diam., bright red. Seeds 2–3.5 mm diam., pale yellow or pale orange.  $n=12$ .

Occurs predominantly in south-eastern Qld and north-eastern N.S.W., mainly in basaltic soil. Common in rainforest and wet sclerophyll forest. Map 108.

Qld: D'Aguilar Range, V. K. Moriarty 907 (BRI); Laceys Creek, L. J. Webb & J. G. Tracey 10738 (ADW). N.S.W.: SSW of Alstonville, S. Clark, J. Pickard & R. Coveny 1260 (NSW).

Variable in habit, prickliness and flower colour. Closely related to *S. stelligerum* Smith and *S. discolor* R. Br.; distinguished from the former by larger fruits and from the latter by entire or more shallowly lobed leaves.

#### 40. *Solanum yirrkalensis* Symon, *J. Adelaide Bot. Gard.* 4: 137; figs 47, 49 (1981)

T: Yirrkala Gardens, N.T., 27 Feb. 1976, D. Hinz 7633; holo: NT; iso: ADW, BRI, CANB, DNA, K, L, NSW.

Illustrations: D. E. Symon, *loc. cit.*

Low spreading shrub, dark green, pubescent with minute stellate hairs; hairs dense on lower leaf-surface, sparse to absent on upper surface; prickles absent, or to 5 mm long, scattered on stems and leaf-surfaces. Leaves elliptic; lamina 5–10 cm long, 2.5–4 cm wide, discolorous, entire; petiole 10–15 mm long. Lower leaves broadly elliptic, the lamina up to 12 cm long, 7 cm wide, shallowly lobed; petiole to 3 cm long. Inflorescence up to 8-flowered; lower flowers bisexual, upper flowers male; peduncle 5–20 mm long; rachis up to 10 mm long; pedicels to 20 mm long. Bisexual flowers: calyx 3–6 mm long, the lobes lanceolate, 1–3 mm long; corolla stellate, deeply incised, to 25 mm diam., white or faintly tinged blue; anthers 5 mm long. Male flowers similar: calyx-lobes very short; corolla 10–15 mm diam. Berry globular, 10–15 mm diam., red. Seeds 4–5 mm long, dark brown or pale yellow, hairy.  $n=12$ .

An inadequately known species, recorded only from Yirrkala, N.T., on disturbed edge of vine forest on coastal dune, in red sandy soil. Map 109.

N.T.: Yirrkala, N. Scarlett 275 (ADW).

#### 41. *Solanum discolor* R. Br., *Prodr.* 445 (1810)

T: Coen River, Gulf of Carpentaria, 6 Nov. 1802, R. Brown s.n.; lecto: BM n.v., photo ADW; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 140 (1981).

*S. defensum* F. Muell., *Fragm. Phytogr. Austral.* 5: 193 (1866).

T: Cape York, E. Daemel s.n.; holo: MEL; iso: BM.

Illustration: D. E. Symon, *op. cit.* fig. 50.

Erect shrub to 1 m, green; stems and petioles pubescent with minute stellate hairs, leaves sparsely pubescent to glabrous on both surfaces; prickles to 7 mm long, frequent on older stems, scattered on leaf-surfaces. Leaves lanceolate-elliptic; lamina 9–18 cm long, 2–5 cm wide, concolorous, shallowly lobed; lobes bluntly triangular; petiole 1–2 cm long. Inflorescence up to 12-flowered, upper flowers male, lower flowers bisexual; peduncle 10–30 mm long; pedicels 10–15 mm long, elongated in fruit. Bisexual flowers: calyx 3–4 mm long, the lobes triangular, 2–3 mm long; corolla

stellate, deeply incised, 15–20 mm diam., violet; anthers 5–6 mm long. Male flowers similar. Berry 10–15 mm diam., blood-red; fruiting pedicel 15–25 mm long. Seeds 3–4 mm long, pale buff, winged on one side. *n*=24.

Known only from tip of Cape York Peninsula and McIlwraith Range area of northern Qld. Map 110.

Qld: McIlwraith Range, *B. Hyland* 8429 (ADW).

#### 42. *Solanum densevestitum* F. Muell. ex Benth., *Fl. Austral.* 4: 456 (1868)

T: Araucaria Ranges, Qld, Dec. 1856, *F. Mueller s.n.*; syn: MEL; Upper Burnett River, Qld, *F. Mueller s.n.*; syn: K; Brisbane River, Moreton Bay, Qld, Dec. 1856, *F. Mueller s.n.*; lecto: MEL 12200; iso: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 142 (1981); New England, N.S.W., *C. Stuart s.n.*; syn.: K; Hastings River, N.S.W., *Beckler s.n.*; syn: K; Mt Lindsay, N.S.W., *C. Moore s.n.*; syn: NSW.

Illustration: D. E. Symon, *op. cit.* fig. 51.

Leafy, clonal shrub to 1 m, green, densely pubescent with stellate hairs; twigs and young growth hirsute-villous; prickles usually absent, occasionally present, to 9 mm long. Leaves ovate, ovate-lanceolate or elliptic; lamina mostly 6–9 cm long, 3–4 cm wide, slightly discoloured, mature leaves entire or almost so, the juvenile leaves shallowly lobed; petiole 1–3 cm long. Inflorescence short, 1–3-flowered; peduncle absent; pedicels c. 10 mm long, lengthened in fruit. Calyx 5–15 mm long; lobes usually elliptic to oblong, 4–12 mm long, leafy, slightly enlarged in fruit. Corolla stellate, shallowly incised, 25–30 mm diam., 4–5-lobed, violet. Anthers 4–5 mm long. Berry globular, 6–7 mm diam., bright red, largely covered by calyx-lobes. Seeds 2–2.5 mm diam., pale yellow-brown. *n*=12. Figs. 25C–D; 30C.

Occurs in coastal and subcoastal areas of south-eastern Qld and north-eastern N.S.W., in sand and basaltic soil. Usually associated with wet sclerophyll forest or rainforest margins. Map 111.

Qld: Mt Glorious, *R. J. Henderson* 2165 (ADW, BRI, CANB, NSW). N.S.W.: Coffs Harbour, June 1911, *J. L. Boorman* (NSW).

Closely related to *S. nemophilum* F. Muell., but usually occurs in wetter habitats; distinguished by larger leaves and calyx-lobes.

#### 43. *Solanum nemophilum* F. Muell., *Fragm. Phytogr. Austral.* 2: 161 (1861)

*S. nemophilum* var. *typicum* Domin, *Biblioth. Bot.* 89: 584 (1929) *nom. illeg.*

T: Between the Mackenzie and Dawson Rivers, Qld, *coll. unknown*; lecto: MEL 12201; iso: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 144 (1981).

*S. nemophilum* var. *brachycarpum* Domin, *op. cit.* 585.

T: Near Pentland, Mar. 1910, *Domin s.n.*; iso: PR *n.v.*, photo ADW.

Illustration: D. E. Symon, *op. cit.* fig. 52.

Shrub to 1.5 m, drab green, densely pubescent with stellate hairs; prickles generally absent, occasionally present on stems. Leaves elliptic, ovate-lanceolate or rarely ovate; lamina mostly 3–6 cm long, 1.5–2.5 cm wide, slightly discoloured, entire; petiole 5–10 mm long. Inflorescence short, 1–4-flowered; peduncle to 5 mm long; pedicels c. 5 mm long. Calyx 5–8 mm long; lobes linear-oblong or narrowly triangular, 2–5 mm long, slightly enlarged in fruit. Corolla stellate, shallowly incised, 15–25 mm diam., purple-blue. Anthers 3–5 mm long. Berry globular, 5–8 mm diam., bright red, more or less covered by calyx-lobes. Seeds c. 2 mm long, pale. *n*=12.

Occurs on western slopes of ranges in south-eastern Qld, and rarely from north-eastern N.S.W., on stony outcrops, in granitic and basaltic soil. Associated with margins of vine forest, brigalow and lancewood (*Acacia* spp.) and Eucalypt woodland. Map 112.

Qld: Hannaford, *T. J. McDonald* 63 (BRI). N.S.W.: c. 48 km NE of Glen Innes, 24 Apr. 1956, *E. F. Constable* (NSW).

Closely related to *S. densevestitum* F. Muell. ex Benth.; distinguished by generally smaller parts, especially calyx-lobes, and denser tomentum.

#### 44. *Solanum elegans* Dunal ex Poiret, *Encycl. Suppl.* 3: 769 (1814)

T: An unpublished plate in Herb. Dunal, MPU, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 146 (1981).

*S. amblymerum* Dunal, in DC., *Prodr.* 13(1): 294 (1852); *S. violaceum* var. *amblymerum* (Dunal) Maiden & Betche, *Census New South Wales Pl.* 181 (1916).

T: Macquarie River, N.S.W., 1822, *A. Cunningham* 90; holo: G; iso: BM, K, *fide* D. E. Symon, *loc. cit.*

Illustration: D. E. Symon, *op. cit.* fig. 53.

Erect shrub to 1 m, possibly clonal, dark green; leaves pubescent with minute stellate hairs, the hairs sparse on upper surface, dense on lower surface; prickles 1–8 mm long, scattered on stems, leaves and peduncles, largely absent elsewhere. Leaves linear to lanceolate; lamina 4–6 cm long, 5–15 mm wide, sometimes larger, discolorous, entire to sinuate; petiole 5–10 mm long; lamina of juvenile leaves, up to 14 cm long, shallowly lobed towards base; petiole to 4 cm long. Inflorescence 1–6-flowered; peduncle absent or to 10 mm long; rachis up to 10 mm long; pedicels 10–13 mm long. Calyx 5–6 mm long; lobes triangular, 2–3 mm long. Corolla stellate, shallowly incised, 25–30 mm diam., purple or heliotrope. Anthers 3.5–6 mm long. Berry globular, 10–15 mm diam., red. Seeds 2.5–3 mm diam., pale brown. *Spiny Kangaroo Apple*.

Occurs in south-eastern Qld and north-eastern N.S.W. in open forest, in rocky soil derived from granite or conglomerate. Map 113.

Qld: Near Stanthorpe, *L. Pedley* 1161 (BRI). N.S.W.: Torrington, Oct. 1911, *J. L. Boorman* (NSW); Jennings, Dec. 1903, *J. H. Maiden* & *J. L. Boorman* (NSW); near Tenterfield, *R. Pearce* 88 (ADW).

Closely related to *S. parvifolium* R. Br. from which distinguished by generally larger leaves, lobing of juvenile leaves, and larger flowers and fruits.

#### 45. *Solanum chenopodium* F. Muell., *Fragm. Phytogr. Austral.* 2: 165 (1861)

T: River Darling, N.S.W., *Beckler s.n.*; syn: MEL; Barrier Range, N.S.W., *Beckler s.n.*; syn: MEL; Mt Murchison, *Dallachy s.n.*; lecto: MEL; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 148 (1981); Stuart's Creek, *J. M. Stuart s.n.*; syn: K.

Illustration: D. E. Symon, *op. cit.* fig. 54.

Erect shrub to 1 m, green, pubescent with minute stellate hairs; hairs sparse on upper leaf-surface, dense on lower surface; prickles to 1 cm long, usually scattered on stems, less common or absent elsewhere. Leaves hastate but variable; lamina mostly 4–6 cm long, 2–4 cm wide, discolorous, usually with 2–4 lobes towards base; petiole 10–15 mm long. Inflorescence 3–12-flowered; peduncle to 5 mm long; rachis 5–25 mm long, pedicels 5–6 mm long. Calyx 2–4 mm long, sometimes larger; lobes triangular or lanceolate, 1–3 mm long. Corolla stellate, 10–20 mm diam., pale lilac or

white. Anthers 3–5 mm long. Berry globular, 5–9 mm diam., bright red, drying blackish. Seeds 3–5 mm long, pale yellow.  $n=12$ . Figs 25K–M, 30C.

A species of disjunct distribution in arid areas of south-western Qld, north-western N.S.W., central-eastern S.A. and southern N.T. Usually grows in sandy soil and on alluvial banks of seasonally flooded creeks, often in shelter of other shrubs or trees. Map 114.

N.T.: Near Simpsons Gap, *N. Byrnes 168* (CANB, DNA); c. 22 km W of Alice Springs, *P. K. Latz* (NT). S.A.: 21 km W of Old Moolawatana, *D. E. Symon 5972* (ADW). Qld: Currawilla, *S. L. Everist 4025* (BRI). N.S.W.: Milparinka, *G. M. Cunningham 1078* & *P. L. Milthorpe* (NSW).

## Sect. XVI. *Oliganthes*

*Solanum* sect. *Oliganthes* (Dunal) Bitter, *Repert. Spec. Nov. Regni Veg. Beih.* 16: 1 (1923)

*Solanum* [ser.] *Oliganthes* Dunal, in DC., *Prodr.* 13(1): 30, 282 (1825).

Type species: *S. indicum* L.

Small shrubs or herbaceous perennials, pubescent with stellate hairs; prickles present. Leaves simple, entire or lobed. Inflorescence usually simple, extra-axillary, few-flowered. Corolla stellate and shallowly incised, to rotate. Anthers lanceolate, dehiscent by terminal pores. Berry mucilaginous, succulent, dry or hard and bony, mostly yellow.

### 46. \**Solanum dimidiatum* Raf., *Aut. Bot.* 8: 107 (1840)

T: Texas, New Mexico, Arkansas; *n.v.*

[*S. carolinense* auct. non L.: H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 202 (1979)]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 55 (1981).

Clonal perennial herb to 50 cm, green, pubescent with minute stellate hairs; prickles to 7 mm long, scattered on midrib of lower leaf-surface, petioles and stems. Leaves ovate to broadly lanceolate; lamina 5–12 cm long, 3–7 cm wide, slightly discoloured, lobed; lobes broadly triangular to oblong; petiole 1–4 cm long. Inflorescence often forked, few–15-flowered; peduncle 1–2 cm long to first fork; rachis 2–5 cm long; pedicels 1 cm long. Calyx 8–10 mm long; lobes broadly triangular with slender apex, 3–5 mm long. Corolla stellate, shallowly incised, 30–40 mm diam., violet. Anthers 5–7 mm long. Berry globular, 15–20 mm diam., yellow. Seeds 2.5–4 mm long, pale buff.  $n=36$ .

Native to south-eastern U.S.A. Recently introduced to Australia and naturalised in the Bundaberg area, Qld, where associated with sugar cane. Map 115.

Qld: Near Bundaberg, Nov. 1972, *N. H. Adams* (BRI).

A declared noxious weed in Qld (as *S. carolinense* L., a name misapplied to the species).

### 47. \**Solanum elaeagnifolium* Cav., *Icon.* 3: 22; t. 243 (1795)

T: From tropical America; C, MA, P-Juss., *fide* W. G. D'Arcy, *Ann. Missouri Bot. Gard.* 61: 847 (1974).

Illustrations: W. T. Parsons, *Noxious Weeds Victoria*, fig. 251 (1973); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 203 (1979); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 56 (1981).

Erect, clonal perennial herb to 1 m, often suckering, silvery-green, rarely rusty-green, densely pubescent with stellate hairs; prickles 2–5 mm long, usually on stems, less common elsewhere. Leaves oblong-lanceolate to oblong; lamina 2.5–10 cm long, 1–3 cm wide, sometimes larger, slightly discoloured, entire (upper leaves) to shallowly lobed (lower leaves); petiole 5–10 mm long. Inflorescence 1–4-flowered; peduncle 5–10 mm long; rachis 20–30 mm long; pedicels c. 10 mm long, lengthened in fruit. Calyx 9–10 mm long, enlarged in fruit; tube 5-ribbed; lobes awl-shaped, 4–5 mm long. Corolla rotate-stellate, 20–30 mm diam., blue, rarely white, pink or deep purple. Anthers 5–8 mm long. Berry depressed globular, 8–14 mm diam., orange-brown; fruiting pedicels 20–30 mm long. Seeds 2.5–4 mm long, light brown.  $n=12$ . *Silver-leaf Nightshade*, *White Horse Nettle*.

Native to south-western U.S.A., northern Mexico and temperate South America, now introduced to Europe, Asia, Africa and Australia. Naturalised in south-eastern Qld, western slopes and southern plains of N.S.W., Vic., southern S.A. and south-western W.A.; occasional in southern N.T. Usually a weed of cereal land and pasture. Map 116.

W.A.: Muresk, 3 Mar. 1953, *H. A. Lovegrove* (PERTH). S.A.: Darlington, *Hj. Eichler* 12167 (AD). Qld: Gattton, 12 Dec. 1977, *M. Olsen* (BRI). N.S.W.: Cowra, *D. E. Symon* 9893a (ADW, NSW). Vic.: Corio Bay, *T. B. Muir* 3168 (MEL).

A declared noxious weed in Qld, Vic. and S.A. Australian material previously often confused with *S. esuriale* Lindley and *S. ellipticum* R. Br.

#### 48. *Solanum orbiculatum* Dunal ex Poiret, *Encycl. Suppl.* 3: 762 (1814)

T: New Holland: Baie des Chiens Marins (Shark Bay), W.A., 1801, *C. Gaudichaud s.n.*; lecto: P; iso: BM, G, K, P; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 156 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 57.

Erect or rounded, clonal shrub to 1.5 m, silvery-, rusty- or grey-green, pubescent with stellate hairs; prickles absent, if present 5–15 mm long, sparsely scattered on stems. Leaves orbicular to ovate, concolorous; lamina 15–60 mm long, entire; petiole 5–20 mm long. Inflorescence 1–4-flowered; peduncle to 10 mm long; rachis 3–5 mm long, pedicels 5–12 mm long. Calyx 4–7 mm long; lobes broadly triangular, 1–2 mm long, slightly elongated in fruit. Corolla stellate, 20–25 mm diam., violet. Anthers 5–7 mm long. Berry globular, 10–15 mm diam., yellow-ivory, drying dark brown. Seeds 2–3 mm long, pale brown.  $n=12$ .

Leaves orbicular, usually 1.5–3 cm diam.

**48a. subsp. orbiculatum**

Leaves ovate, usually 3–6 cm long

**48b. subsp. macrophyllum**

#### 48a. *Solanum orbiculatum* Dunal ex Poiret subsp. **orbiculatum**

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 600 (1975); Symon, *op. cit.* fig. 58.

All parts densely pubescent. Leaves usually orbicular, the lamina 1.5–3 cm diam., sometimes larger, silvery-green or rusty-green, rarely greyish-green. *Round-leaved Solanum*. Figs 24G; 28F; 30F.

Widespread in central W.A. on coastal dunes and gravelly and sandy inland plains, extending to southern N.T. and western S.A. where found on low, red sand dunes. Map 117.

W.A.: 58 km S of Carnarvon, *D. E. Symon 5441* (AD, ADW, B, CANB, HUJ, K, NSW, PERTH, US). N.T.: 112 km N of Alice Springs, *D. E. Symon 10379* (ADW, NT). S.A.: 29 km W of Mt Christie, *D. E. Symon 3420* (ADW, BIRM, CANB, K).

Fresh fruit eaten by Aborigines. Closely related to *S. nummularium* S. Moore; distinguished by the more open habit, larger leaves and generally pale tomentum.

**48b. *Solanum orbiculatum* subsp. *macrophyllum*** Symon, *J. Adelaide Bot. Gard.* 4: 158; figs 48, 58 (1981)

T: Dean Range, W.A., Aug. 1967, *S. Smith-White s.n.*; holo: ADW 33384.

Illustrations: D. E. Symon, *loc. cit.*

All parts loosely pubescent. Leaves usually ovate, the lamina 3–6 cm long, 2–3 cm wide, grey-green, rarely yellow-green. Fig. 24H.

Confined to western parts of the central Australian ranges in N.T. and W.A., in rocky habitats. Map 117.

W.A.: Rawlinson Range, *A. S. George 8853* (ADW, PERTH). N.T.: James Range, *N. T. Burbidge & M. Gray 4551* (PERTH); Kings Canyon, *P. K. Latz 320* (AD, NT).

Fresh fruit eaten by Aborigines.

**49. *Solanum nummularium*** S. Moore, *J. Linn. Soc., Bot.* 34: 205 (1899)

T: Between Gibraltar and Coolgardie, W.A., Sept. 1895, *S. Moore s.n.*; holo: BM.

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 600 (1975); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 59 (1981).

Erect or rounded, intricate shrub to 1 m, sparingly clonal, usually rusty-green, densely pubescent with stellate hairs; hairs dense on lower leaf-surface, sparser on upper surface; prickles 5–12 mm long, conspicuous on stems, often paired at base of petioles, absent elsewhere. Leaves orbicular to broadly orbicular; lamina 4–10 mm diam., sometimes larger, slightly discoloured, entire; petiole 2–4 mm long. Inflorescence short, 1–2-flowered; peduncle to 5 mm long; pedicels 3–6 mm long, slightly longer in fruit. Calyx 2.5–5 mm long; lobes broadly triangular, 0.5–1 mm long. Corolla stellate, deeply incised, 20–25 mm diam., purple-blue. Anthers 5–6 mm long. Berry globular, 10–15 mm diam., yellow. Seeds 2.5–3 mm diam., pale buff. *n*=12. *Money-leaved Solanum*. Figs 24B; 30G.

Occurs in arid regions of southern W.A. on sandy plains and rocky rises. Map 118.

W.A.: 60 km NE of Geraldton, *A. M. Ashby 957* (AD); 37 km W of Kalgoorlie, *R. Melville 4073* & *D. Kemsley* (MEL); near Mt Jackson, *R. A. Saffrey 955* (PERTH).

Closely related to *S. orbiculatum* Dunal ex Poir.

**50. *Solanum oldfieldii*** F. Muell., *Fragm. Phytogr. Austral.* 2: 161 (1961)

T: Murchison River, W.A., *Oldfield s.n.*; syn: L, MEL; Lynton, Port Gregory, W.A., *Oldfield 856*; lecto: K; iso: MEL; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 161 (1981).

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 600 (1975); D. E. Symon, *op. cit.* Fig. 60.

Erect, clonal shrub to 1 m, dark green or rusty-green, the growing tips, pedicels and calyces often rusty; densely pubescent, often woolly, with stellate hairs; prickles to 8 mm long, usually scattered on stems, generally absent elsewhere. Leaves ovate to

oblong; lamina 2–7 cm long, 1–5 cm wide, slightly discolourous, entire or shallowly lobed; petiole 5–13 mm long. Inflorescence short, 1–10-flowered; peduncle to 15 mm long; pedicels 5–15 mm long. Calyx 4–10 mm long; lobes oblong to obovate, 2.5–5.5 mm long. Corolla rotate-pentagonal, 25–40 mm diam., purple. Anthers 4–6 mm long. Berry globular, 5–10 mm diam., pale yellow. Seeds 1–2 mm long, dark brown.  $n=12$ . Figs 24E; 27G.

Occurs in drier parts of south-western W.A. on slopes and plains in gravelly or sandy soils. Map 119.

W.A.: N of Borden, A. M. Ashby 1935 (PERTH); 16 km S of Northampton, R. Melville 4194 & J. Calaby (MEL); N of Geraldton, D. E. Symon 5450 (ADW, CANB, NSW, PERTH).

Suspected of poisoning stock.

## 51. *Solanum plicatile* (S. Moore) Symon, *J. Adelaide Bot. Gard.* 4: 163; fig. 61 (1981)

*S. oldfieldii* var. *plicatile* S. Moore, *J. Bot.* 41: 99 (1903).

T: Near Coolgardie, W.A., L. C. Webster s.n.; holo: BM, photo ADW.

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 601 (1975), as *S. oldfieldii* var. *plicatile*; D. E. Symon, *loc. cit.*

Erect, clonal shrub to 60 cm, grey-green, densely pubescent with stellate hairs; prickles to 5 mm long, usually scattered on stems, rare or absent elsewhere. Leaves oblong; lamina 10–20 mm long, 5–10 mm wide, concolorous, shallowly lobed, the margin tightly undulate or folded; petiole to 8 mm long. Inflorescence short, 1–3-flowered, sessile or with peduncle to 5 mm long; pedicels 5–6 mm long. Calyx 5–9 mm long; lobes elliptic, 2–5 mm long. Corolla broadly stellate, 20–25 mm diam., sometimes larger, 4–5 lobed, purple. Anthers 4–6 mm long. Berry globular, 8–10 mm diam., sometimes larger, yellow. Seeds 2–2.5 mm long, pale yellow-brown.  $n=12$ . Fig. 24F.

Occurs in southern arid areas of W.A. in red sandy soil in Eucalypt, Acacia and mixed woodland, occasionally in hummock grassland. Map 120.

W.A.: S of Menzies, D. E. Symon 5475 (AD, ADW, CANB, PERTH); c. 68 km W of Balladonia, 6 Nov. 1963, J. H. Willis (MEL); Fraser Range, P. G. Wilson 7740 (PERTH).

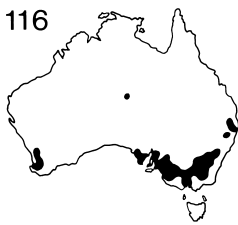
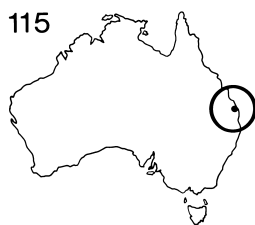
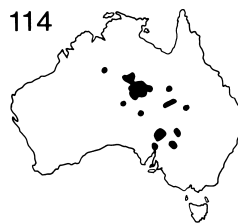
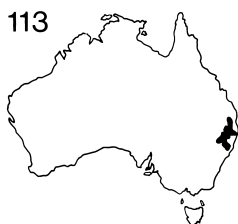
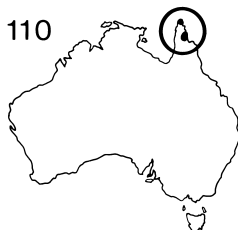
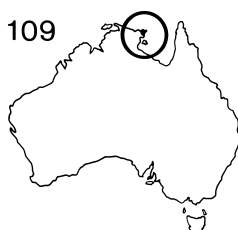
## 52. *Solanum coactiliferum* J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 33: 224; t. 14 (1909)

T: Port Broughton district, North of Port Pirie, S.A., 1 Mar. 1909, G. M. Black s.n.; lecto: AD; iso: K, NSW; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 165 (1981); Port Broughton, Aug. 1904, G. M. Black s.n.; syn: AD.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1069 (1957); D. E. Symon, *op. cit.* fig. 62.

Erect clonal shrub to 30 cm, grey- or silvery-green, densely pubescent with stellate hairs; prickles 2–5 mm long, usually on stems, rare elsewhere. Leaves oblong, often folded; lamina 1–5 cm long, 3–10 mm wide, sometimes larger, concolorous, entire to slightly undulate; petiole 3–5 mm long, sometimes to 15 mm. Inflorescence short, 1–6-flowered; peduncle to 10 mm long; pedicels 10–15 mm long, slightly longer in fruit. Flowers 4–5-partite. Calyx 4–8 mm long; lobes triangular, 1–5 mm long. Corolla rotate-stellate, 20–30 mm diam., violet. Anthers 3.5–7 mm long. Berry depressed-globular, 8–15 mm diam., yellow to yellow-brown, drying brown. Seeds 2–3 mm long, pale brown.  $n=12$ . *Western Nightshade*. Fig. 30E.





- 106.** *Solanum parvifolium*  
**109.** *Solanum yirkalense*  
**112.** *Solanum nemophilum*  
**115.** *Solanum dimidiatum*  
**118.** *Solanum nummularium*

- 107.** *Solanum ferocissimum*  
**110.** *Solanum discolour*  
**113.** *Solanum elegans*  
**116.** *Solanum elaeagnifolium*  
**119.** *Solanum oldfieldii*

- 108.** *Solanum corifolium*  
**111.** *Solanum densevestitum*  
**114.** *Solanum chenopodium*  
**117.** *Solanum orbiculatum*  
 (both subspp.)  
**120.** *Solanum plicatile*

Widespread in arid areas of central W.A., southern N.T., S.A. and western N.S.W., extending to south-western Qld and north-western Vic. Often occurs in sandy loams and on sand dunes. Map 121.

W.A.: N of Warburton Mission, A. S. George 8188 (PERTH). N.T.: NW Simpson Desert, P. K. Latz 4695 (ADW, DNA, NT); E of Hermansburg, R. A. Perry 5391 (BRI, CANB, NT). S.A.: near Maralinga, 4 Sept. 1960, H. Turner (AD). N.S.W.: E of Lethero, B. G. Briggs 2788 (NSW).

Treated fruit sometimes eaten by Aborigines. A variable species; a form with looser, paler tomentum and more robust leaves occurs between Lake Everard and Lake Gairdner, W.A.; a narrow-leaved form in south-western Qld approaches *S. tumulicola* Symon; plants in W.A. with shallowly lobed leaves approach *S. plicatile* (S. Moore) Symon. Closely related to *S. esuriale* Lindley, from which distinguished by the shrubby habit, often slightly recurved prickles, often 4-partite flowers, and often folded leaves.

**53. *Solanum centrale*** J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 58: 180; t.11, fig. 4 (1934)

T: Macdonald Downs Stn, Central Australia, 1932, J. Chalmers s.n.; lecto: K; iso: AD; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 167 (1981).

[*S. nemophilum* auct. non F. Muell.: J. M. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 62: 106 (1938)]

Illustration: D. E. Symon, *op. cit.* fig. 63.

Clonal, perennial herb or undershrub to 45 cm, often sprawling, pale or rusty yellowish-green, densely pubescent with stellate hairs; prickles absent, or few and sparsely scattered on stems, 1–5 mm long. Leaves ovate-oblong; lamina 3–6 cm long, 1–2 cm wide, sometimes larger, concolorous, entire to slightly undulate; petiole 5–15 (sometimes 30) mm long. Inflorescence 1–6-flowered, peduncle absent or to 10 mm long; rachis 5–15 mm long, sometimes to 40 mm, pedicels 6–10 mm long. Calyx 4–6 mm long; lobes triangular, 1.5–2.5 mm long. Corolla stellate, 15–25 mm diam., pale or deep purple. Anthers 4.5–6.5 mm long. Berry globular, 10–15 mm diam., yellow, drying brown and raisin-like in appearance. Seeds 2–4 mm long, pale yellow or light brown. *n*=24. Fig. 30H.

Widespread in arid areas of W.A., N.T. and northern S.A. in sandy deserts. Map 122.

W.A.: SW of Warburton, A. S. George 4050 (PERTH). N.T.: Stirling Creek, Stuart Highway, N. Byrnes 187 (ADW, DNA); Hamilton Downs, 13 Apr. 1956, G. M. Chippendale (ADW, BRI, CANB, NT). S.A.: Ernabella, Aug 1945, J. B. Cleland (AD).

Important food plant of Aborigines; fruit eaten fresh or dry.

**54. *Solanum hesperium*** Symon, *J. Adelaide Bot. Gard.* 4: 169; figs 64, 66 (1981).

T: 30 km SE of Denham, W.A., 21 July 1957, J. W. Green 1430; holo: PERTH.

Illustrations: D. E. Symon, *loc. cit.*

Shrub to 1 m, drab rusty-green, the new growth and stems rusty, densely pubescent with stellate hairs; prickles absent, or scattered on stems, 2–3 mm long. Leaves oblong; lamina 2–4 cm long, 6–15 mm wide, slightly discoloured, entire; petiole 2–5 mm long. Inflorescence 1–5-flowered; peduncle to 10 mm long, sometimes to 20 mm; rachis to 10 mm long, pedicels 4–8 mm long, lengthening in fruit. Calyx 4–6 mm long; lobes obtusely triangular, 2–3 mm long. Corolla stellate, shallowly incised, 20–25 mm diam., purple. Anthers 4–5 mm long. Berry depressed-globular,

8–10 mm diam., yellow, drying brown; fruiting pedicel to 15 mm long. Seeds 1.7–2 mm long, brown.

Occurs in coastal and near-coastal areas of W.A. between Geraldton and Carnarvon. Map 123.

W.A.: Nerrin Nerrin, *A. C. Beauglehole 11831* (ADW); Dorre Is., *R. D. Royce 5892* (PERTH).

Closely related to *S. centrale* J. Black and *S. coactiliferum* J. Black; distinguished by the slender, straight prickles and smaller leaves.

**55. *Solanum esuriale*** Lindley, in Mitchell, *Three Exped. Interior Eastern Austral.* 2: 43 (1838)

T: Interior of New Holland, 19 Apr. 1836, ?*J. Richardson s.n.*; holo: CGE, iso: K.

*S. pulchellum* F. Muell., *Trans. Philos. Soc. Victoria* 1: 18 (1855).

T: Wimmera River; syn: K; Avoca River; *n.v.*; and Murray River; syn.: CGE, E, TCD; thence through the desert country to Lake Torrens; *n.v.*; Spencer's Gulf; *n.v.*; and St. Vincent Gulf; *n.v.*

*S. ellipticum* f. *inermis* Wawra, *Itinera Principum S. Coburgi* 1: 100 (1883).

T: Floodplains of Murray River, Australia, 'Coll. I 485'; iso: ?W *n.v.*

*S. esuriale* var. *sublobatum* Domin, *Biblioth. Bot.* 89: 583 (1929).

T: near Longreach, Qld, Mar. 1910, *Domin s.n.*; holo: PR530896, photo ADW.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1065D (1957); D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 67 (1981).

Clonal perennial herb to 30 cm, grey-green, rarely pale green, densely pubescent with stellate hairs; prickles usually absent, sometimes present towards base of plant. Leaves oblong to oblong-lanceolate; lamina 2–8 cm long, 5–15 mm wide, concolorous, entire to slightly undulate; lower leaves with lamina up to 10 cm long and 3 cm wide, shallowly lobed; petiole 5–10 mm long, sometimes to 20 mm. Inflorescence 2–6-flowered; peduncle 1–4 cm long; rachis 1–2 cm long, pedicels 10–15 mm long. Flowers (4)5-partite. Calyx 4–6 mm long; tube ribbed; lobes linear to narrowly triangular, 2–3 mm long. Corolla rotate-stellate, 15–25 mm diam., purple. Anthers 4–5 mm long. Berry globular, ovoid or obovoid, acute, 10–15 mm diam., pale yellow or light yellow-brown. Seeds 2–3 mm long, pale yellow-brown. *n*=12, 24. *Quena*. Figs 28H, 30J.

Widespread in inland Qld, N.S.W., Vic., eastern S.A. and south-eastern N.T., with isolated localities in north-western W.A. Occurs in many habitats in clay, clay-loam, and loam, often along seasonal pools, creeklines or levee banks of inland streams, and in W.A. in near-coastal sandy soils. Map 124.

N.T.: c. 7 km W of Argadargada Homestead, *D. J. Nelson 325* (NT). S.A.: Renmark, 15 Jan. 1966, *G. Howard* (ADW). Qld: Boatman Stn, *S. L. Everist 2737* (BRI). N.S.W.: c. 32 km ESE of Bourke, *E. F. Constable 4512A* (NSW). Vic: Nathalia, Dec. 1929, *J. H. Willis* (MEL).

Occasionally reported poisonous to sheep in southern and central Qld. Fruits eaten by Aborigines. A variable species in habit, prickliness, leaf size and lobing, and fruit size; closely related to *S. tumulicola* Symon and *S. coactiliferum* J. Black.

**56. *Solanum tumulicola*** Symon, *Trans. Roy. Soc. S. Austral.* 95: 234; fig. 9 (1971)

T: c. 40 km E of Stuart Highway at Daly Waters, N.T., 7 June 1967, *D. E. Symon 5085*; holo: ADW; iso: AD, B, CANB, K, NSW, NT, US.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 68 (1981).

Sprawling, clonal, perennial herb to 30 cm, grey-green, densely pubescent with minute stellate hairs; prickles absent, or up to 2 mm long, scattered on stems and leaves. Leaves linear-oblong; lamina 4–8 cm long, 4–8 mm wide, sometimes larger, slightly discoloured, entire; petiole 5–10 mm long. Inflorescence short, 1–6-flowered; peduncle 10–15 mm long; pedicels 1 cm long. Calyx 2–3 mm long; lobes triangular, 1–1.5 mm long. Corolla stellate, 20–25 mm diam., purple. Anthers 3.5–5 mm long. Berry globular, sometimes acute, 10–15 mm diam., yellow; fruiting peduncle 20–30 mm long. Seeds 2–3 mm long, pale yellow-orange. *n*=12.

Occurs predominantly in N.T., extending to the Gregory North and Mitchell Districts of Qld. Most common in heavy clay associated with seasonally flooded lakes and rivers; rarely in hard gravelly loam or sandy soil. Map 125.

N.T.: 24 km SE of Elliott, *N. Byrnes 1422* (DNA, NT); 21 km SE of Elliott, *P. K. Latz 458* (ADW, NT); 48 km E of Eva Downs, *R. A. Perry 1885* (CANB). Qld: 8 km SE of Bedourie, *R. W. Purdie 1338* (BRI).

Closely related to *S. esuriale* Lindley; distinguished by the more slender leaves and often more tufted habit.

### 57. *Solanum tetrathecum* F. Muell., *Fragm. Phytogr. Austral.* 2: 165 (1861)

T: Brisbane River, Qld, *F. Mueller s.n.*; lecto: MEL 12231, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 176 (1981); Pine River, Qld, *F. Mueller s.n.*; *n.v.*; Burnett River, Qld, *F. Mueller s.n.*; syn: K, TCD.; Warwick, Qld, *Beckler s.n.*; *n.v.*; Tenterfield, N.S.W., *Stuart s.n.*; *n.v.*

Illustration: D. E. Symon, *op. cit.* fig. 69.

Erect, sparingly clonal subshrub to 60 cm, dark green or grey-green, pubescent with stellate hairs; prickles absent, or to 1 cm long, scattered on young growth, stems and leaves. Leaves oblong to ovate-oblong; lamina 4–6 cm long, 5–15 mm wide, sometimes larger, concolorous or discoloured, entire to slightly undulate; hairs sparse to dense on upper surface, dense on lower surface; petiole 5–15 mm long. Inflorescence 1–5-flowered; peduncle to 10 mm long; rachis to 15 mm long; pedicels 5–10 mm long. Calyx 5–7 mm long; lobes triangular, 2–4 mm long. Corolla stellate, 20–40 mm diam., blue-purple. Anthers 5–6 mm long. Berry globular or depressed globular, 10–15 mm diam., pale yellow. Seeds 2.5–3 mm long, light grey, margin slightly thickened. *n*=24.

Occurs predominantly in south-eastern Qld, and on the northern slopes and plains of N.S.W., in red earth, red loam, grey clay and rarely sandy loam. Often associated with cleared Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*) or *Eucalyptus* spp. Map 126.

Qld: Glen Morgan, *D. M. Gordon 571* (CANB); 6 km W of Yarraman, *L. S. Smith 14736* (ADW, BRI). N.S.W.: Narrabri, Apr. 1961, *K. R. Gibson* (NSW).

Leaves densely pubescent both surfaces in northern areas of range only. Fruits readily shed with pedicel when ripe, rarely present on collected specimens.

### 58. *Solanum elachophyllum* F. Muell., *Fragm. Phytogr. Austral.* 2: 164 (1861)

T: Between the Mackenzie and Dawson Rivers, Qld, Nov. 1856, *F. Mueller s.n.*; lecto: K, iso: MEL 12234; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 178 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 70.

Rigid, intricate shrub to 50 cm, grey-green; leaves, pedicels and calyx pubescent with stellate hairs; prickles 5–15 mm long, scattered on stems, occasionally on upper leaf-

surface, often paired at base of petiole. Leaves ovate-elliptic; lamina 7–12 mm long, 5–9 mm wide, discolorous, entire; upper surface glabrescent, hairs dense on lower surface; petiole 2–4 mm long. Flowers solitary or paired; peduncle absent or up to 5 mm long; pedicels 7–8 mm, long sometimes to 12 mm. Calyx 3–4.5 mm long; lobes obtusely triangular, 1–1.5 mm long. Corolla stellate, deeply incised, 15–30 mm diam., mauve. Anthers 3.5–5 mm long. Berry globular, 10–15 mm diam., yellow. Seeds 3–4 mm long, light grey-brown.  $n=12$ . Fig. 24A.

Known only from limited collections in the Leichhardt District of Qld, occurring with Brigalow (*Acacia harpophylla*) in heavy grey clay. Map 127.

Qld: Thomby, R. W. Johnson 2874 (ADW, MEL); near Warwick homestead, Leichhardt District, Story & Yapp 174 (BRI, CANB).

### 59. *Solanum papaverifolium* Symon, *Trans. Roy. Soc. S. Austral.* 95: 233; fig. 8 (1971)

T: 'Maneroo', Graman, c. 56 km NW of Inverell, N.S.W., 11 June 1969, V. N. Gidley *s.n.*; holo: NSW; iso: ADW, BRI, CANB, K, MEL.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 71 (1981).

Erect or sprawling, clonal, perennial herb with annual stems to 30 cm, green, glabrous except for minute glandular hairs on young growth; prickles to 5 mm long, abundant on stems, leaves, pedicels and calyx. Leaves ovate; lamina 4–7 cm long, 3–5 cm wide, concolorous, deeply lobed; lobes 1–2 cm long, the margin toothed or lobed; petiole 10–15 mm long, sometimes to 30 mm. Inflorescence 1–6-flowered; peduncle 1–6 cm long; rachis 1–2 cm long, pedicels 1–2 cm long. Calyx 5–8 mm long; lobes lanceolate, 3–5 mm long. Corolla stellate, 20 mm diam., purple. Anthers 3.5–4 mm long. Berry depressed globular, 10–12 mm diam., greenish-yellow with faint green stripes. Seeds not known.

Occurs predominantly in the Darling Downs District of south-eastern Qld and the Northern Slopes District of N.S.W., generally in heavy clay. Frequently a weed of cereal crops. Map 128.

Qld: Dalby, 16 Apr. 1952, *Land Ranger* (BRI). N.S.W.: Moree, 18 May 1971, G. Strange (NSW).

### 60. *Solanum adenophorum* F. Muell., *Fragm. Phytogr. Austral.* 2: 162 (1861)

*S. adenophorum* var. *typicum* Domin, *Biblioth. Bot.* 89: 586 (1929), *nom. illeg.*

T: Between the Dawson and Mackenzie Rivers, Qld, 17–20 Nov. 1856, F. Mueller *s.n.*; holo: MEL 11775; iso: K, TCD.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 72 (1981).

Herbaceous perennial with annual stems to 40 cm, green, pubescent with glandular and stellate hairs; prickles 1–7 mm long, on stems, petiole, leaves, peduncles and calyx. Leaves ovate; lamina 3–6 cm long, 3–4 cm wide, concolorous, shallowly lobed; lobe margins undulate or lobed; petiole 2–6 cm long. Inflorescence short, 2–6-flowered; peduncle c. 10 mm long; pedicels 20 mm long. Calyx 7–8 mm long; lobes lanceolate, 5–6 mm long. Corolla stellate, shallowly incised, 20–40 mm diam., purple. Anthers 4–5 mm long. Berry globular, 10–13 mm diam., reported whitish or yellow. Seeds 2.5–3 mm long, pale grey-yellow.

A relatively rare, inadequately known species recorded from scattered localities in Qld, N.S.W. and Vic. Map 129.

Qld: 110 km N of Clermont, *I. R. Saclier* 3 (BRI). N.S.W.: Bedgerabong School, 4 Dec. 1955, *C. K. Ingram* (NSW); 6 km S of Forbes, 20 Feb 1966, *B. Whitehead* (ADW, CANB). Vic.: near Barrakee Railway Stn, *W. H. McIlroy* 3102 (MEL).

## 61. *Solanum eremophilum* F. Muell., *Linnaea* 25: 432 (1853)

T: Flinders Ranges, S.A., Oct. 1851, *F. Mueller s.n.*; lecto: MEL; iso: MEL; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 183 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 73.

Herbaceous perennial to 15 cm, rusty green, pubescent with stellate hairs and minute glandular hairs; prickles 5–8 mm long, scattered on stems, petioles, leaf-surfaces, peduncles and calyx. Leaves ovate; lamina 30–45 mm long, 15–35 mm wide, sometimes larger, concolorous, shallowly lobed; lobe margins rounded or undulate; petiole 15–45 mm long. Inflorescence 2–7-flowered; peduncle 10 mm long; rachis 2–6 cm long; pedicels 10–25 mm long. Calyx 5–9 mm long; lobes broadly lanceolate, 3–6 mm long. Corolla broadly stellate, 25–35 mm diam., purple. Anthers 4–5 mm long. Berry unknown.

An inadequately known species, recorded from scattered localities in S.A. and N.S.W. Map 130.

S.A.: Napperby, *D. E. Symon* 10609 (AD, ADW, NSW).

The name has been frequently misapplied to other species. Possibly a hybrid between *S. petrophilum* F. Muell. and *S. esuriale* Lindley.

## 62. *Solanum lacunarium* F. Muell., *Trans. Philos. Soc. Victoria* 1: 18 (1855)

T: Near the junction of the Darling and Murray Rivers, N.S.W., Dec. 1853, *F. Mueller s.n.*; lecto: MEL 11745; iso: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard* 4: 185 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 74.

Erect or sprawling, clonal, herbaceous perennial to 25 cm, grey-green, pubescent with minute stellate hairs, the hairs sparse on stems and upper leaf-surface; prickles to 5 mm long, abundant on petioles and leaf-surfaces, usually fewer elsewhere. Leaves elliptic; lamina 1–9 cm long, 5–30 mm wide, discolorous, shallowly to deeply lobed; lobe margins entire to shallowly lobed; petiole 15–40 mm long. Inflorescence 4–10-flowered; peduncle 10–30 mm long; rachis 10–30 mm long, lengthening in fruit; pedicels 8–10 mm long. Calyx 3–5 mm long; lobes triangular, 1–1.5 mm long. Corolla broadly stellate to rotate-pentagonal, 4–5-lobed, 15–30 mm diam., blue. Anthers 3–5 mm long. Berry globular to depressed globular, 10–15 mm diam., pale yellow; fruiting axis including peduncle up to 12 cm long. Seeds 3–4 mm long, light grey. *n*=12. *Lagoon Nightshade*. Fig. 26L.

A species of disjunct distribution, predominantly along the Frome River in S.A., and parts of the Murray-Darling river system from the Darling Downs District in Qld, through western N.S.W. and north-western Vic. to the Murray District of S.A. Usually associated with heavy clay soils of the river flood plains. Map 131.

S.A.: Near Berri, *Hj. Eichler* 13786 (AD); Mundy Creek, *D. E. Symon* 4046 (ADW). N.S.W.: Darling River, *Dallachy & Goodwin* (MEL 11756); Menindie, *P. L. Milthorpe* 876 (NSW); Menindie, *D. E. Symon* 6744 (CANB).

The leaves are variable, being larger with coarser lobes in westernmost populations, smaller and narrower in eastern populations.

**63. *Solanum terraneum* Symon, *J. Adelaide Bot. Gard.* 4: 186; fig. 75 (1981)**

T: 61 km S of Agnew, W.A., 12 May 1975, *D. E. Symon* 9932; holo: PERTH; iso: ADW, CANB, K, MO.

Illustration: *D. E. Symon, loc. cit.*

Clonal, herbaceous perennial to 10 cm, grey-green, densely pubescent with stellate hairs; prickles absent, or 3–5 mm long, on stems and petioles. Leaves ovate to elliptic; lamina mostly 2–6 cm long, 1–4 cm wide, slightly discoloured, entire; petiole to 15 mm long, sometimes longer. Flowers solitary or 2–3; peduncle absent or to 5 mm long; pedicels 15–25 mm long. Calyx 5–8 mm long; lobes narrowly triangular to linear, 3–5 mm long. Corolla stellate, 20 mm diam., pale blue. Anthers 4–5 mm long. Berry globular to ellipsoid, 8–10 mm diam., pale green when ripe. Seeds 2.5–3 mm long, yellow. *n*=24.

Known only from scattered collections from south-west margins of the Great Victoria Desert, W.A. Usually associated with grasslands or sparse woodlands on red sand plains. Map 132.

W.A.: 48 km W of Coonana, *R. J. Chinnock* 1124 (AD); 31 km W of Wiluna, *D. E. Symon* 9975 (ADW, PERTH).

**64. *Solanum ellipticum* R. Br., *Prodr.* 446 (1810)**

*S. ellipticum* var. *typicum* Domin, *Biblioth. Bot.* 89: 588 (1929), *nom. illeg.*

T: Broad Sound, Qld, 25 Sept. 1802, *R. Brown s.n.*; lecto: BM; iso: MPU; *fide* *D. E. Symon, J. Adelaide Bot. Gard.* 4: 188 (1981).

*S. lithophilum* F. Muell., *Linnaea* 25: 434 (1853).

T: Flinders Ranges, S.A., Oct. 1851, *F. Mueller s.n.*; lecto: MEL 11873; iso: MEL; *fide* *D. E. Symon loc. cit.*

*S. ellipticum* var. *chillagoense* Domin, *loc. cit.*

T: Near Chillagoe, Qld, Feb. 1910, *Domin s.n.*; iso: PR *n.v.*

*S. ellipticum* var. *horridum* Domin, *loc. cit.*

T: Near Cloncurry, Qld, Feb. 1910, *Domin s.n.*; iso: PR *n.v.*

*S. ellipticum* var. *mollibaccalis* J. Black, *Trans. Roy. Soc. S. Austral.* 52: 227 (1928).

T: Finnis Springs, Lake Eyre Basin, S.A., *F. D. Warren s.n.*; holo: AD 97614116.

*S. ellipticum* f. *albiflorum* Domin, *loc. cit.*

T: Near Chillagoe, Nov. 1910, *K. Domin s.n.*; *n.v.*

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1073 (1957); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 204 (1977); *D. E. Symon, op. cit.* fig. 76.

Sprawling, clonal, perennial herb to 1 m diam., usually pale green or grey-green, the growing tips often purple, densely pubescent with stellate hairs; hairs often tufted and woolly on stems and lower leaf-surface; prickles to 10 mm long, scattered to abundant on stems, petioles and peduncles, sparse or absent elsewhere. Leaves ovate to elliptic; lamina mostly 4–8 cm long, 2–3 cm wide, slightly discoloured, entire to undulate; petiole 1–5 cm long. Inflorescence 1–7-flowered; peduncle 1–8 cm long; rachis 1–3 cm long; pedicels 8–11 mm long, lengthening in fruit. Calyx mostly 6–10 mm long; lobes triangular with linear apices, 5–8 mm long. Corolla rotate to rotate-pentagonal, 20–30 mm diam., purple. Anthers 4–5 mm long. Berry globular to slightly obovoid, 15–20 mm diam., pale yellow-green, often tinged purple; fruiting pedicels usually 15–20 mm long. Seeds 2–3 mm long, pale buff. *n*=12. *Potato Bush*, *Potato Weed*. Fig. 30 I.

Widespread in Qld, northern N.S.W., southern N.T. and S.A., with scattered localities in W.A. Occurs on ranges and plains in heavy clay and sandy soil; usually absent from flood plains of rivers. Map 133.

W.A.: Mt Tietkens, A. S. *George* 8945 (PERTH). N.T.: c. 12 km E of Harper Springs boundary, 16 Aug. 1956, G. Chippendale (ADW, NT). S.A.: Paralana Springs, D. E. Symon 6003 (ADW, CANB). Qld: Windorah, Sept. 1966, T. O. Browning (BRI). N.S.W.: Tibooburra, May 1913, O. E. Couch (NSW).

Fresh berries eaten by Aborigines. A very variable species, with three main forms: the typical form (moderately prickly, leaves relatively large) is widespread in arid areas; a prickly form occurs on ranges in Central Australia; a small-leaved form occurs on the upper Eyre Peninsula, mainly west of the Flinders Ranges. Prickly forms approach *S. horridum* Dunal ex Poiret and *S. cleistogamum* Symon in Central Australia; smaller specimens approach *S. terraneum* Symon in W.A., while on the north and north-eastern margins of its distribution, plants approach *S. dianthophorum* Dunal.

## 65. *Solanum dianthophorum* Dunal, *Hist. Nat. Solanum* 183 (1813)

*S. biflorum* R. Br., *Prodr.* 445 (1810), *nom. illeg.*, non Lour., *Fl. Conchin.* 1: 129 (1790).

T: Port II (Port Clinton, Qld), R. Brown *s.n.*; lecto: BM; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 191 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 77.

Sprawling perennial herb with stems to 1 m long, green or purplish-green, densely pubescent with minute stellate hairs; prickles to 1 cm long, scattered on stems, petioles and leaf-surfaces, dense on calyx. Leaves elliptic; lamina 3–6 cm long, 15–25 mm wide, sometimes larger, slightly discoloured, entire to slightly undulate; petiole mostly 10–30 mm long. Inflorescence short, 1–6-flowered; peduncle absent or to 5 mm long; pedicels 5–10 mm long. Calyx 5–6 mm long; lobes narrowly triangular to linear, 3–4 mm long. Corolla stellate, deeply incised, 15–20 mm diam., white or pale lavender. Anthers 4–5 mm long. Berry globular, 10–20 mm diam., purplish-green. Seeds 2.5 mm long, light brown. *n*=12.

Occurs predominantly in eastern Qld and in scattered localities in central and western Qld, in a variety of habitats. Map 134.

Qld: Near Barcaldine, G. R. Beeston 1147C (BRI); Rockhampton, A. Dietrich 1404 (MEL); 122 km SW of Sarina, V. K. Moriarty 1626 (ADW).

## 66. *Solanum cleistogamum* Symon, *Trans. Roy. Soc. S. Austral.* 95: 227; fig. 1 (1971)

T: c. 32 km N (?NE) of Onslow, W.A., 1 July 1967, D. E. Symon 5418; holo: PERTH; iso: ADW, CANB, K, L.

*S. petrophilum* var. *pedicellatum* Ewart & Davies, *Fl. Northern Territory* 243; t. 21 (1917).

T: Lat. 19°S, long. 132°E, N.T., 4 July 1911, G. F. Hill 435; holo: MEL; iso: MEL.

Illustrations: D. E. Symon, *loc. cit.*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 78 (1981).

Sprawling annual or herbaceous perennial, with stems to 60 cm long, grey-green, occasionally rusty-green, densely pubescent with stellate hairs; prickles to 10 mm long, usually common on stems, petioles and calyx-tube, less common or absent elsewhere. Leaves ovate to ovate-lanceolate; lamina 3–10 cm long, 1–4 cm wide, slightly discoloured, entire to weakly lobed; petiole mostly 12–25 mm long. Inflorescence 1–4-flowered; peduncle 5–40 mm long; rachis 1–4 cm long; pedicels 5–10 mm long, lengthening in fruit. Calyx 4–6 mm long, sometimes longer; lobes almost linear, 2–3 mm long. Corolla rotate, 10–15 mm diam., pale lavender, often remaining closed. Anthers 2.5–3 mm long. Berry globular, 10–13 mm diam., pale yellow-green or slightly purple; fruiting pedicels usually 15–30 mm long. Seeds 2.5–3 mm long, light brown. *n*=12.



Occurs predominantly in W.A. and southern N.T., and in isolated localities in S.A., Qld and N.S.W. Usually associated with rocky or gravelly hillsides or creek lines, or in depressions on sand plains. Map 135.

W.A.: N of Geraldton, *D. E. Symon 5448* (MEL, PERTH). N.T.: Erldunda Stn, *P. K. Latz 4971* (ADW, CANB, NT). S.A.: Mt Alexander, *D. E. Symon 9108* (ADW). N.S.W.: near Brewarrina, *D. J. McGillivray 2907* (NSW).

A variable species; may be confused with *S. ellipticum* R. Br. and *S. dianthophorum* Dunal.

## 67. *Solanum horridum* Dunal ex Poirét, *Encycl. Suppl.* 3: 763 (1814)

T: West coast of New Holland, probably collected by A. Riedlé; lecto: P; iso: P; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 195 (1981).

*S. horridum* var. *repandifolium* Dunal, in DC., *Prodr.* 13(1): 297 (1852).

T: New Holland, *Baudin*; iso: BM; photo ADW.

Illustration: D. E. Symon, *op. cit.* fig. 79.

Sprawling, probably short-lived shrub to 1 m across, pale green or yellow-green, densely pubescent with stellate hairs; prickles to 10 mm long, abundant on stems, petioles and inflorescence, sparse or absent elsewhere. Leaves ovate to ovate-lanceolate; lamina 3–8 cm long, 2–4 cm wide, sometimes larger, slightly discoloured, entire to undulate, occasionally shallowly lobed; petiole 1–4 cm long. Inflorescence short, 1–3-flowered; peduncle absent or to 10 mm long; pedicels 5–10 mm long. Calyx 10–12 mm long; lobes linear, 4–7 mm long. Corolla rotate, 15–20 mm diam., purple. Anthers 3 mm long. Berry globular to depressed globular, 15–20 mm diam., dull yellow-green, drying brown. Seeds 2–2.5 mm long, dark grey-brown. *n*=12.

Apparently restricted to Hamersley Range in W.A., occurring on low stony ridges and hills in *Triodia* and *Acacia* communities. Map 136.

W.A.: SE of Tambrey Stn, *D. E. Symon 5400* (CANB, PERTH).

## 68. *Solanum echinatum* R. Br., *Prodr.* 447 (1810)

T: Island h (North Is., Sir Edward Pellew Group, Gulf of Carpentaria), *R. Brown s.n.*; lecto: BM; iso: E, K, MEL, MPU; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 197 (1981).

*S. ellipticum* var. *pannifolium* Cunn. ex Benth., *Fl. Austral.* 4: 464 (1868).

T: Cambridge Gulf, NW coast, *A. Cunningham s.n.*; lecto: BM; iso: K; *fide* D. E. Symon, *op. cit.* 198.

*S. wilkinsii* S. Moore, *J. Bot.* 64: 95 (1926).

T: Groote Eylandt, N.T., Mar. 1925, *S. H. Wilkins 131*; holo: BM, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 198 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 80.

Annual or short-lived perennial herb, erect and up to 50 cm high, or nearly prostrate and to 2 m across, bright rusty-green or grey-green, densely pubescent with stellate hairs; prickles 4–6 mm long, scattered to abundant on stems, petioles, peduncles and calyx, rare or absent elsewhere. Leaves ovate to ovate-lanceolate; lamina mostly 3–6 cm long, 2–3 cm wide, slightly discoloured, usually entire; petiole usually 1–3 cm long. Inflorescence 2–5-flowered; peduncle to 4 cm long; rachis 1–2 cm long; pedicels c. 1 cm long. Calyx 4–6 mm long, enlarged in fruit; lobes triangular, 2–3 mm long. Corolla broadly stellate to pentagonal, 20–30 mm diam., purple. Anthers 4–5 mm long. Fruiting calyx-tube 10–15 mm diam. Berry depressed globular, squarish in

outline, 10–15 mm diam., pale ivory-green when ripe, drying light brown. Seeds 2–2.5 mm long, dark liver-coloured.  $n=12$ . Figs 30K; 38.

Occurs on mainland northern Australia and adjacent offshore islands, from the Kimberley region of W.A. to the Gulf of Carpentaria in north-western Qld. Associated with rocky outcrops, or sandy and alluvial debris at base of outcrops. Map 137.

W.A.: c. 100 km S of Gibb River Stn, *D. E. Symon 7149* (PERTH). N.T.: S of Mt Brockman, *R. E. Fox 431* (DNA); near Cannon Hill, *P. Martensz AE667* (BRI, CANB, NT); Arnhem Land, *D. E. Symon 7968* (ADW, BRI, NT).

Colour of pubescence, leaf size and prickliness of calyx variable. Closely related to *S. seitheae* Symon; distinguished by smaller stature and smaller fruiting calyx.

### 69. *Solanum lucani* F. Muell., *Victorian Naturalist* 9: 175 (1893)

T: Cambridge Gulf, 1889, *A. Lucanus s.n.*; lecto: MEL 11346; iso: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 199 (1981).

[*S. pubescens* auct. non Willd.: W. V. Fitzgerald, *J. Roy. Soc. W. Austral.* 3: 102 (1918)]

Illustration: D. E. Symon, *op. cit.* fig. 81.

Sprawling, probably annual herb to 30 cm high, c. 1 m wide, green or purple-green, pubescent with stellate hairs; prickles to 8 mm long, abundant on stems, peduncles and calyx, less common elsewhere. Leaves ovate; lamina 5–10 cm long, 3–6 cm wide, sometimes larger, discoloured, entire or shallowly lobed; hairs sparse on upper surface, dense on lower surface; petiole 3–5 cm long. Inflorescence 6–15-flowered; peduncle 2–5 cm long, lengthening in fruit; rachis 5–10 cm long; pedicels 5–13 mm long. Calyx mostly 3–4 mm long; lobes more or less triangular, 1–2 mm long; tube enlarged in fruit. Corolla rotate, 20–25 mm diam., purple. Anthers 4–5 mm long. Berry globular, 10–15 mm diam., green when ripe; fruiting peduncle and axis 4–17 cm long; fruiting calyx 10–15 mm diam. Seeds 1.5 mm long, dark brown.  $n=12$ . Figs 25 I; 28D; 30L; 39.

Occurs from the Kimberley region, W.A., to Willeroo Stn, N.T., usually in disturbed areas such as sand bars and levees of rivers. Occasionally associated with gravelly washes of rocky outcrops. Map 138.

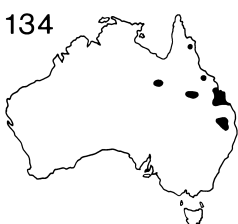
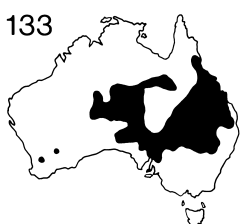
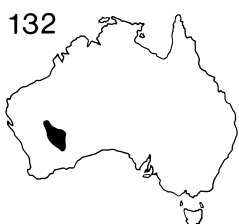
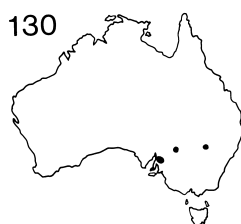
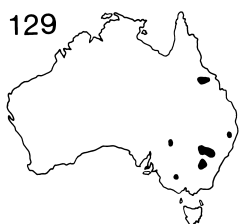
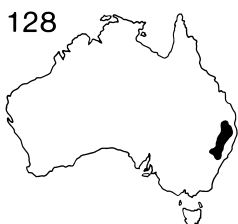
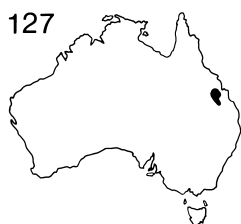
W.A.: 21 km N of Halls Creek, *D. E. Symon 5268* (CANB, PERTH). N.T.: 47 km NNW of Inverway Homestead, *P. K. Latz 5412* (ADW, NT, PERTH); 182 km W of Katherine, *J. Must 1242* (DNA, NT).

### 70. *Solanum seitheae* Symon, *J. Adelaide Bot. Gard.* 4: 201; figs 82, 84 (1981)

T: 116 km SW of Normanton, Qld, 29 May 1967, *D. E. Symon 4959*; holotype: ADW 33274; iso: B, BRI, CANB, K, NSW, US.

Illustration: D. E. Symon, *loc. cit.*

Sprawling, perennial subshrub to 60 cm high and 2 m wide, grey-green, densely pubescent with stellate hairs; prickles 5–6 mm long, scattered to abundant on stems, petioles, peduncles and calyx, rare or absent elsewhere. Leaves ovate; lamina 4–13 cm long, 3–9 cm wide, slightly discoloured, shallowly lobed; petiole to 5 cm long. Inflorescence up to 8-flowered; peduncle to 5 cm long; rachis to 5 cm long; pedicels 1–2 cm long. Calyx 8–11 mm long; lobes triangular, 4–6 mm long; tube enlarged in fruit. Corolla broadly stellate to rotate, 25–30 mm diam., violet-blue. Anthers 4–6 mm long. Fruiting calyx 20–25 mm diam. Berry depressed globular, 10–15 mm diam., pale yellow-green when ripe, drying pale brown. Seeds 2.5 mm long, dark brown.  $n=12$ .



121. *Solanum coactiliferum*

124. *Solanum esuriale*

127. *Solanum elachophyllum*

130. *Solanum eremophilum*

133. *Solanum ellipticum*

122. *Solanum centrale*

125. *Solanum tumulicola*

128. *Solanum papaverifolium*

131. *Solanum lacunarium*

134. *Solanum dianthophorum*

123. *Solanum hesperium*

126. *Solanum tetrathecum*

129. *Solanum adenophorum*

132. *Solanum terraneum*

135. *Solanum cleistogamum*

Occurs in north-western Qld and adjacent areas in N.T., and on the Wessel Islands, N.T. Usually associated with rocky or gravelly outcrops. Map 139.

N.T.: Nicholson River area, *T. S. Henshall* 275 (ADW, DNA, NT). Qld: 60 km E of Mt Isa, Qld, *J. Swan* 117 (ADW, BRI).

Closely related to *S. echinatum* R. Br.; distinguished by subshrubby habit and larger size, greyish tomentum and larger fruiting calyx.

## 71. *Solanum sturtianum* F. Muell., *Trans. Philos. Soc. Victoria* 1: 19 (1855)

*S. sturtii* F. Muell., *Fragm. Phytogr. Austral.* 6: 146 (1868), orthographic variant.

T: Central Australia, 1844–46, *C. Sturt* 16; lecto: BM, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 204 (1981); Interior Australia, 10 Jan. 1848, *C. Sturt s.n.*; syn: MEL; Interior Australia, *C. Sturt* 87; syn: MEL.

*S. tetrandrum* var. *angustifolium* A. Morrison, *J. Bot.* 50: 275 (1912); *S. morrisonii* Domin, *Biblioth. Bot.* 89: 577 (1929), based on *S. tetrandrum* var. *angustifolium* A. Morrison.

T: Between Globe Hill and Minderoo, Ashburton River, 7 Oct. 1905, *A. Morrison s.n.*; holo: BM; iso: E.

Illustration: D. E. Symon, *op. cit.* fig. 85.

Erect, clonal shrub to 3 m, silvery-green or grey-green, usually densely pubescent with stellate hairs; prickles absent, or 5–6 mm long, scattered to dense on stems, rare elsewhere. Leaves lanceolate; lamina mostly 30–60 mm long, 5–15 mm wide, discolorous, occasionally concolorous, entire to slightly undulate; petiole 5–15 mm long. Inflorescence short, few–12-flowered; peduncle absent or to 15 mm long; pedicels 5–8 mm long. Calyx 3–5 mm long; lobes triangular, 1–3 mm long. Corolla rotate-stellate, 30–40 mm diam., purple. Anthers 5–6 mm long. Berry globular, 10–15 mm diam., yellow to brownish-black, the skin brittle and breaking irregularly. Seeds 3–5 mm long, dark brown to black. *n*=12. *Thargomindah Nightshade*. Fig. 31C.

Widespread in arid areas, extending from central-western W.A. through southern N.T. and S.A. to south-western Qld and north-western N.S.W. Commonly associated with ranges, occurring in deep gravelly soils of dry creek lines, rarely on rocky slopes. Map 140.

W.A.: c. 65 km S of old Mundiwindi, *A. S. George* 958 (PERTH). N.T.: N of Finke River crossing, *N. Byrnes* 573 (DNA, NT). S.A.: Paralana Springs, *D. E. Symon* 6076 (ADW, CANB, NSW). Qld: near Thargomindah, *M. Olsen* 760 & *D. E. Boyland* (BRI). N.S.W.: Broken Hill, *P. L. Milthorpe* 868 (NSW).

Ripe fruit reported to be toxic to stressed sheep and cattle in Qld and N.S.W.

## 72. *Solanum oligacanthum* F. Muell, *Trans. Philos. Soc. Victoria* 1: 19 (1855)

T: Central Australia, *C. Sturt s.n.*; holo: MEL 11991; iso: BM.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 86 (1981).

Erect, clonal, herbaceous perennial herb or subshrub to 1 m, pale grey-green, densely pubescent with minute stellate hairs; prickles to 16 mm long, often pubescent in lower half, on stems, sometimes paired at base of petiole, generally absent elsewhere. Leaves broadly ovate; lamina 8–20 mm long, 7–20 mm, wide, sometimes larger, concolorous to slightly discolorous, entire or shallowly lobed at base; petiole 1–5 mm long. Inflorescence short, 1–6-flowered; peduncle to 10 mm long; pedicels 4–5 mm long. Calyx 5–8 mm long; lobes triangular, 2–3.5 mm long. Corolla rotate, 20–25 mm diam., lavender-blue. Anthers 4–5 mm long. Berry globular or depressed globular,



**Figure 37.** *Solanum tetrathecum*.  
Photograph — M. Fagg.

**Figure 38.** *Solanum echinatum*.  
Photograph — J. Wrigley.



**Figure 39.** *Solanum lucani*.  
Photograph — D. E. Symon.

**Figure 40.** *Solanum petrophilum*.  
Photograph — A. S. George.

4–10 mm diam., pale yellow. Seeds 4–5 mm long, black or dark brown.  $n=12$ . Figs 24D; 31B.

Occurs mainly in south-western Qld, north-western N.S.W. and north-eastern S.A.; established as a weed in southern S.A. Usually associated with seasonally flooded creek channels, flats and lagoons. Map 141.

S.A.: Coopers Creek, *R. Hill* 473 (AD); 23 km SW of Etadunna Homestead, *M. Lazarides* 8372 (CANB); N of Tinga Tingana on road to Gidgealpa, *D. E. Symon* 5891 (ADW). Qld: W of Durrie, *S. L. Everist* & *L. S. Smith* 82 (BRI). N.S.W.: Sturt National Park, *K. Wilson* 1657 (NSW).

### 73. *Solanum karsensis* Symon, *Trans. Roy. Soc. S. Austral.* 95: 230; fig. 4 (1971)

T: Tara Downs', Wentworth, N.S.W., Dec. 1961, *A. Smith s.n.*; holo: NSW 59352.

Illustrations: D. E. Symon, *loc. cit.*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 87 (1981).

Clonal, herbaceous perennial to 30 cm, grey-green, densely pubescent with stellate hairs; prickles to 15 mm long, pubescent in lower half, usually scattered on stems, rare or absent elsewhere. Leaves ovate; lamina 15–30 mm long, 10–20 mm wide, sometimes larger, slightly discolorous, undulate to shallowly lobed; petiole 3–10 mm long. Inflorescence up to 12-flowered; peduncle usually to 10 mm long; rachis 1–2 cm long, sometimes up to 4 cm; pedicels 4–5 mm long, lengthening in fruit. Calyx 5–10 mm long; lobes triangular, 2–5 mm long; tube enlarged in fruit. Corolla shallowly campanulate-rotate, 20–35 mm diam., purple. Anthers 3–4 mm long. Fruiting calyx 7–10 mm diam. Berry globular, c. 7 mm diam., colour not known; fruiting pedicels 10–15 mm long. Seeds 4–5 mm long, dark.  $n=12$ .

Restricted to south-western plains of N.S.W., occurring in occasionally flooded depressions in clay or red sand. Apparently becoming weedy in recent years. Map 142.

N.S.W.: Lake Tandau, 16 Dec. 1974, *A. D. Mears* & *D. E. Wallin* (NSW); Kars Stn, *R. Pearce* 63 (ADW, CANB, NSW).

### 74. *Solanum quadriloculatum* F. Muell., *Fragm. Phytogr. Austral.* 2: 161 (1861)

T: Nicholson River, Gulf of Carpentaria, 21–24 Aug. 1856, *F. Mueller s.n.*; lecto: MEL; iso: K; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 210 (1981); Arnhem Land, *coll. unknown*; *n.v.*

*S. crassitomentosum* Domin, *Biblioth. Bot.* 89: 584 (1929).

T: W of Pentland, Qld, Feb. 1910, *Domin s.n.*; iso: PR *n.v.*

*S. ellipticum* var. *duribaccalis* J. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 52: 227 (1928), *fide* J. M. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 58: 181 (1934).

T: none cited or traced.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1074 (1957); D. E. Symon, *op. cit.* fig. 88.

Erect or sprawling, sparingly clonal shrub to 50 cm, grey-green or yellowish-green, densely pubescent with stellate hairs, sometimes scabrous; prickles to 6 mm long, abundant on stems, petioles, peduncles and calyx, sparse or absent elsewhere. Leaves ovate-elliptic; lamina mostly 5–9 cm long 1.5–4 cm wide, sometimes larger, entire to slightly undulate; petiole 1–4 cm long. Inflorescence up to 20-flowered; peduncle 15–20 mm long; rachis to 8 cm long; pedicels 5–10 mm long. Calyx 6–10 mm long; lobes narrowly triangular, 4–6 mm long. Corolla stellate or pentagonal, 20–25 mm diam., purple. Anthers 4–6 mm long. Berry globular or depressed globular, 10–15 mm diam., light yellow-brown, finally hard and bony. Seeds 2–3 mm long, pale mustard-yellow to light grey.  $n=12$ .

Widespread in arid regions, extending from north-eastern W.A. through N.T. and S.A. to western Qld and north-western N.S.W. Commonly occurs on undulating plains, levee banks of seasonally flooded water courses, or flood-out plains. Map 143.

N.T.: Palm Valley, 21 July 1954, *G. M. Chippendale* (ADW, CANB, NT). S.A.: Paralana Springs, *D. E. Symon 6004* (ADW). Qld: 80 km SE of Camooweal, *S. L. Everist 3381* (BRI). N.S.W.: c. 16 km S of White Cliffs, *J. H. Leigh W216* (NSW).

Reported to be toxic to sheep in Central Australia.

## **75. *Solanum eardleyae* Symon, *J. Adelaide Bot. Gard.* 4: 212; figs 83, 89 (1981)**

T: Duffield Rocks, c. 91 km NE of Mt Davies Camp, S.A., 1 Oct. 1970, *P. K. Latz 939*; holo: NT; iso: ADW, CANB, MEL.

Illustrations: *D. E. Symon, loc. cit.*

Straggly, erect shrub to 2 m, rusty-green, rarely grey-green, densely pubescent with stellate hairs; prickles to 10 mm long, abundant on stems, petioles, peduncles and calyx, generally scattered elsewhere. Leaves oblong-ovate; lamina mostly 5–10 cm long, 2–4 cm wide, sometimes larger, concolorous, undulate to shallowly lobed; petiole 1–2 cm long. Inflorescence few–22-flowered; peduncle 1–2 cm long; rachis 3–10 cm long; pedicels 5–10 mm long. Calyx 8–13 mm long, enlarged in fruit; lobes narrowly triangular with linear apices, 5–10 mm long. Corolla rotate, 25–35 mm diam., purple. Anthers 4–5 mm long. Berry globular, 10–15 mm diam., yellow, finally hard and bony. Seeds 1.5–2 mm long, light buff to light grey-brown. Fig. 31A.

Restricted mainly to Musgrave and Everard Ranges and Mt Connor in Central Australia, usually occurring at the base of rock outcrops. Map 144.

N.T.: SE side of Mt Connor, *A. C. Beauglehole 22854* (ADW, CANB); Mulga Park Homestead, *P. K. Latz 5044* (ADW, DNA, NT). S.A.: between Ernabella and Mt Woodroffe, *F. L. Hill & T. R. N. Lothian 707* (AD).

## **76. *Solanum petrophilum* F. Muell., *Linnaea* 25: 433 (1853)**

T: Cudnaka, Flinders Ranges, S.A., Oct. 1851, *F. Mueller s.n.*; holo: MEL 12107; iso: MEL 12106.

Illustrations: *J. M. Black, Fl. S. Austral.* 2nd edn, 4: fig. 1072 (1957); *D. E. Symon, J. Adelaide Bot. Gard.* 4: figs 90–91 (1981).

Intricate, usually erect, clonal shrub to 50 cm, grey-green, occasionally rusty-green, densely pubescent with stellate hairs; prickles to 10 mm long, common on most parts. Leaves ovate-lanceolate to oblong; lamina 3–6 cm long, 1.5–3 cm wide, sometimes larger, slightly to distinctly discolorous, shallowly to deeply lobed; petiole 5–15 mm long. Inflorescence 3–10-flowered; peduncle 5–10 mm long, sometimes to 30 mm; rachis to 5 cm long; pedicels 5–10 mm long. Calyx 8–10 mm long; lobes narrowly triangular with linear apices, 6–7 mm long, elongated slightly in fruit. Corolla shallowly campanulate-rotate, 25–30 mm diam., purple. Anthers 4–6 mm long. Berry globular or depressed globular, 8–10 mm diam., sometimes to 15 mm, yellow, drying pale brown. Seeds 1–1.5 mm long, light brown or grey-brown, finally hard and bony. *n*=12, 24. *Rock Nightshade*. Figs 31D; 40.

Associated with ranges in arid areas, occurring in the Coolgardie area of W.A., the Macdonnell, Musgrave, and Everard Ranges of Central Australia, the Gawler and Flinders Ranges of S.A., and the Barrier Range of N.S.W. Grows in rocky habitats or close to the base of ranges. Map 145.

W.A.: Cavenagh Range, A. S. George 8741 (PERTH). N.T.: near Kulgera Homestead, 5 Aug. 1954, G. Chippendale (MEL, NT). S.A.: Everard Park, 16 June 1958, J. B. Cleland (AD); 16 km NW of Moonaree Stn, D. E. Symon 3444 (ADW, CANB). N.S.W.: Mootwingee, 10 June 1973, P. L. Mithorpe (NSW).

Suspected of poisoning stock in N.S.W. and W.A.

**77. *Solanum lachnophyllum*** Symon, *Trans. Roy. Soc. S. Austral.* 95: 231; fig. 5 (1971)

T: 58 km E of Meekatharra, W.A., 16 Oct. 1945, C. A. Gardner 7871; holo: PERTH.

Illustrations: D. E. Symon, *loc. cit.*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 92 (1981).

Dense, spreading shrub to 1 m, grey-white, densely woolly-pubescent with stellate hairs, glandular hairs also present; prickles to 10 mm long, abundant on stems, fewer elsewhere. Leaves ovate-lanceolate; lamina 5–8 cm long, 2–3 cm wide, sometimes larger, concolorous, entire; petiole 1–5 mm long. Juvenile leaves up to 32 cm long, 11 cm wide, entire to slightly undulate. Inflorescence short, 2–3-flowered; peduncle 10–15 mm long; pedicels 5–10 mm long. Calyx 12–17 mm long; lobes narrowly triangular, unequal, 5–10 mm long; tube enlarged in fruit. Corolla shallowly campanulate; tube to 5 mm long; limb broadly stellate to rotate, 30–35 mm diam., purple. Anthers 6–8 mm long. Fruiting calyx-tube to 20 mm long. Berry ovoid to ovoid-conical, 15–20 mm long, green when ripe, drying brown. Seeds 2.5–3 mm long, pale.  $n=12$ . Fig. 31E.

Restricted to central-western W.A., between Wiluna and Meekatharra, usually growing on stony hillsides. Map 146.

W.A.: c. 51 km W of Wiluna, N. H. Speck 1484 (CANB, PERTH); 19 km W of Wiluna, D. E. Symon 9971 (ADW, PERTH).

**78. *Solanum lasiophyllum*** Dunal ex Poiret, *Encycl. Suppl.* 3: 764 (1814)

*S. eriophyllum* Dunal, *Solan. Syn.* 30 (1916), *nom. illeg.*, based on *S. lasiophyllum* Dunal ex Poiret.

T: Shark Bay, W.A., *coll. unknown*; lecto: P; iso: K, P; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 219 (1981).

*S. lasiophyllum* var. *crassissimum* Benth., *Fl. Austral.* 4: 463 (1868); *S. crassissimum* (Benth.) Domin, *Biblioth. Bot.* 89: 587 (1929).

T: Northern Australia, NW Coast, *Bynoe s.n.*; holo: K.

*S. inceanum* Domin, *Vestn. Král. České Společn. Nauk, Tr. Mat.-Prír.* 22: 107 (1923).

T: W.A., W. H. Ince *s.n.*; holo: PR 530926; iso: K.

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 602 (1975); D. E. Symon, *op. cit.* fig. 93.

Erect or rounded shrub to 2 m, usually grey-green, the growing points and buds often purplish, densely pubescent with stellate hairs; prickles to 5 mm long, moderately abundant on stems and fruiting calyx, less common or absent elsewhere. Leaves ovate to broadly elliptic; lamina mostly 4–7 cm long, 2.5–5 cm wide, sometimes larger, concolorous, entire, rarely shallowly lobed; petiole mostly 5–15 mm long. Inflorescence short, the axis elongated in fruit, 2–7-flowered; peduncle 10–15 mm long; pedicels 8–10 mm long. Calyx usually 7–10 mm long; lobes triangular, 3–6 mm long; tube enlarged in fruit. Corolla rotate-pentagonal, usually 25–30 mm diam., purple. Anthers 4–6 mm long. Berry globular to ovoid, rarely conical or ellipsoid, 10–15 mm diam., yellow; fruiting peduncle and axis to 9 cm long; fruiting calyx 10–15 mm diam. Seeds 2–3 mm long, pale or light brown.  $n=12$ , 24. *Flannel Bush*. Fig. 31F.



Widespread in W.A., extending to south-western N.T. and central S.A. Usually occurs in sand or on stony rises in W.A., but restricted to rocky outcrops and ranges in N.T. and S.A. Map 147.

W.A.: About 12 km E of Carnegie, *J. S. Beard* 4812 (PERTH). N.T.: c. 180 km W of Ayers Rock, *J. R. Maconochie* 659 (NT). S.A.: near Mt Davies, 24 Aug. 1954, *J. B. Cleland* (AD); Mt Christie, *D. E. Symon* 3387 (ADW).

Used as medicinal plant by Aborigines in W.A.

### **79. *Solanum gilesii* Symon, *Trans. Roy. Soc. S. Austral.* 95: 229; fig. 3 (1971)**

T: c. 11 km W of Dovers Hills, northern Gibson Desert, W.A., 27 July 1967, *A. S. George* 9014; holo: PERTH.

Illustrations: *D. E. Symon, loc. cit.*; *D. E. Symon, J. Adelaide Bot. Gard.* 4: fig. 94 (1981).

Spreading or erect clonal shrub to 50 cm, brownish-green, the young parts rusty red or orange-brown; densely pubescent with stellate hairs, the peduncles woolly; prickles to 8 mm long, usually scattered on stems, abundant on calyx, few or absent elsewhere. Leaves ovate to ovate-oblong; lamina mostly 2–4 cm long, 1–3 cm wide, slightly discolorous, undulate to shallowly lobed; petiole to 10 mm long. Inflorescence short, 1–3-flowered; peduncle to 5 mm long; pedicels 5–10 mm long. Calyx 6–10 mm long, enlarged in fruit; lobes triangular, 1–4 mm long. Corolla rotate-pentagonal, 25 mm diam., purple. Anthers 7–8 mm long. Berry globular, c. 10 mm diam., drab bone-coloured; fruiting pedicels 10–15 mm long; fruiting calyx 10–15 mm diam. Seeds 3 mm long, pale. Fig. 24C.

Occurs mostly in north-eastern W.A. and central-western N.T., on sand plains and sand dunes. Map 148.

W.A.: NE of Sir Frederick Range, *A. S. George* 8909 (PERTH); 61 km S of Sturt Creek Homestead, *P. K. Latz* 4035 (AD, ADW, CANB, DNA, PERTH); 155 km S of Halls Creek, *J. H. Willis* 24 (MEL).

### **80. *Solanum ashbyae* Symon, *J. Adelaide Bot. Gard.* 4: 223; figs 95, 97 (1981)**

T: 120 km N of Meekatharra, W.A., 15 May 1975, *D. E. Symon* 9983; holo: PERTH; iso: ADW, CANB, K.

Illustrations: *D. E. Symon, loc. cit.*

Shrub to 2 m, densely pubescent with glandular-stellate hairs, yellowish-green, rarely grey-green, the stems and young leaves yellowish; prickles to 5 mm long, abundant on stems, sparse elsewhere. Leaves ovate-elliptic; lamina 5–8 cm long, 4–5.5 cm wide, sometimes larger, concolorous, entire; petiole 2–4 cm long. Inflorescence up to 12-flowered, several lower flowers bisexual, the upper flowers male; peduncle 3–4 cm long; rachis 2–3 cm long. Bisexual flowers: pedicel to 15 mm long; calyx 8–13 mm long, enlarged in fruit, the lobes lanceolate, unequal, 4–10 mm long; corolla broadly stellate to rotate, 25–40 mm diam., purple; anthers 7–8 mm long. Male flowers similar: corolla to 30 mm diam.; anthers 5–7 mm long; ovary, style and stigma rudimentary. Berry ovoid to globular, occasionally slightly conical, c. 15 mm diam., pale bright green when ripe, drying brown; fruiting calyx 15–18 mm long. Seeds 2 mm long, light brown.  $n=12$ .

Restricted to inland central-western W.A., occurring in deep red sand and on the margins of granite slopes. Map 149.

W.A.: 22 km S of Gascoyne River South, *D. E. Symon 9991* (ADW); near Laverton, *J. Z. Weber 4815* (AD); Von Treuer Tableland, *P. G. Wilson 7426* (PERTH).

### 81. *Solanum gabrielae* Domin, *Biblioth. Bot.* 89: 588; fig. 189 (1929)

T: North-west Australia, between the Ashburton and De Grey Rivers, *E. Clement s.n.*; holo: PR 530923; iso: K.

Illustration: *D. E. Symon, J. Adelaide Bot. Gard.* 4: fig. 98 (1981).

Spreading shrub to 30 cm tall and 50 cm wide, yellowish-green, densely silky-pubescent with stellate hairs, the hairs frequently with glandular tips; prickles to 5 mm long, common on stems and calyx, rare or absent elsewhere. Leaves ovate to ovate-lanceolate; lamina 3–7 cm long, 2.5–4.5 cm wide, sometimes larger, concolorous, usually entire; petiole 1–3 cm long. Inflorescence short, 2–6-flowered; peduncle 1–2 (sometimes to 6) cm long; pedicels short. Calyx 7–10 mm long, enlarged in fruit; lobes obtusely triangular, 2–3 mm long. Corolla shallowly campanulate; tube 3–4 mm long; limb rotate, 2–3 cm diam., lilac-purple with green centre. Anthers 4–7 mm long. Berry globular, 10–20 mm diam., green or yellow when ripe; fruiting calyx 1–2 cm diam. Seeds 1.5–2 mm long, light grey-brown, margin paler. *n*=12. Fig. 25B.

Restricted to Hamersley Range region of W.A., growing on rocky slopes. Map 150.

W.A.: 48 km SE of Coonarie River crossing, *D. E. Symon 5389* (ADW, NSW, PERTH); Tambrey Stn, *D. E. Symon 5401* (CANB, PERTH).

### 82. *Solanum prinophyllum* Dunal, in DC., *Prodr.* 13(1): 296 (1852)

T: Port Jackson, New Holland, *Gaudichaud s.n.*; holo: G, microfiche AD.

*S. armatum* R. Br., *Prodr.* 446 (1810), *nom. illeg.*, non Forsskal, *Fl. Aegyptiaco-Arabico* 47 (1775).

T: Port Jackson area, N.S.W., 1803–1805, *R. Brown s.n.*; holo: BM; iso: K.

*S. armatum* var. *cultum* Dunal, in DC., *Prodr.* 13(1): 295 (1852).

T: 'In horto Monspel. cultum'; holo: MPU; iso: K, photo ADW.

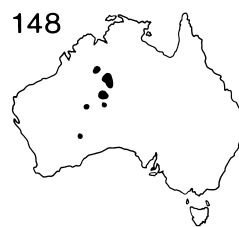
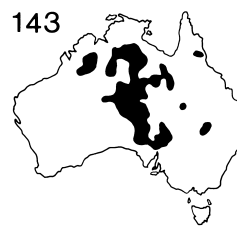
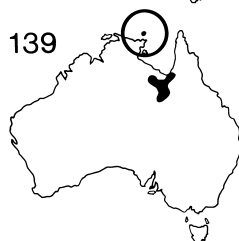
[*S. xanthocarpum* auct. non Schrader: F. M. Bailey *Queensland Fl.* 1088 (1901)]

Illustration: *D. E. Symon, J. Adelaide Bot. Gard.* 4: fig. 99 (1981).

Sprawling, annual or short-lived perennial herb with stems to 45 cm long, dark green or purplish-green; sparsely pubescent with minute stellate hairs, the young growing points also with minute glandular hairs; prickles to 10 mm long, few on peduncle and pedicel, frequent on most other parts. Leaves elliptic to lanceolate-elliptic; lamina mostly 5–8 cm long, 3–5 cm wide, sometimes larger, concolorous, deeply lobed; lobe margins toothed or lobed; petiole 5–15 mm long. Inflorescence short, 1–6-flowered; peduncle 1–10 mm long; pedicels usually 8–10 mm long, slightly longer in fruit. Calyx 5–7 mm long; lobes narrowly triangular, 1–4 mm long, the veins prominent. Corolla campanulate, 10–15 mm long; limb broadly stellate; lilac-blue. Anthers 2–2.5 mm long. Berry globular or obovoid, 15–20 mm diam., drab green or purple when ripe; fruiting pedicels 10–20 mm long. Seeds 2–3 mm long, ivory or pale yellow. *n*=12. *Forest Nightshade*.

Occurs along Great Dividing Range from south-eastern Qld to eastern Vic. Usually associated with rainforest or Eucalypt woodland, often in disturbed areas. Map 151.

Qld: D'Aguilar Range, *V. K. Moriarty 1202* (BRI). N.S.W.: near Broulee, *L. Haegi 1758* (ADW, NSW). Vic.: near Lakes Entrance, *A. C. Beauglehole 37807* (MEL); Gippsland, 5 Apr. 1872, *A. Morrison* (CANB).



136. *Solanum horridum*

139. *Solanum seitheae*

142. *Solanum karsense*

145. *Solanum petrophilum*

148. *Solanum gilesii*

137. *Solanum echinatum*

140. *Solanum sturtianum*

143. *Solanum quadriloculatum*

146. *Solanum lachnophyllum*

149. *Solanum ashbyae*

138. *Solanum lucani*

141. *Solanum oligacanthum*

144. *Solanum eardleyae*

147. *Solanum lasiophyllum*

150. *Solanum gabrielae*

Plants in northern areas are more erect and prickly, the leaves often more pubescent, with stellate and glandular hairs, and approach *S. cookii* Symon and *S. campanulatum* R. Br. Closely related to *S. pungetium* R. Br.

### 83. *Solanum multiglochidiatum* Domin, *Biblioth. Bot.* 89: 586 (1929)

T: near Mungana, Qld, Feb. 1910, *Domin s.n.*; ?PR *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 100 (1981).

Sprawling, clonal, herbaceous perennial herb with stems to 25 cm long, green or yellow-green, sparsely pubescent with stellate hairs, the upper leaf-surface almost glabrous except along main veins; prickles to 6 mm long, scattered to abundant on most parts. Leaves ovate; lamina 5–10 cm long, 3–8 cm wide, concolorous, undulate to shallowly lobed; petiole 1–2 cm long. Inflorescence few–10-flowered; peduncle 2–4 cm long; rachis 1–5 cm long; pedicels 8–15 mm long. Calyx 5–8 mm long; lobes narrowly triangular, 3–5 mm long, slightly longer in fruit. Corolla broadly stellate to rotate, 25–40 mm diam., pale lavender-blue. Anthers 6–7 mm long. Berry 15–20 mm diam., pale yellow-green when ripe; fruiting calyx-lobes to 1 cm long. Seeds 3–3.5 mm diam., pale buff or yellow. *n*=24.

Known from only a few collections; restricted to the Cook District of northern Qld. Map 152.

Qld: 24 km W of Petford, *D. E. Symon* 4873 (ADW, BRI, CANB, NSW).

### 84. *Solanum cookii* Symon, *J. Adelaide Bot. Gard.* 4: 233; figs 96, 102 (1981)

T: cultivated at Adelaide, S.A., 25 Feb. 1972, *D. E. Symon s.n.*, from seed collected from McIlwraith Range, Cape York Peninsula, Qld, Oct. 1969, *Webb & Tracey* 8355; holo: ADW; iso: BRI, CANB, K.

*S. adenophorum* var. *indivisum* Domin, *Biblioth. Bot.* 89: 586 (1929).

T: Rockingham Bay, Qld, *Dallachy s.n.*; iso: K, photo ADW. Illustrations: D. E. Symon, *loc. cit.*

Erect or sprawling shrub to 3 m, green, pubescent with simple and glandular hairs; stellate hairs usually present on lower leaf-surface; prickles to 10 mm long, abundant on most parts. Leaves ovate-elliptic; lamina 8–15 cm long, 5–10 cm wide, concolorous, shallowly lobed; lobes angular, slightly toothed or lobed; petiole 3–6 cm long. Inflorescence few–10-flowered; peduncle 15–25 mm long; rachis 15–30 mm long; pedicels 3–8 mm long. Calyx 7–11 mm long; lobes linear-lanceolate, 5–8 mm long. Corolla broadly stellate to pentagonal, 15–20 mm diam., pale lavender-blue. Anthers 3.5–5 mm long. Berry globular, 10–15 mm diam.; colour not known. Seeds 2–2.5 mm long, pale yellowish or buff. *n*=12.

Occurs in northern Qld, in the area inland from Ingham to Cairns and in the McIlwraith Range. Usually associated with rainforest, growing in soils derived from basalt and granodiorite. Map 153.

Qld: Evelyn, 11 Jan. 1974, *D. J. Collins* (ADW, BRI); Rockingham Bay, 12 Apr. 1868, *Dallachy* (MEL).

### 85. *Solanum pungetium* R. Br., *Prodr.* 446 (1810)

T: Port Jackson area, N.S.W., 1802–1804, *R. Brown s.n.*; lecto: BM; iso: K, P; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 235 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 103.

Sprawling annual or short-lived perennial herb to 1.5 m, green, pubescent with stellate hairs, the hairs sparse on upper leaf-surface, moderately dense on lower surface; prickles to 6 mm long, scattered on stems, peduncles, petioles and leaf-surfaces. Leaves elliptic; lamina 5–8 cm long, 2–4 cm wide, slightly discoloured, lobed; lobes obtusely triangular; petiole 10–15 mm long. Inflorescence 1–3-flowered; peduncle absent or very short; pedicels 2–4 cm long, slightly longer in fruit. Calyx 5–7 mm long; lobes narrowly triangular, 3–4 mm long. Corolla campanulate-rotate, 15–20 mm long, pale purple. Anthers 3–4 mm long. Berry globular, 25–30 mm diam., yellow; fruiting pedicel 25–50 mm long. Seeds 2.5–4 mm long, pale yellow-orange.  $n=12$ . *Eastern Nightshade*. Fig. 25E–F.

Occurs predominantly along eastern coast of N.S.W., extending into north-eastern Vic. Often associated with basaltic or granitic soil on hillsides or in creeklines. Map 154.

N.S.W.: Boyne National Park, *M. Evans* 2556 (CANB, NSW). Vic.: Mallacoota Inlet National Park, *A. C. Beauglehole* 32919 (ADW, MEL).

Closely related to *S. prinophyllum* Dunal.

### 86. *Solanum hystrix* R. Br., *Prodr.* 446 (1810)

T: Anchorage 5 (Franklin Isles, S.A.) Feb. 1802, *R. Brown s.n.*; lecto: BM; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 237 (1981).

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1070 (1957); D. E. Symon, *op. cit.* fig. 104.

Sprawling, clonal, herbaceous perennial with usually annual stems to 25 cm long, green or greenish-yellow, almost glabrous to sparsely pubescent with simple hairs, occasional stellate hairs and minute glandular hairs; prickles to 15 mm long, abundant on all parts except corolla. Leaves elliptic; lamina 3–7 cm long, 1–3 cm wide, sometimes larger, almost concolorous, lobed; lobes obtusely triangular, shallowly lobed; petiole usually up to 15 mm long. Inflorescence 1–10-flowered; peduncle 5–10 mm long; rachis 1–3 cm long; pedicels 5–10 mm long. Calyx 4–8 mm long, enlarged in fruit; lobes narrowly triangular, 2–4 mm long. Corolla broadly stellate to rotate, 15–25 mm diam., pale blue or white. Anthers 5 mm long. Berry globular, 15–25 mm diam., drying blackish; fruiting peduncle to 30 mm long, pedicels 15–20 mm long, calyx c. 15–25 mm diam. Seeds 2–2.5 mm long, dark grey to almost black.  $n=12$ . *Afghan Thistle*, *Porcupine Solanum*. Fig. 25H.

Native to Eyre Peninsula region and adjacent offshore islands of S.A.; introduced populations locally established in south-eastern S.A., N.S.W. and W.A. Usually occurs on sandy plains; common in recently burnt scrub. Map 155.

W.A.: c. 165 km E of Norseman, 20 May 1968, *G. Howard* (PERTH); S.A.: near Cummins, *C. R. Alcock* 2260 (AD); near Kimba, *D. E. Symon* 4482 (ADW, CANB, NSW); Ceduna, 2 Nov. 1950, *J. H. Willis* (MEL).

Treated fruit eaten by Aborigines. Closely related to *S. hoplopetalum* Bitter & Summerh., but distinguished by being almost glabrous.

### 87. *Solanum hoplopetalum* Bitter & Summerh., *Bull. Misc. Inform.* 116 (1926)

T: Merredin, W.A., May 1925, *E. J. Limbourne s.n.*; holo: K; iso: MEL.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 105 (1981).

Sprawling, clonal, perennial herb with usually annual stems to 35 cm long, green; prickles to 14 mm long, abundant on all parts. Leaves elliptic; lamina 4–12 cm long,

1–5 cm wide, concolorous, deeply lobed, hispid with simple, often glandular hairs, and minute glandular hairs; lobes oblong to triangular, toothed or shallowly lobed; petiole 15–45 mm long. Inflorescence 4–8-flowered; peduncle to 30 mm long; rachis 10–20 mm long; pedicels 5–13 mm long. Calyx 6–13 mm long, enlarged in fruit; tube almost obscured by prickles; lobes narrowly triangular, 2–5 mm long. Corolla broadly stellate to subrotate, 15–30 mm diam., pale blue or white. Anthers 4–6 mm long. Berry globular or depressed globular, 15–20 mm diam., bright green, drying almost black; fruiting calyx 15–20 mm diam. Seeds 2.5 mm long, dark grey. *n*=12. *Prickly Potato Weed*, *Afghan Thistle*.

Occurs in south-western W.A. where sometimes a minor weed of cereal crops and sheep grazing areas. Possibly naturalised in south-eastern S.A. Common on sandy plains, in open woodlands, cultivated areas and roadsides. Map 156.

W.A.: c. 110 km E of Norseman, *K. M. Allen* 224 (PERTH); near Broad Arrow, *D. E. Symon* 9913 (ADW, CANB); 30 km W of Coolgardie, Oct. 1961, *J. H. Willis* (MEL).

Closely related to, and previously confused with, *S. hystrix* R. Br.; distinguished by presence of hispid and reduced stellate hairs (which may be glandular) and minute glandular hairs.

### 88. *Solanum macoorai* Bailey, *Queensland Dept. Agric. Bot. Bull.* 8: 80 (1893)

T: South peak, Mt Bellenden Ker, Qld, June 1889, *coll. unknown*; holo: BRI.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 106 (1981).

Erect shrub or small tree to 4 m tall, dark green or purplish-green; young growth and buds pubescent with minute stellate hairs, mature growth glabrous except along leaf veins; prickles to 1 cm long, abundant only on lower main stem and leaf-surfaces of young plants, sparse to absent elsewhere. Leaves elliptic, concolorous. Juvenile leaves with lamina 10–25 cm long, 4–12 cm wide, shallowly lobed; petiole 3–8 cm long. Mature leaves with lamina mostly 5–10 cm long, 2–4 cm wide, entire to shallowly lobed; petiole 1–2 cm long. Inflorescence short, up to 12-flowered; peduncle 1–2 cm long; pedicels 10–15 mm long, lengthened in fruit. Calyx 5–8 mm long; lobes triangular, 2.5–3 mm long. Corolla stellate, deeply incised, 2–3 cm diam, mauve. Anthers 4–5 mm long. Berry globular or obovoid, mostly 15–20 mm diam., orange-red; fruiting pedicels 20–30 mm long, distinctly thickened. Seeds 3 mm long, pale yellow-brown.

Occurs in northern Qld in the Atherton Tableland and McIlwraith Range areas. Common in disturbed rainforest. Map 157.

Qld: Mt Bartle Frere, *V. K. Moriarty* 1583 (BRI, CANB).

Closely related to and often confused with *S. inaequilaterum* Domin; distinguished by taller stature, shallowly lobed juvenile leaves, absence of glandular hairs on pedicels and calyx, and orange-red fruit.

### 89. *Solanum sporadotrichum* F. Muell., *Chem. & Druggist* 5: *Australas. Suppl.* 48 (1882)

T: Mt Dryander, Qld, *Kilner & Fitzalan s.n.*; lecto: MEL 12282; *fide* D. E. Symon, *J. Adelaide Bot. Gard* 4: 242 (1981); Port Denison, Qld, *E. Fitzalan s.n.*; syn: K, MEL.

Shrub, green; inflorescence and leaves sparsely pubescent with stellate hairs, the hairs sometimes dense on lower leaf-surface, branchlets almost glabrous; prickles scattered to numerous on branchlets, few or absent on leaves. Leaves ovate, concolorous, entire

to shallowly lobed. Entire leaves with lamina 5.5–11 cm long, 1.5–5 cm wide; lobed leaves with lamina 7–17 cm long, 4–10 cm wide; petiole 1–6 cm long. Inflorescence short, few-flowered. Calyx c. 9 mm long; lobes narrowly triangular, c. 7 mm long. Corolla stellate, deeply incised, white or purple. Anthers c. 5 mm long. Berry c. 16–18 mm diam., probably scarlet. Seeds 2–3 mm long, pale yellow.

Known only from Mt Dryander and adjacent areas in tropical North Qld in rainforest. Map 158.

Qld: Mt Dryander, *R. J. Henderson 2213* (ADW, BRI).

Probably closely related to *S. macoorai* Bailey and *S. inaequilaterum* Domin. The name has been frequently misapplied to other *Solanum* species. The above is based largely on Mueller's description and from early collections, the only recent collection being vegetative.

## 90. *Solanum inaequilaterum* Domin, *Biblioth. Bot.* 89: 581 (1929)

T: Near Beech Mtns, southern Qld, Mar. 1910, *Domin s.n.*; ?PR *n.v.*

[*S. sporadotrichum* auct. non F. Muell.: J. H. Maiden & E. Betche, *Census New South Wales Pl.* 181 (1916)]

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 107 (1981).

Shrub to c. 2 m, green or dark green, the young leaves often purplish; leaves sparsely pubescent with stellate hairs, the hairs rarely dense on lower surface; simple and glandular hairs also on pedicel and calyx; prickles 5–12 mm long, dense on main stems, scattered to abundant on leaves and peduncle, absent from pedicel and calyx. Leaves elliptic, concolorous. Juvenile leaves with lamina up to 20 cm long and 15 cm wide, deeply lobed; petiole to 5 cm long. Mature leaves with lamina 4–15 cm long, 2–5 cm wide, entire to shallowly lobed; petiole 1–3 cm long. Inflorescence often congested, 1–10-flowered; peduncle 10–15 mm long; pedicels 5–10 mm long. Calyx 8–10 mm long; lobes linear-lanceolate, 5–8 mm long. Corolla broadly stellate, 25–35 mm diam., blue. Anthers 5–6 mm long. Berry globular to slightly ovoid, 10–20 mm diam., scarlet; fruiting pedicel 20–25 mm long, thickened in upper half. Seeds 3–3.5 mm long, pale or light brown. *n*=12.

Occurs in higher rainfall areas of south-eastern Qld and north-eastern N.S.W., confined to disturbed areas and forest margins. Map 159.

Qld: Levers Plateau, *R. J. Henderson 1304* (ADW, BRI, NSW). N.S.W.: Wiangarie State Forest, *L. Haegi 1533* (NSW).

Closely related to *S. macoorai* Bailey, but distinguished by the smaller stature, deeply lobed juvenile leaves, multicelled glandular hairs on pedicels and calyx, and scarlet fruit.

## 91. *Solanum dallachii* Benth., *Fl. Austral.* 4: 456 (1868)

T: Rockingham Bay, Qld, *Dallachy s.n.*; lecto: K; iso: G, MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 245 (1981).

[*S. repandrum* auct. non G. Forster; F. Mueller, *Fragm. Phytogr. Austral.* 6: 145 (1868)].

Illustration: D. E. Symon, *op. cit.* fig. 108.

Shrub to 4 m, green, pubescent with stellate hairs, the hairs sparse on upper surface of adult leaves, more dense on lower surface, loose and tufted on young growth; prickles to 6 mm long, common on juvenile growth, rare or absent on mature growth. Leaves slightly discolorous. Juvenile leaves broadly elliptic; lamina 7–17 cm long,

3.5-8 cm wide, sometimes larger, shallowly lobed; petiole to 5 cm long. Mature leaves ovate to ovate-elliptic; lamina mostly 6-12 cm long, 4-5.5 cm wide, entire; petiole 15-20 mm long. Inflorescence up to 16-flowered; peduncle to 15 mm long; rachis 2-5 cm long; pedicels 10-15 mm long, longer in fruit. Calyx 5-7 mm long; lobes broadly lanceolate, 3-4 mm long. Corolla stellate, deeply incised, 25-30 mm diam., heliotrope with pale centre. Anthers 4.5-6 mm long. Berry broadly ovoid, 15-25 mm diam., reported yellow; fruiting pedicel to 30 mm long, thickened towards apex. Seeds 2.5 mm long, colour not known.  $n=24$ . Fig. 24K-L.

Restricted to northern Qld. Occurs in disturbed rainforest and in openings and margins of wet scrub. Map 160.

Qld: Wyvuri Holding, B. Hyland 7367 (BRI, NSW); near Yungaburra, 16 Oct. 1968, J. G. Tracey (ADW, CANB).

## 92. *Solanum furfuraceum* R. Br., *Prodr.* 446 (1810)

T: Broad Sound, Qld, R. Brown s.n.; lecto: BM; iso: K, MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 247 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 109.

Erect shrub to 2 m, dark drab-green, pubescent with stellate hairs, the hairs sparse on upper leaf-surface, moderately dense on lower surface; prickles to 1 cm long, scattered on young growth, absent from mature growth and inflorescence. Leaves discolorous. Juvenile leaves broadly ovate, the lamina up to 17 cm long, 12 cm wide, shallowly lobed; petiole 1-4 cm long. Mature leaves broadly lanceolate to elliptic; lamina mostly 6-9 cm long, 3-4 cm wide, sometimes larger, entire or shallowly lobed; petiole to 1.5 (4.5) cm long. Inflorescence 3-9-flowered; peduncle to 5 mm long; rachis to 1 cm long, pedicels 8-10 mm long. Calyx 5-8 mm long; lobes lanceolate with linear apices, 4-8 mm long, slightly longer in fruit. Corolla broadly stellate, 25-35 mm diam., bluish-purple. Anthers 4-6 mm long. Berry globular or depressed globular, 15-20 mm diam., green or yellow-green. Seeds 1.5-2 mm long, pale yellow or brown.  $n=12$ .

Occurs in higher rainfall areas of Great Dividing Range in eastern Qld and north-eastern N.S.W., usually on margins of rainforest. Map 161.

Qld: Rockhampton, A. Dietrich 1538 (MEL). N.S.W.: Toonumbar State Forest, R. J. Henderson 1267 & J. Parham (BRI); 26 km NW of Kyogle, R. Coveny 4410 (NSW); Levers Plateau, L. J. Webb & J. G. Tracey 10740 (ADW).

## 93. *Solanum brownii* Dunal, *Hist. Nat. Solanum* 201 (1813)

*S. violaceum* R. Br., *Prodr.* 445 (1810), non Ortega, *Hort. Matr. Decas* 56 (1797).

T: Paterson's River, N.S.W., Oct. 1804, R. Brown s.n.; lecto: BM; iso: K, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 249 (1981).

*S. violaceum* var. *scabrum* Benth., *Fl. Austral.* 4: 452 (1868); *S. violaceum* f. *scabrum* (Benth.) Domin, *Biblioth. Bot.* 89: 582 (1929).

T: New South Wales, *Vicary s.n.*; holotype: K; New South Wales, C. Moore s.n.; syn: *n.v.*

*S. violaceum* var. *variegata* R. Baker, *Proc. Linn. Soc. New South Wales* 21: 458 (1896).

T: Rylstone - Goulburn River Districts, N.S.W., R. T. Baker s.n.; *n.v.*

*S. violaceum* var. *album* Maiden & Betche, *Proc. Linn. Soc. New South Wales* 2nd ser., 29: 747 (1905).

T: Mt Dangar, Gungal, near Merriwa, N.S.W., Sept. 1904, J. L. Boorman s.n.; syn: NSW; Wallsend, N.S.W. Sept. 1904, J. L. Boorman s.n.; *n.v.*

*S. curvipes* Domin, *Repert. Spec. Nov. Regni Veg.* 12: 131 (1913).



T: New South Wales, *Clowes s.n.*; syn: K *n.v.*, photo ADW; Nepean River, *coll. unknown*; syn: K *n.v.*, photo ADW; Hastings River, *C. Moore s.n.*; syn: K *n.v.*

*S. curvipes* f. *curvispina* Domin, *loc. cit.*

T: Clarence River, *Beckler s.n.*; iso: K *n.v.*, photo ADW.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 110 (1981).

Erect shrub to 2 m, dark green, pubescent with stellate hairs, the hairs sparse on upper leaf-surface, dense and woolly on lower surface, peduncle and pedicels; prickles absent, or to 1 cm long, usually sparse on stems, occasional or rare elsewhere. Leaves lanceolate; lamina mostly 8–12 cm long, 10–13 mm wide, sometimes larger, discolorous, entire or sinuate; petiole to 10 mm long. Juvenile leaves with lamina up to 14 cm long and 8 cm wide, entire or shallowly lobed. Inflorescence up to 10-flowered; peduncle to 10 mm long; rachis 10–20 mm long; pedicels 5–10 mm long. Calyx usually 5–7 mm long; lobes triangular to narrowly triangular, 2.5–5 mm long. Corolla broadly stellate to rotate, 25–40 mm diam., pale blue, heliotrope or rich purple. Anthers 4.5–6 mm long. Berry globular, 15–20 mm diam., yellow, greenish-white and white. Seeds 2.5–3.5 mm long, pale bone-coloured. *Violet Nightshade*. Fig 28E; 42.

Occurs along the Great Dividing Range from south-eastern Qld to north-eastern Vic. in a variety of habitats, often disturbed, in soils derived from sandstones and basalts. Map 162.

N.S.W.: Owens Gap, 11 Aug. 1970, *C. Burgess* (ADW); Mt Richardson, *J. M. Swan 15* (BRI); c. 16 km W of Gloucester, *C. Slade & R. Coveny 1901* (NSW); Clyde Mtn, *Walker ANU 1111* (CANB, NSW). Vic.: Mt Drummer, *N. A. Wakefield 3225* (MEL).

In northern areas the leaves become more deeply lobed, and plants approach *S. cinereum* R. Br.

## Sect. XVII. MICRANTHA

*Solanum* sect. *Micracantha* Dunal, *Hist. Nat. Solanum* 128, 193 (1813)

Type species: *S. micracanthos* Lam.

Sprawling or climbing shrubs, pubescent with stellate, often minute hairs, often sparse on upper leaf-surface. Stems, petioles and often lower midveins of leaves with hooked prickles; leaf blades sometimes with straight prickles. Leaves simple, angularly lobed, often paired. Inflorescence a condensed cyme, few-flowered. Corolla stellate. Anthers lanceolate, dehiscing by terminal pores. Berry succulent, orange-red.

### 94. *Solanum hamulosum* C. T. White, *Contr. Arnold Arbor.* 4: 95 (1933)

T: Boonjee, Atherton Tableland, Qld, 23 Sept. 1929, *S. F. Kajewski 1222*; holo: BRI; iso: K.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 112 (1981).

Scrambling shrub to 4 m, green; leaves pubescent with minute stellate hairs, the hairs sparse on upper surface, dense on lower surface; prickles 2–3 mm long, common on stems and petioles, scattered on juvenile leaves, few or absent on mature leaves; leaves discolorous. Mature leaves ovate to ovate-elliptic; lamina mostly 10–15 cm long, 6–9 cm wide, entire to shallowly lobed; petiole 2–6 cm long. Juvenile leaves broadly elliptic, the lamina up to 20 cm long, 13 cm wide, lobed; lobe margins shallowly lobed; petiole 6–7 cm long. Inflorescence to 12-flowered; peduncle 5–10 mm long; rachis up to 10 mm long; pedicels 10–15 mm long, longer in fruit. Calyx 5–6 mm long; lobes broadly lanceolate, 3–5 mm long, sometimes several fused.

Corolla stellate, deeply incised, 15–35 mm diam., light purple. Anthers 5–6 mm long. Berry globular, 15–35 mm diam., ripe colour not known; fruiting pedicel 15–40 mm long. Seeds 1.5–2 mm long, yellow-orange. *Dirran Curse*.

Known only from the Atherton Tabeland, Qld, in disturbed rainforest. Map 163.

Qld: Bellenden Ker Range, *B. Hyland* 7757 (ADW, BRI, CANB); Boonjie, *V. K. Moriarty* 1147 (BRI).

Very closely related to *S. dimorphispinum* C. T. White, differing mainly in habit, leaf pubescence and chemical composition (V. Bradley et al., *Austral. J. Bot.* 26: 723-754 (1978).

**95. *Solanum dimorphispinum*** C. T. White, *Proc. Roy. Soc. Queensland* 50: 82 (1939)

T: Mt Spurgeon, Qld, Sept. 1936, *C. T. White* 10619; holo: BRI.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 111 (1981).

Similar to the preceding, differing as follows: Erect or sprawling shrub, green or grey-green; some minute glandular hairs present; prickles on leaves 5-7 mm long. Juvenile leaves ovate, the lamina up to 25 cm long and 20 cm wide. Calyx lobes elliptic, 2-3 mm long, not fused. Corolla mauve. Anther usually 7-8 mm long. Berry 15-20 mm diam. Seeds 2-2.5 mm long, pale or light brown. *n*=12. Fig. 28G.

Known only from the Mossman area, north of the Atherton Tableland, Qld, in disturbed areas of rainforest and along forest margins. Map 164.

Qld: Mt Lewis, *V. K. Moriarty* 1590 (ADW, BRI, CANB).

*S. dimorphispinum* C. T. White and *S. hamulosum* C. T. White are related not to other Australian species but to species in Central and South America. Both species are possibly early introductions into Australia.

## Sect. XVIII. CAMPANULATA

*Solanum* sect. *Campanulata* Symon, *J. Adelaide Bot. Gard.* 4: 255 (1981)

Type species: *S. campanulatum* R. Br.

Shrubs, pubescent with stellate, often glandular, hairs; prickles present. Leaves simple, lobed. Inflorescence cyme-like; lower flowers bisexual, upper male. Corolla deeply campanulate, purple. Anthers lanceolate, dehiscing by terminal pores. Berry firm-fleshed, yellow, partly enclosed by calyx. Seeds black.

**96. *Solanum campanulatum*** R. Br., *Prodr.* 446 (1810)

T: Grose R., N.S.W., 1803-1805, R. Brown s.n.; lecto: BM; iso: K, MEL, ?MPU, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 256 (1981).

Illustration: D. E. Symon, *loc. cit.* 4: fig. 113 (1981).

Short-lived perennial shrub to 1 m, green, pubescent with stellate and simple glandular hairs; prickles to 10 mm long, abundant on all parts except corolla. Leaves ovate-elliptic, the lamina mostly 8-13 cm long, 5-9 cm wide, concolorous, lobed; lobes angular, obtusely lobed; petiole 2-5 cm long. Inflorescence 4-10-flowered; upper flowers sometimes male; peduncle to 4 cm long; rachis to 3 cm long; pedicels 15-20 mm long. Calyx 7-12 mm long; lobes lanceolate-acuminate, 5-8 mm long. Corolla deeply campanulate, 15-20 mm long, lavender-purple. Anthers 5 mm long.

Berry subglobular to obovoid, 20-25 mm diam., pale green-yellow, drying brown to black. Seeds 2-2.5 mm long, black.  $n=12$ . Figs 27C; 31G.

Occurs in the Great Dividing Range in N.S.W. and south-eastern Qld. Map 165.

N.S.W.: 20 km NNE of Rylstone, *R. Coveny 10519* & *P. Hind* (BRI, NSW); Culoul Range, *A. Rodd 413* (ADW, NSW).

## Sect. XIX. MELONGENA

*Solanum* sect. *Melongena* Dunal, *Hist. Nat. Solanum* 130, 208 (1813)

Type species: *S. melongena* L.

Shrubs, rarely herbs, pubescent with stellate, sometimes glandular, hairs; prickles present. Leaves simple, entire or shallowly to deeply lobed. Plants androdioecious or dioecious; inflorescence cymose with one or few bisexual flowers at base and few to many male flowers above, or plants with cyme of male flowers, or solitary female flowers. Corolla rotate or shallowly incised, usually purple. Anthers lanceolate, dehiscent by small terminal pores. Berry mucilaginous, rarely pulpy, often yellow, mostly glabrous, often enclosed by enlarged calyx. Seeds pale or black.

### 97. *Solanum cinereum* R. Br., *Prodr.* 446 (1810)

T: Banks of the Grose R., N.S.W., 1804, *R. Brown s.n.*; holo: BM.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 114 (1981).

Erect or bushy clonal shrub to 1 m, dark green, pubescent with stellate hairs; hairs dense on lower leaf-surface, sparse and mostly along veins of upper surface; minute glandular hairs also present; prickles to 15 mm long, usually abundant on most parts. Leaves ovate-elliptic, the lamina mostly 6-10 cm long, 3-6 cm wide, discolorous, deeply lobed; petiole 5-15 mm long. Inflorescence up to 7-flowered, the upper flowers sometimes male; peduncle mostly 2-10 mm long; rachis to 6 cm long, pedicels 5-8 mm long. Calyx 5-10 mm long; lobes usually linear, 3-5 mm long. Corolla campanulate-rotate, 15-20 mm long, mauve-purple. Anthers 3-4 mm long. Berry globular, usually 15-20 mm diam., dark brown. Seeds 3-4 mm long, usually dark brown.  $n=12$ , 24. *Narrawa Burr.* Figs 31H; 41.

Widespread along slopes and tablelands of the Great Dividing Range, extending from south-eastern Qld to central Vic. Introduced and established in Flinders Ranges area, S.A. Map 166.

S.A.: 45 km SE of Port Augusta, 1 Oct. 1960, *I. Shillabeer* (AD); near Crystal Brook, *D. E. Symon 5480* (ADW, CANB). Qld: 24 km ENE of Killarney, *S. L. Everist 8124* (BRI). N.S.W.: Yearinan, 2 Nov. 1954, *L. A. S. Johnson* & *E. F. Constable* (NSW).

Associated with rainforest in northern regions; elsewhere occurs mainly in rough pasture on hills and rocky slopes. Berries reported poisonous to sheep. Distinguished by the shallowly campanulate corolla and parchment-like texture of the berry, and not closely related to other Australian species.

**98. \**Solanum marginatum* L.f., *Suppl.* 147 (1781)**

T: 'Habitat in Abyssinia' *n.v.*

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 115 (1981).

Sparingly clonal shrub to 1.5 m, dull green to silvery-white, pubescent with minute stellate hairs, the hairs dense on lower leaf-surface, sparse on upper surface except along margins; prickles to 1 cm, scattered on most parts. Leaves elliptic, the lamina mostly 10–12 cm long, 8–10 cm wide, sometimes larger, discolourous, lobed; lobes sinuate-crenate; petiole 15–25 mm long. Inflorescence short, 2–10-flowered; lower flowers bisexual, the remainder male; peduncle absent. Bisexual flower: pedicel 20–25 mm long, calyx 9–10 mm long, the lobes narrowly triangular to oblong, unequal, 5–10 mm long; corolla rotate, 30–40 mm diam., white or very pale mauve; anthers 6–7 mm long. Male flower similar but slightly smaller. Berry globular, 30–40 mm diam., pale or deep yellow. Seeds 2–2.5 mm long, light brown. *n*=12. *White-edge Nightshade*. Fig. 32C.

Ornamental plant originally from north-east Africa; sparingly naturalised in Vic., Tas. and S.A. Map 167.

S.A.: Burnside, 9 Apr. 1917, *T. G. B. Osborn* (AD); Willunga, *D. E. Symon 8806* (ADW, CANB, NSW). Vic.: Merino district, 1919, *W. J. Baker* (MEL). Tas.: Domestic garden, Moonah, 4 Apr. 1978, *D. I. Morris* (HO).

**99. *Solanum hermannii* Dunal, *Hist. Nat. Solanum* 212; t. 2, fig. b (1813)**

*S. sodomeum* var. *hermannii* (Dunal) Dunal, in DC., *Prodr.* 13(1): 366 (1852).

T: 'Cape of Good Hope, Breyne, Fasc. 25, Hermann, *Florae lugduno-batavae flores*, t. 474 (1687), not traced', *vide* F. N. Hepper, *Bot. J. Linn. Soc.* 76: 292 (1978).

[*S. sodomeum* auct. non L., *vide* F. N. Hepper, *loc. cit.*]

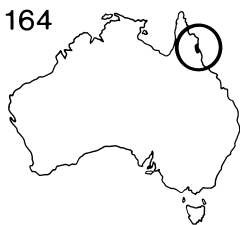
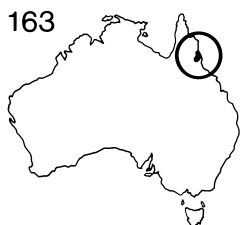
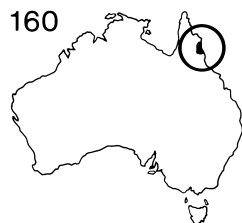
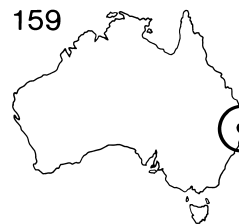
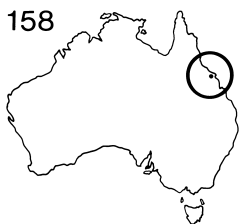
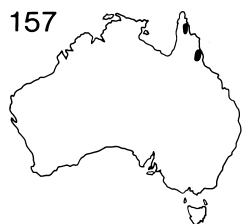
Illustrations: G. H. Clarke, *Dept. Agric. S. Austral. Bull.* 406: t. opp. 7 (1949) as *S. sodomeum* var. *hermannii*; J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1071 (1957) as *S. sodomeum*; W. T. Parsons, *Noxious Weeds Victoria*, fig. 254 (1973) as *S. sodomeum*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 117 (1981).

Often rounded shrub to 1 m, dark green, pubescent with stellate and some simple glandular hairs, the hairs sparse on upper leaf-surface, denser on lower surface; prickles to 15 mm long, common on most parts. Leaves elliptic, the lamina mostly 4–8 cm long, 3–6 cm wide, concolorous, deeply lobed; larger lobes sinuate; petiole 1–2 cm long. Inflorescence short, 3–6-flowered; peduncle absent or short; pedicels 10–15 mm long. Calyx 7–8 mm long; lobes lanceolate, 2–4 mm long. Corolla rotate-stellate to pentagonal, 15–20 mm diam., pale purple-blue. Anthers 4.5–6 mm long. Berry globular, 2–3 cm diam., yellow, finally brown or black. Seeds 2–3 mm long, light brown or mustard coloured. *n*=12. *Apple of Sodom*.

Native to South Africa and the Mediterranean basin; introduced to many countries including Australia, where first collected in 1801. Naturalised in Qld, N.S.W., Vic., S.A. and W.A., usually in urban waste places, roadsides and rough pastures. Commonly associated with calcareous soils, often in near-coastal areas. Map 168.

W.A.: Yalgorup National Park, *S. Paust 1412* (PERTH). S.A.: Hindmarsh Tiers, Nov. 1967, *D. Davidson* (ADW). Qld: Brisbane, *J. R. Clarkson 35* (BRI). N.S.W.: Narrabeen Lakes, *M. Gray 6789* (CANB). Vic.: Ricketts Point, Port Phillip Bay, *H. I. Aston 939* (MEL).

A declared noxious weed in Vic., Tas. and parts of W.A. Fruits can be poisonous to sheep and children; green fruits more toxic than ripe ones.



151. *Solanum prinophyllum*  
 154. *Solanum pungetium*  
 157. *Solanum macoorai*  
 160. *Solanum dallachii*  
 163. *Solanum hamulosum*

152. *Solanum multiglochidiatum*  
 155. *Solanum hystrix*  
 158. *Solanum sporadotrichum*  
 161. *Solanum furfuraceum*  
 164. *Solanum dimorphispinum*

153. *Solanum cookii*  
 156. *Solanum hoplopetalum*  
 159. *Solanum inaequilaterum*  
 162. *Solanum brownii*  
 165. *Solanum campanulatum*

**100. *Solanum beagleholei* Symon, *J. Adelaide Bot. Gard.* 4: 266; figs 118, 120 (1981)**

T: Geikie Gorge, Fitzroy River, W.A., 23 June 1967, *D. E. Symon* 5300; holo: ADW 33147; iso: B, K, NSW, PERTH, US.

Illustrations: *D. E. Symon, loc. cit.*

Erect, straggly, sparingly clonal shrub to 1.5 m, grey-green or yellowish-green, densely pubescent with stellate hairs; prickles to 10 mm long, abundant on stems and petioles, on pedicels and calyx of bisexual flowers, less common to absent elsewhere. Leaves ovate to ovate-lanceolate; lamina mostly 6–8 cm long, 3–4 cm wide, concolorous, entire to slightly undulate; petiole 5–15 mm long. Juvenile leaves up to 21 cm long, 11 cm wide. Inflorescence of one bisexual flower below cyme of up to 25 male flowers; peduncle c. 10 mm long; rachis to 10 (sometimes 20) cm long. Bisexual flower: pedicels 10–15 mm long, lengthened in fruit; calyx usually 9–14 mm long, the lobes lanceolate, 5–8 mm long; corolla broadly stellate, 35–40 mm diam., purple; anthers 7–8 mm long. Male flowers: pedicels 5–10 mm long; calyx 7–9 mm long; corolla to 40 mm diam.; anthers 6–7 mm long. Berry globular, 25–35 mm diam., pale yellow; fruiting pedicel 20–35 mm long. Seeds 2.5–3 mm long, black.  $n=12$ .

Restricted to the Kimberley region, W.A. Map 169.

W.A.: 84 km S of Derby, *A. C. Beaglehole* 53055 (PERTH); near Fossil Downs Homestead, *A. C. Beaglehole* 53990 (ADW, PERTH); Winjina Gorge, Napier Range, *D. E. Symon* 7153 (CANB, PERTH).

Closely related to *S. phlomoides* Cunn. ex Benth. and *S. chippendalei* Symon; distinguished by the shrubby habit, usually entire leaves, and the inflorescence which is often once or twice forked.

**101. *Solanum phlomoides* Cunn. ex Benth., *Fl. Austral.* 4: 464 (1868)**

T: Enderby Island, N.W. Coast, W.A., *A. Cunningham s.n.*; lecto: K; iso: BM, G, MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 270 (1981); Hamersley Range, W.A., *Maitland Brown s.n.*; syn: K.

Illustration: *D. E. Symon, op. cit.* fig. 121.

Rounded, clonal shrub to 2 m, grey-green, occasionally rusty-green, densely pubescent with stellate hairs; prickles to 8 mm long, usually abundant on stems and petioles, and on pedicels and calyx of bisexual flower, less common to absent elsewhere. Leaves elliptic to ovate-elliptic, the lamina mostly 4–7 cm long, 1.5–4 cm wide, concolorous, entire; petiole 1–2 cm long. Juvenile leaves ovate-lanceolate, up to 12 cm long, 5 cm wide, entire or slightly undulate. Inflorescence of one bisexual flower below cyme of 12–20 male flowers; peduncle 5–15 mm long. Bisexual flower: pedicels to 25 mm long; calyx 15–23 mm long, the lobes narrowly triangular, 10–16 mm long, lengthened in fruit; corolla broadly stellate to almost rotate, 40–50 mm diam., deep purple; anthers 7–8 mm long. Male flowers: pedicels c. 10 mm long; calyx 10–13 mm long; the lobes broadly lanceolate, 6–10 mm long, often partly fused; corolla rotate, 20–40 mm diam., purple; anthers 6–8 mm long. Berry globular, 25–40 mm diam., yellow when ripe, drying nearly black; fruiting pedicel 20–25 mm long; fruiting calyx lobes 20–35 mm long. Seeds 4–5 mm long, black.  $n=12$ . Fig. 27A-B.

Occurs in the Hamersley Range region of W.A. and on adjacent offshore islands, usually associated with spinifex sandplains, at base of rocky outcrops and in rocky gullies. Map 170.

W.A.: Barlee Range, *R. D. Royce 6575* (PERTH); 21 km S of Robe River crossing, *D. E. Symon 5417* (AD, ADW, CANB, NSW, PERTH).

Closely related to *S. beaugleholei* Symon and *S. chippendalei* Symon; distinguished from the former by its leaf shape, and from the latter by its shrubby habit, entire leaves and often larger fruit.

**102. *Solanum chippendalei* Symon, *J. Adelaide Bot. Gard.* 4: 272; figs 119, 122 (1981)**

T: Sir Frederick Range, W.A., 1 Aug. 1962, *D. E. Symon 2272*; holo: ADW; iso: AD, CANB, PERTH.

[*S. melanospermum* auct. non F. Muell.; G. Chippendale, *Trans. & Proc. Roy. Soc. S. Austral.* 83: 202 (1960)]

[*S. phlomoides* auct. non Cunn. ex Benth.; A. J. Ewart & E. Davies, *Fl. N. Terr.* 243 (1917)]

Illustrations: D. E. Symon, *loc. cit.*

Erect or spreading subshrub to 1 m, usually grey-green, densely pubescent with stellate hairs; prickles to 10 mm long, common on stems, and on pedicel and calyx of bisexual flower, scattered to absent elsewhere. Leaves ovate; lamina 4–7 cm long, 2–4 cm wide, concolorous, shallowly lobed to entire; petiole 10–15 mm long. Inflorescence of one bisexual flower below cyme of many male flowers, peduncle to 5 mm long; rachis to 10 cm long. Bisexual flower: pedicels mostly 10–15 mm long, lengthened in fruit; calyx usually 15–24 mm long, the lobes linear, 10–15 mm long, lengthened in fruit; corolla broadly stellate to rotate-pentagonal, 30–35 mm diam., purplish; anthers 5–6 mm long. Male flowers: pedicels to 10 mm long; calyx 10–15 mm long, the lobes narrowly triangular, 5–10 mm long; corolla stellate, 20–25 mm diam., purple; anthers 4.5–6 mm long. Berry ovoid or globular, 20–30 mm diam., pale yellow; fruiting pedicels 25–45 mm long; fruiting calyx-lobes 20–25 mm long. Seeds 3–3.5 mm long, black. *n*=12. Figs 32A; 43.

Widespread in N.T., extending to central W.A. and central-western Qld. Map 171.

W.A.: Rawlinson Range, *A. S. George 8266* (PERTH). N.T.: Humbert Railway Stn., *P. K. Latz 5324* (ADW); 34 km SW of Napperby Stn., *M. Lazarides 6001* (CANB, NT); 25 km N of Alice Springs, *D. J. Nelson 1698* (NT). Qld: near Selwyn, *C. H. Gittens 716* (BRI).

Important food plant of Aborigines; treated fruit eaten fresh or dried. Leaves variable; deeply-lobed specimens approach *S. melanospermum* F. Muell., those with entire leaves approach *S. phlomoides* Cunn. ex Benth. Also closely related to *S. beaugleholei* Symon.

**103. *Solanum melanospermum* F. Muell., *Fragm. Phytogr. Austral.* 2: 163 (1861)**

T: Abel Tasman's River (?= Robinson River), Gulf of Carpentaria, coll. unknown; holo: MEL 12085; iso: K.

Illustration: D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 123 (1981).

Erect shrub to 1.5 m, rusty-green, densely pubescent with stellate hairs; prickles to 7 mm long, abundant on calyx of bisexual flowers and young stems, sparse to absent elsewhere. Leaves ovate-lanceolate; lamina 4–7 cm long, 1.5–4 cm wide, concolorous, with several shallow lobes towards base; petiole 10–15 mm long. Juvenile leaves ovate, up to 15 cm long, 10 cm wide, lobed to deeply lobed; petiole 4–7 cm long. Inflorescence of one bisexual flower below cyme of up to 10 male flowers; peduncle absent or very short; rachis to 5 cm long. Bisexual flower: pedicels 2–3 cm long, lengthened in fruit; calyx 10–17 mm long, the lobes linear, 5–7 mm



**Figure 41.** *Solanum cinereum*.  
Photograph — M. Fagg.

**Figure 42.** *Solanum brownii*.  
Photograph — M. Fagg.



**Figure 43.** *Solanum chippendalei*.  
Photograph — P. Ollerenshaw.



**Figure 44.** *Solanum asymmetriphyllum*.  
Photograph — D. E. Symon.



long, enlarged in fruit; corolla broadly stellate to pentagonal, 40–45 mm diam., purple; anthers 7 mm long. Male flowers: pedicels 2 cm long; calyx 5–6 mm long, the lobes triangular, c. 3 mm long; corolla broadly stellate, 30–35 mm diam., purple; anthers c. 6 mm long. Berry broadly ellipsoid, 2.5 cm long, pale yellow with deeper yellow stripes; fruiting pedicel 3–4 cm long; fruiting calyx lobes 1–2 cm long. Seeds 4 mm long, almost black.  $n=12$ . Figs 25J; 32B.

Restricted to McArthur and Robinson River area in north-eastern N.T., occurring on river flats in open Eucalypt woodland. Map 172.

N.T.: MacArthur River Stn, Aug. 1970, *I. Mellor* (DNA); 32 km NW of Robinson River Homestead, *D. E. Symon* 5074 (AD, ADW, CANB, NSW, NT).

Closely related to *S. chippendalei* Symon; distinguished by the taller, more open habit, the leaf lobing, rusty tomentum, and reflexed, ovate-lanceolate fruiting calyx-lobes.

#### 104. *Solanum clarkiae* Symon, *J. Adelaide Bot. Gard.* 4: 277; figs 124, 126 (1981)

T: 16 km SW of East Alligator River crossing on road to Oenpelli, N.T., 11 June 1967, *D. E. Symon* 5156; holo: CANB; iso: ADW, B, K, NSW, NT, US.

Illustrations: *D. E. Symon, loc. cit.*

Spreading annual or biennial shrub to 1 m, bright yellow-green, densely pubescent with stellate hairs; prickles to 1 cm long, abundant on stems, pedicels and calyx, sparse or absent elsewhere. Leaves ovate; lamina 5–10 cm long, 3–6 cm wide, concolorous, entire or almost so; petiole 2–3 cm long. Juvenile leaves with lamina up to 22 cm long, 14 cm wide, shallowly lobed, the petiole to 5 cm long. Inflorescence of one bisexual flower below racemose cyme of up to 20 male flowers; peduncle absent or to 1 cm long; rachis to 10 cm long. Bisexual flower: pedicels 25–40 mm long; calyx 15–20 mm long, the lobes narrowly triangular, 10–13 mm long, enlarged in fruit; corolla broadly stellate, 30–45 mm diam., purple; anthers 5–7 mm long. Male flowers: pedicels 1–2 cm long; calyx 10–15 mm long, the lobes lanceolate, 8–12 mm long; corolla broadly stellate, 25–35 mm diam., purple; anthers 6–8 mm long. Berry globular or ellipsoid, 20–30 mm diam., ivory or pale yellow, drying black; fruiting calyx lobes 25–50 mm long. Seeds 2.5–3 mm long, black.  $n=12$ . Fig. 32D.

Restricted to Wessel Islands and the northern and western escarpments of the Arnhem Land plateau, N.T. Usually at base of large rocky breakaways. Map 173.

N.T.: Elcho Island, *P. K. Latz* 6259 (ADW, CANB, DNA, NT); 16 km from East Alligator River crossing on road to Oenpelli, *D. E. Symon* 7991 (BRI, NT).

#### 105. *Solanum diversiflorum* F. Muell., *Fragm. Phytogr. Austral.* 6: 146 (1868)

T: La Grange Bay, Martin s.n.; syn: MEL; Davenport Range, *J. M. Stuart* s.n.; syn: MEL; Upper Victoria River, *F. Mueller* s.n.; syn: K, MEL; Port Walcott, *C. Harper* s.n.; lecto: MEL 12119; iso: K, *fide* *D. E. Symon, J. Adelaide Bot. Gard.* 4: 280–281 (1981).

Illustration: *D. E. Symon, op. cit.* fig. 127.

Sparingly clonal, rounded shrub to 50 cm, green or grey-green, pubescent with stellate hairs; prickles to 1 cm long, pubescent for three quarters of length, scattered to abundant on most parts. Leaves ovate to ovate-oblong; lamina 2–4 cm long, 1–2 cm wide, sometimes larger, concolorous, deeply lobed; lobes oblong or obovate; petiole to 15 mm long. Inflorescence of one bisexual flower below cyme of up to 20 male flowers; peduncle absent; rachis 3–5 cm long. Bisexual flower: pedicels 1–3 cm

long, lengthened in fruit; calyx 5–7 mm long, the lobes narrowly triangular, 1.5–3 mm long, lengthened in fruit; corolla rotate-pentagonal, c. 3 cm diam., purple; anthers 5–6 mm long. Male flowers similar: pedicels 8–15 mm long; calyx-lobes oblong, 2–3 mm long; anthers 4–5 mm long. Berry depressed globular, 2–3 cm diam., pale greenish-yellow; fruiting pedicel 2–4 cm long; fruiting calyx lobes 10–15 mm long. Seeds 3.5–5 mm long, dark brown to black.  $n=12$ . Fig. 26 C-D.

Occurs from north-western W.A. north of the Tropic to the Kimberley, extending east to the Tanami Desert in N.T. usually on red sandy plains, often with gravelly capping, or on low stony hills, dominated by *Triodia* and *Acacia*. Map 174.

W.A.: Between Uaroo & Nanutarra, 1905, A. Morrison (CANB, E, K, PERTH); 139 km SW of Halls Creek, D. E. Symon 5281 (ADW, CANB, PERTH). N.T.: Negri-Stirling area, C. Dunlop 3577 (DNA); 48 km WNW of Mongrel Downs Homestead, P. K. Latz 756 (AD, ADW, NT).

**106. *Solanum eburneum*** Symon, *Trans. Roy. Soc. S. Austral.* 95: 228; fig. 2 (1971)

T: c. 19 km E of East Baines River, N.T., 19 May 1971, D. E. Symon 6954; holo: CANB; iso: ADW, K, NT, PERTH.

Illustrations: D. E. Symon, *loc. cit.*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 128 (1981).

Sprawling, clonal, herbaceous perennial or subshrub to 0.5 m wide, grey-green, densely pubescent with stellate hairs; prickles to 5 mm long, common on stems, and on pedicel and calyx of bisexual flower, less common elsewhere. Leaves usually ovate to elliptic; lamina 2.5–8 cm long, 1–4 cm wide, usually deeply lobed; petiole 10–25 mm long. Inflorescence of one bisexual flower below elongating cyme of 3–many male flowers; peduncle to 10 mm long. Bisexual flower: pedicel c. 10 mm long, lengthening in fruit; calyx 7–10 mm long, the lobes narrowly triangular, several often partly fused, 5–6 mm long, lengthening in fruit; corolla pentagonal, 30 mm diam., purple; anthers 5–7 mm long. Male flowers similar: pedicels 5–8 mm long. Berry globular, 15–25 mm diam., whitish to pale green or yellow when ripe; fruiting pedicel 2–3 cm long; fruiting calyx-lobes 1–2 cm long. Seeds 2–2.5 mm long, very dark brown or black.  $n=12$ .

Restricted to East Baines River area, north-western N.T., usually in disturbed sites along roadsides, in seasonally dry Melaleuca swamps or on flats with heavy grey soil. Map 175.

N.T.: 24 km E of East Baines River, D. E. Symon 5229 (ADW, NSW, NT, PERTH); 24 km W of East Baines River, D. E. Symon 6956 (CANB, NT).

**107. *Solanum heteropodium*** Symon, *J. Adelaide Bot. Gard.* 4: 284; figs 125, 129 (1981)

T: (South) Heywood Island, W.A., 21 May 1972, P. G. Wilson 10895; holo: PERTH; iso: ADW, CANB.

Illustrations: D. E. Symon, *loc. cit.*

Sprawling or semi-erect shrub to 1.5 m, yellow-green, densely pubescent with stellate hairs; prickles to 10 mm long, abundant on most parts. Lower leaves broadly elliptic; lamina to 22 cm long and 12 cm wide, concolorous, shallowly lobed; petiole 1–4 cm long. Upper leaves often in unequal-sized pairs, ovate; lamina 7–10 cm long, 4–6 cm wide, shallowly lobed, sessile or with petiole to 5 mm long. Inflorescence of one bisexual flower below cyme of up to 12 male flowers; peduncle absent; rachis to 8 cm long. Bisexual flower: pedicel 10–15 mm long, lengthening in fruit; calyx 15–20 mm

long, enlarged in fruit, the lobes triangular with linear apices, 10–15 mm long; corolla broadly stellate to pentagonal, 35 mm diam. purple; anthers 7–8 mm long. Male flowers similar: calyx 8–12 mm long, the lobes linear-lanceolate, unequal, 5–8 mm long; corolla broadly stellate. Berry slightly bilobed, 10–15 mm diam.; colour unknown; fruiting pedicel to 4 cm long; fruiting calyx-lobes to 3 cm long. Seeds 4 mm long, black.

A rare species known only from the far north-western Kimberley coast and adjacent offshore islands of W.A. Map 176.

W.A.: Prince Regent River Reserve, A. S. George 12835 (PERTH); Boongaree Island, P. G. Wilson 11381 (ADW, PERTH).

### 108. *Solanum oedipus* Symon, *Trans. Roy. Soc. S. Austral.* 95: 232; fig. 7 (1971)

T: between Kalumburu Mission and Longini Landing, North Kimberley W.A., 29 May 1971, D. E. Symon 7119; holo: CANB; iso: ADW, K, L, NT, PERTH.

Illustrations: D. E. Symon, *loc. cit.*; D. E. Symon, *J. Adelaide Bot. Gard.* 4: fig. 130 (1981).

Erect, sparse, clonal shrub to 2m, bright green; leaf axils, petioles, base of younger leaves and inflorescence pubescent with minute stellate hairs; glandular hairs present on calyx of bisexual flower; prickles 5–10 mm long, abundant on young stems and calyx, scattered to absent elsewhere. Leaves elliptic; lamina 7–10 cm long, 3–6 cm wide, sometimes larger, concolorous, shallowly lobed; lobes triangular, with 1–2 smaller lobes; petiole 1–3(10) cm long. Inflorescence of one bisexual flower at base of cyme of up to 60 male flowers; peduncle to 2 cm long; rachis 4–10 cm long. Bisexual flower: pedicel 18 mm long; calyx 20–30 mm long, ribbed, the lobes narrowly triangular with linear apices, unequal, 15–25 mm long; corolla stellate, 45–55 mm diam., purple; anthers 10–12 mm long. Male flowers similar: pedicels 10–15 mm long; calyx 7–18 mm long, the lobes 5–15 mm long; corolla broadly stellate, 35–40 mm diam.; anthers 8–11 mm long. Berry globular, slightly bilobed, 1.5–2 cm diam., pale green when ripe. Seeds 4–4.5 mm long, black.  $n=12$ . Figs 25G; 32E.

Known only from the Kalumburu Mission area, North Kimberley, W.A.; usually occurs on rocky quartzite outcrops. Map 177.

W.A.: Kalumburu, D. E. Symon 10188 (ADW, PERTH).

### 109. *Solanum dioicum* W. Fitzg., *J. & Proc. Roy. Soc. W. Austral.* 3: 104, 203 (1918)

T: Dillons Springs, East Kimberley, W.A., Oct. 1906, W. V. Fitzgerald s.n.; holo: NSW; iso: ADW, BM, E.

Illustrations: D. E. Symon, *J. Adelaide Bot. Gard.* 4: figs 131–132 (1981).

Erect or spreading clonal shrub to 1 m, usually male or bisexual; grey-green, rusty-green or silvery, densely pubescent with stellate hairs; prickles 5–10 mm long, often pubescent towards base, usually common on stems and calyx-tube of bisexual flower, few or absent elsewhere. Leaves ovate, ovate-lanceolate or elliptic; lamina mostly 6–10 cm long, 10–30 cm wide, sometimes larger, usually concolorous, petiole 1–2 cm long. Male plant: inflorescence up to 20-flowered; peduncle to 1 cm long; rachis 2–10 cm long, pedicels 5–7 mm long; calyx 4–6 mm long, the lobes broadly triangular with linear apices, 1–2 mm long; corolla shallowly campanulate-rotate, 2–3 cm diam., purple; anthers 3–5 mm long. Female plant: flowers solitary; peduncle absent or to 2 mm long; pedicel 5–8 mm long; calyx 15–27 mm long, enlarged in fruit, the lobes linear, 10–20 mm long; corolla broadly stellate, 30–50 mm diam., purple; anthers

c. 5 mm long. Berry globular, 20–30 mm diam., yellow-green when ripe, drying pale brown; fruiting pedicel 10–30 mm long; fruiting calyx 25–30 mm diam. Seeds 2–2.5(3) mm long, black or very dark brown.  $n=12, 24$ . Figs 27E–F; 32F.

Occurs from Port Hedland, north-western W.A., through the Kimberley to north-western N.T. Grows on sand plains, alluvial flats, and rocky outcrops. Usually associated with hummock grassland and open woodland. Map 178.

W.A.: Denison Range, *P. K. Latz 4019* (ADW, DNA, NT, PERTH); 11 km S of Gibb River Stn, *D. E. Symon 7064* (ADW); 51 km W of Louisa Downs Stn, *D. E. Symon 7165* (ADW, PERTH); 15 km E of Hann River crossing, *D. E. Symon 10268* (ADW, PERTH). N.T.: 60 km SW of Hookers Creek, *D. E. Symon 6937* (ADW, NT).

One of a complex group currently regarded as three variable species, the other two being *S. cunninghamii* Benth., and *S. petraeum* Symon.

An extremely variable species: plants from the Kimberley usually have narrow leaves and rusty pubescence; plants from farther south usually have broader leaves and a less rusty pubescence; plants from inland and eastern areas are usually densely silvery-pubescent and extremely prickly. Fruit eaten by Aborigines in some areas.

### 110. *Solanum cunninghamii* Benth., *Fl. Austral.* 4: 465 (1868)

T: Cygnet Bay, NW Coast, W.A., *A. Cunningham 134*; lecto: K; iso: BM, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 291–292 (1981); NW Coast, *Bynoe s.n.*; syn: K; Glenelg district, *Martin s.n.*; syn: MEL.

Illustrations: D. E. Symon, *op. cit.* figs 133–134.

Erect, clonal shrub to 2m, usually male or bisexual, rusty-green, densely pubescent with stellate hairs; prickles 2–5 mm long, abundant on calyx-tube of bisexual flower, usually scattered on stems. Leaves lanceolate-elliptic; lamina 3–7 cm long, 1–1.5 cm wide, sometimes larger, discolorous, entire; petiole 5–10 mm long. Male plant: inflorescence up to 50-flowered; peduncle 20–30 mm long; rachis 10–15 cm long, pedicels 2–4 mm long; calyx 4–6 mm long, the lobes triangular, 2–4 mm long; corolla shallowly campanulate-rotate, 25–30 mm diam., purple-blue; anthers 3–4 mm long. Female plant: flowers solitary; pedicels 5–15 mm long, lengthened in fruit; calyx 9–14, sometimes to 20, mm long, enlarged in fruit, the lobes more or less linear, 5–7(10)mm long; corolla rotate, 20–30 mm diam., purple; anthers 3–4 mm long. Berry globular or depressed globular, 20 mm diam.; colour unknown; fruiting pedicels 15–20 mm long; fruiting calyx 25–30 mm diam. Seeds 2 mm long, dark brown.  $n=12$ . Fig. 32G.

Occurs in nearcoastal areas near Broome, W.A., usually in deep red sandy soil in open woodland. Map 179.

W.A.: Broome, *D. E. Symon 5342* (CANB, NSW), and *5345* (ADW, CANB, NSW); Cable Bay, *D. E. Symon 6999, 7000* (ADW, PERTH).

A variable species, grading into *S. dioicum* W. Fitzg.; distinguished by the slender, narrow leaves and rusty tomentum.

### 111. *Solanum petraeum* Symon, *J. Adelaide Bot. Gard.* 4: 294; figs 135, 137, 138 (1981)

T: Surveyors Pool, Mitchell Plateau, far NW Kimberley, 1 June 1971, *D. E. Symon 7139*; holo: PERTH; iso: ADW, CANB, K, L, NT.

Illustrations: D. E. Symon, *loc. cit.*

Spreading shrub to 1.5 m, male or bisexual, grey-green to dark grey-green, densely pubescent with stellate hairs; prickles to 5 mm long, abundant on stems and calyx-tube. Leaves lanceolate; lamina 3–7 cm long, 10–12 mm wide, slightly discolorous, entire; petiole to 10 mm long. Juvenile leaves up to 18 cm long, lobed; lobes broadly triangular or rounded; petiole to 3 cm long. Male plant: inflorescence 10–14-flowered; peduncle c. 4 cm long; rachis to 8 cm long; pedicels 8–12 mm long; calyx 6–8 mm long, the lobes narrowly triangular to linear, 4–5 mm long; corolla broadly stellate, 15–25 mm diam., pale lavender; anthers 4–5 mm long. Female plant: flowers solitary; peduncle absent; pedicel to 12 mm long; calyx 10–11 mm long, the lobes linear, 5–6 mm long; corolla broadly stellate to rotate, 2–3 cm diam., lavender; anthers 4 mm long. Berry depressed globular, 15–20 mm diam., pale, enclosed in enlarged calyx. Seeds 1.5 mm long, dark brownish.  $n=12$ . Fig. 32 I.

A poorly known species restricted to the far north-west of the Kimberley, W.A., occurring among or at the base of quartzite rock masses in monsoonal scrub and woodland. Map 180.

W.A.: Port Warrender, D. E. Symon 10221, 10222 (ADW, PERTH).

Grades into *S. dioicum* W. Fitzg.; distinguished by the slender habit, narrow leaves, pale flowers and smaller fruit.

### 112. *Solanum cataphractum* Cunn. ex Benth., *Fl. Austral.* 4: 459 (1868)

T: (Prince) Regent River, W.A., A. Cunningham 132; lecto: BM; iso: K p.p., MEL; Bat Island, W.A., A. Cunningham 192; syn: BM p.p., K p.p.; *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 298–300 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 139.

Erect or sprawling shrub, green, male or bisexual; younger parts sparsely pubescent with minute stellate hairs, the stems and leaves soon glabrous; prickles to 7 mm long, abundant on all parts. Leaves lanceolate; lamina 3–6 cm long, concolorous, deeply lobed; lobes narrowly linear; petiole c. 1 cm long. Male plant: inflorescence 6–20-flowered; rachis to 8 cm long; pedicels c. 5 mm long; calyx 5–7 mm long, the lobes lanceolate, 3–4 mm long; corolla rotate, 20 mm diam., purple; anthers 3 mm long. Female plant: flowers solitary, pedicels c. 8 mm long, calyx 7–9 mm long, enlarged in fruit, the lobes linear, 4–5 mm long; anthers 2–5 mm long. Berry c. 20 mm diam.

A poorly known species, restricted to the coast and adjacent offshore islands of the Kimberley, W.A. Map 181.

W.A.: Bigge Is., N. G. Marchant 72/42 (PERTH).

### 113. *Solanum carduiforme* F. Muell., *Fragm. Phytogr. Austral.* 2: 163 (1861).

T: Nicholson River, Gulf of Carpentaria region, Qld, 21 Aug. 1856, F. Mueller *s.n.*; lecto: K; iso: MEL, *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 4: 300 (1981).

Illustration: D. E. Symon, *op. cit.* fig. 140.

Erect, clonal herb or subshrub to 50 cm, male or bisexual, pale green, the leaves densely pubescent with stellate hairs; prickles to 8 mm long, abundant on all parts. Leaves lanceolate; lamina 5–11 cm long, 2–4 cm wide, concolorous, deeply lobed, the lobes oblong to broadly triangular; petiole 5–15 mm long. Male plant: inflorescence many-flowered; rachis 3–12 cm long, pedicels 5 mm long; calyx 4–7 mm long, the lobes triangular, 1–3 mm long; corolla broadly stellate, 20–25 mm diam., purple; anthers 4–5 mm long. Female plant: flowers solitary; pedicels short; calyx 9–12 mm

long, enlarged in fruit, the lobes linear, unequal, 2–5 mm long; corolla broadly stellate, 20 mm diam., purple; anthers c. 4 mm long. Berry globular, c. 2 cm diam., drying black. Seeds 1–2 mm long, brownish-black.

An extremely rare, inadequately known species occurring only in the Lawn Hill area of north-western Qld. Map 182.

Qld: Lawn Hill Creek Gorge, *T. Farrell* 922 (ADW).

Grows on conglomerate rock formations.

**114. *Solanum leopoldensis*** Symon, *Trans. Roy. Soc. S. Austral.* 95: 231; fig. 6 (1971)

T: Bold Bluff, King Leopold Range, W.A., 26 May 1971, *D. E. Symon* 7040; holo: PERTH; iso: ADW, CANB, K, L, NT.

Illustrations: *D. E. Symon, loc. cit.*; *D. E. Symon, J. Adelaide Bot. Gard.* 4: fig. 141 (1981).

Intricate, spreading, clonal shrub to 1m, green, male or female; leaves pubescent with minute stellate and minute glandular hairs; prickles 1–6 mm long, abundant on most parts. Leaves lanceolate; lamina 2–8 cm long, 1–3 cm wide, lobed, the lobes triangular; petiole to 5 mm long. Male plant: inflorescence 2–3 cm long, up to 11-flowered; peduncle to 3 cm long; rachis 2–3 cm long; pedicels 5–8 mm long; calyx c. 9–11 mm long, the lobes triangular to lanceolate with linear apices, 6–7 mm long; corolla broadly stellate, 30 mm diam., pale lilac; anthers 4–5 mm long. Female plant: flowers solitary; pedicels 5–10 mm long; calyx 10–11 mm long, enlarged in fruit, the lobes linear, 5–6 mm long; corolla broadly stellate, 25–30 mm diam., purple; anthers 4–5 mm long. Fruiting calyx 15–25 mm diam., lobes 5–10 mm long. Berry depressed-globular, 15–20 mm diam., green when ripe, drying pale brown. Seeds 1.5–2 mm long, dark brown. *n*=12.

Restricted to King Leopold Range and adjacent areas in the Kimberley region of W.A. Occurs in rocky gullies and creeklines. Map 183.

W.A.: Mt Broome, King Leopold Range, *D. E. Symon* 7028 (ADW, CANB, PERTH); Near Inglis Gap, *D. E. Symon* 10416, 10417 (ADW, PERTH).

A poorly known species.

**115. *Solanum asymmetriphyllum*** Specht, in Specht & Mountford, *Rec. Amer. Austral. Sci. Exped. Arnhem Land* 3: 293; fig. 18 (1958)

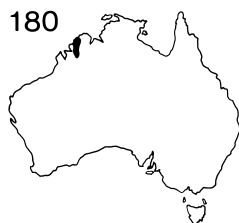
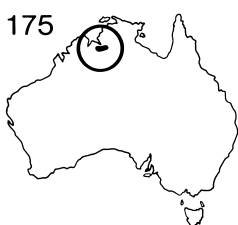
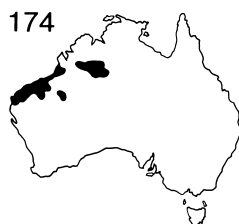
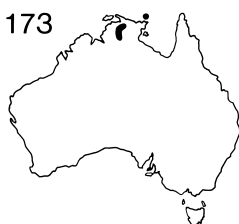
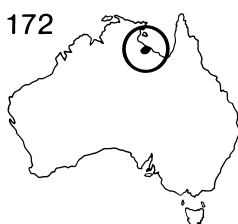
T: Oenpelli, N.T., 6 Oct. 1948, *R. L. Specht* 1143; holo: BRI; iso: AD, CANB, K, L, NSW.

*S. asymmetriphyllum* var. *longiflorum* Specht, *op. cit.* 295.

T: Oenpelli, N.T., 6 Oct. 1948, *R. L. Specht* 1143A; holo: BRI; iso: AD, CANB, K, L.

Illustrations: *D. E. Symon, op. cit.* figs 142–143.

Erect, clonal shrub to 3 m, male or female, green, lower leaf-surface densely pubescent with stellate hairs, upper surface almost glabrous; prickles to 8 mm long, sparse to common on calyx of bisexual flower, sparse to absent elsewhere. Leaves elliptic to ovate-elliptic; lamina 9–18 cm long, 3–7 cm wide, sometimes larger, discolorous, entire to shallowly lobed; petiole 1–2 cm long sometimes to 6 cm. Male plant: inflorescence elongate, 40–60-flowered; peduncle 3.5–5 cm long; pedicels 5–8 mm long; calyx somewhat 2-lipped, 3–5 mm long, the lobes triangular, 1–3 mm long; corolla broadly stellate, 25–30 mm diam., purple; anthers 5–6 mm long. Female plant: flowers solitary; pedicels 10–15 mm long; calyx 10–15 mm long, angular, enlarged in fruit, the lobes narrowly triangular with linear apices, 5–10 mm long; corolla rotate, 40–60 mm diam., lobes with linear apices 2–7 mm long, purple-blue; anthers 6–8 mm long. Berry globular, 2–3 cm diam., shining green when ripe, drying



166. *Solanum cinereum*  
 169. *Solanum beagleholei*  
 172. *Solanum melanospermum*  
 175. *Solanum eburneum*  
 178. *Solanum dioicum*

167. *Solanum marginatum*  
 170. *Solanum phlomoides*  
 173. *Solanum clarkiae*  
 176. *Solanum heteropodium*  
 179. *Solanum cunninghamii*

168. *Solanum hermannii*  
 171. *Solanum chippendalei*  
 174. *Solanum diversiflorum*  
 177. *Solanum oedipus*  
 180. *Solanum petraeum*

black. Fruiting calyx 2-3 cm diam. Seeds 2.5-3 mm long, light to dark brown.  $n=12$ . Figs 28A-C; 32H; 44.

Occurs on north-western scarp of Arnhem Land Plateau, N.T. on rocky outcrops. Map 184.

N.T.: Red Lily Lagoon, East Alligator River, *N. Byrnes* 2715, 2716 (DNA); East Alligator River crossing, *D. E. Symon* 5154 (AD, ADW, CANB, PERTH), 7173 (ADW, CANB, NT); 11 km W of East Alligator River crossing *D. E. Symon* 7178 (AD, BRI, MEL, NSW, NT).

**116. *Solanum tudununggae* Symon, *J. Adelaide Bot. Gard.* 4: 307, figs 136, 144, 145 (1981)**

T: Kalumburu Mission, North Kimberley, W.A., 27 May 1975, *D. E. Symon* 10201; holo: PERTH; iso: ADW, CANB, K.

Illustrations: *D. E. Symon, loc. cit.*

Slender, erect, short-lived perennial shrub to 2 m, silvery-green, male or female, densely pubescent with stellate hairs; prickles to 6 mm long, few or absent on most parts. Leaves mostly ovate to elliptic; lamina 9-25 cm long, 4.5-15 cm wide, slightly discoloured, deeply lobed; lobes linear, to 17 cm long; petiole 1-2, sometimes to 5 cm long. Leaves on mature flowering stems sometimes linear-lanceolate, the lamina up to 15 cm long and 1 cm wide. Male plant: inflorescence 12-20-flowered; peduncle 1-2 cm long; rachis 2-4 cm long; pedicels 5 mm long; calyx 4-5 mm long, the lobes triangular, c. 3.5 mm long; corolla broadly stellate, 30-45 mm diam., purple; anthers 7-9 mm long. Female plant: flowers solitary; pedicel to 2 cm long; calyx 15-27 mm long, enlarged in fruit, the tube globose, lobes linear, unequal, 10-12 mm long; corolla broadly stellate, to 50 mm diam., purple, lobes with slender apices 2-5 mm long; anthers 7-10 mm long. Berry to 2 cm diam., shining green or purplish when ripe, drying within calyx and splitting around circumference towards base to form loose cap; fruiting calyx 15-20 mm diam. Seeds 2.5-3 mm long, black.  $n=12$ .

A rare, poorly known species from the King Edward River close to Kalumburu Mission, Kimberley Division, W.A. Occurs in sandy soil, usually over quartzite rocks of river banks, in seasonally wet areas. Map 185.

W.A.: Near Kalumburu Mission, *D. E. Symon* 10181 (DNA, NSW); Kalumburu Mission, *D. E. Symon* 10202 (ADW).

**117. *Solanum vansittartensis* C. Gardner, *W. Austral. Forest. Dept. Bull.* 32: 89 (1923)**

T: 4 to 8 miles (6-12 km) S of Vansittart Bay, W.A., 7 Aug. 1921, *C. A. Gardner* 1516; holo: PERTH.

Illustration: *D. E. Symon, J. Adelaide Bot. Gard.* 4: fig. 146 (1981).

Erect shrub to 3 m, green, male or female, densely pubescent with stellate hairs; prickles to 10 mm long, abundant on calyx of bisexual flower, scattered to absent elsewhere. Leaves ovate, the upper ones narrowly lanceolate; lamina 5-10 cm long, 2.5-6 cm wide, concolorous or slightly discoloured, entire; petiole 5-20 mm long. Male plant: inflorescence condensed, at least 12-flowered; peduncle c. 10 mm long; pedicels c. 5 mm long; calyx 7-10 mm long, the lobes lanceolate, 5-7 mm long; corolla broadly stellate to pentagonal, c. 25 mm diam., purple; anthers c. 7 mm long.



Female plant: flowers not known; fruiting pedicel absent or up to c. 5 mm long; fruiting calyx c. 25 mm diam., covering fruit; lobes triangular with linear apices, 20 mm long. Berry drying within calyx, and splitting around circumference in lower portion to form a loose cap. Seeds 2.5 mm long, black.

A rare, poorly known species from the North Kimberley, W.A.; occurs on sandy patches over sandstone. Map 186.

W.A.: Mitchell Plateau, K. F. Kenneally 4793 (ADW, CANB, PERTH).

## 17. LYCOPERSICON

*Lycopersicon* Miller, *Gard. Dict.* 4th edn, abr. (1754); from the Greek *lyco* (wolf) and *persicon* (peach), possibly alluding to its inferior quality compared with the peach, or to its supposed poisonous properties; erroneously identified with a plant named *Lycopersicon* by the Greek Galen (c. 130-200 AD).

Type species: *L. esculentum* Miller = *L. lycopersicum* (L.) Karsten ex Farwell

Sprawling, aromatic, perennial herbs, pubescent with glandular and non-glandular simple hairs. Leaves alternate, petiolate, pinnately lobed or pinnate (often irregularly); leaflets entire or lobed, sessile or petiolate. Inflorescence racemose or cymose, usually lateral. Flowers bisexual, actinomorphic; pedicels articulate above middle. Calyx deeply 5-lobed, the lobes lanceolate. Corolla stellate, yellow, 5-lobed, the lobes valvate in bud. Stamens 5, equal in height, inserted on throat of corolla tube; anthers bilocular, basifixed, each with apical, sterile, conical appendage, cohering to form a cone around style, dehiscing inwards by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a berry. Seeds elliptic.

A genus of c. 10 species native to western South America and Galapagos Islands. Closely related to the genus *Solanum*, from which it differs in having appendaged anthers. The genus contains the cultivated tomato, an important food crop, grown world-wide and naturalised in many countries in subtropical and tropical areas, including Australia.

C. H. Muller, A revision of the genus *Lycopersicon*, *U.S. Dept. Agric. Misc. Publ.* no. 382 (1940); L. C. Luckwill, The genus *Lycopersicon*, *Aberdeen Univ. Studies* no. 120 (1943); C. M. Rick, The tomato, *Sci. Amer.* 239: 66-76 (1978); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133-166 (1981).

**\**Lycopersicon lycopersicum* (L.) Karsten ex Farwell, *Ann. Rep. Commissioners Parks Boulevards Detroit* 11: 83 (1900)**

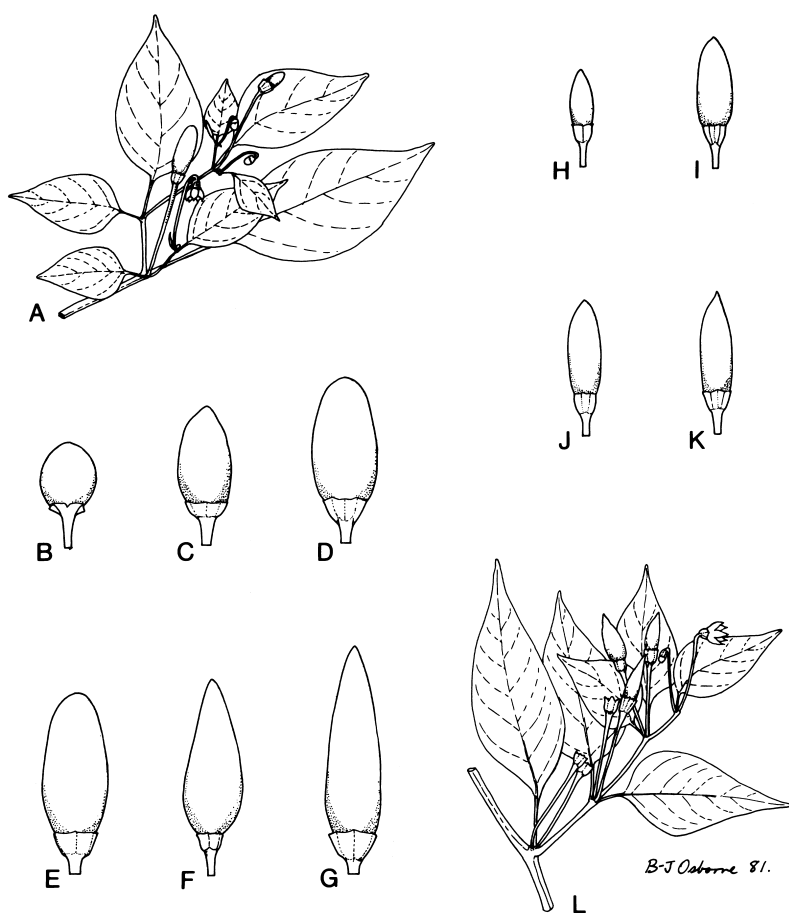
T: Not Australian; *n.v.*

*Solanum lycopersicum* L., *Sp. Pl.* 1: 185 (1753).

*L. esculentum* Miller, *Gard. Dict.* 8th edn, no. 2 (1768).

T: 'Habitat in America calidiore'; *n.v.*

Short-lived herb, 50–150 cm tall, often densely pubescent, aromatic. Leaves ovate in outline, the lamina to 30 cm long, deeply pinnatisect with 7–9 major lobes; petiole 2–5 cm long. Inflorescence raceme- or cyme-like. Calyx-lobes narrowly lanceolate, 4–10 mm long. Corolla to 25 mm diam.; lobes narrowly triangular, to 10 mm long, often reflexed. Anthers 5–10 mm long, including sterile appendage 2–3 mm long.



**Figure 45.** *Capsicum*. **A–G**, *C. annuum* var. *glabriusculum* (A, E: P. Sharpe & R. Dowling 2287, BRI; B: B. Lebler & L. Durrington 33, BRI; C: S. T. Blake 3448, BRI; D: S. L. Everist 5078, BRI; F: C. T. White 8836, BRI; G: L. J. Brass & C. T. White 196, BRI). **H–L**, *C. frutescens* (H: Solomon Is., P.N.G., A. R. Dick, BRI; I–J: Kimguni, Qld, S. H. Nilson, BRI; K–L: Duke of York Is., P.N.G., W. Bradthe, BRI). A, L  $\times 0.8$ ; B–K  $\times 1.5$ .

Ovary glabrous or pubescent. Berry globular or depressed-globular, 10–20 mm diam., red at maturity. Seeds 2–3 mm long, pilose, yellow-grey. *Tomato*.

Spontaneous escape from cultivation, recorded from eastern Qld, central coast of N.S.W., central S.A. and far northern W.A. Map 187.

W.A.: Near Kalumburu, *D. E. Symon* 7127 (PERTH); S.A.: SW of Lake Eyre, *D. E. Symon* 11274 (ADW); Qld: Conway Range, *N. Byrnes* 3849 & *J. Clarkson* (BRI); N.S.W.: Broughton Pass, 9 May 1951, *L. A. S. Johnson* (NSW).

The numerous cultivated forms are usually larger, the corolla 6–9-lobed, ovary multilocular and fruit 5–10 cm diam.

*Lycopersicon lycopersicum* (L.) Karsten ex Farwell is the correct name under the present *International Code of Botanical Nomenclature* (1978). The name *L. esculentum* Miller is a widely used synonym for the cultivated tomato, but its epithet is later than that of Linnaeus. Unless conserved under the provision for *nomina specifica conservanda* introduced into the *Code* at the XIII International Botanical Congress (1981), the name *L. esculentum* is incorrect.

## 18. CAPSICUM

*Capsicum* L., *Sp. Pl.* 1: 188 (1753) and *Gen. Pl.* 5th edn, 86 (1754); origin of name uncertain.

Type species: *C. annuum* L.

Erect or spreading herbs or short-lived, soft-wooded shrubs, glabrous or sparsely pubescent with simple hairs. Leaves alternate or paired, simple, entire, petiolate. Flowers solitary or a few in leaf axils and stem forks, bisexual, actinomorphic. Calyx shortly tubular, with 5 minute teeth, or teeth absent. Corolla stellate in Australian material, white, greenish-white or pale blue; limb deeply 5-lobed, the lobes valvate in bud. Stamens 5, equal in height, inserted at base of corolla-tube; anthers bilocular, connivent, basifixed, dehiscent by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a berry, dryish or somewhat fleshy. Seeds reniform to sub-orbicular.

A genus of c. 10 species, native to tropical America. Several species widely cultivated in temperate and tropical areas throughout the world as vegetables or pungent condiments (Chili, Paprika, Cayenne Pepper, Red and Green Peppers), or as ornamentals. Two closely related species naturalised in Australia as weeds common in waste ground.

W. G. D'Arcy & W. H. Eshbaugh, New World peppers (*Capsicum*—Solanaceae) north of Columbia: A résumé, *Baileya* 19: 93–105 (1974); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

- 1 Pedicels, after first flowering, usually one (rarely two) at each node; corolla white or blue; fruit globose, ovoid or oblong-conical, usually more than 6 mm diam.

### 1. *C. annuum*

- 1: Pedicels, after first flowering, usually two or more at each node; corolla white or green; fruit narrowly conical to narrowly ellipsoid or fusiform, usually 3–6 mm diam.

### 2. *C. frutescens*

**1. \*Capsicum annum L., Sp. Pl. 1: 188 (1753)**

var. **glabriusculum** (Dunal) Heiser & Pickersgill, *Baileya* 19: 156 (1975)

*C. hispidum* var. *glabriusculum* Dunal, in DC., *Prodr.* 13(1): 420 (1825).

T: In Mexico, near Bejar, *Berland* 1863; near Tampicocode de Tamaulipas, *Berland* 95; n.v.

*C. frutescens* var. *queenslandicum* Domin, *Biblioth. Bot.* 89: 572 (1928).

T: Near Harveys Creek, North Qld, Jan. 1910, *Domin s.n.*; PR, n.v., *fide* D. E. Symon, *J. Adelaide Bot. Gard.* 3: 137 (1981).

Shrub to 2 m; distal branches often widely forked. Leaves ovate, the lamina 12 cm long, 5 cm wide, frequently smaller; petiole 1–4 cm long. Flowers solitary, rarely two, in each axil; pedicels 15–20 mm long. Calyx 2–3 mm long. Corolla c. 15 mm diam., white. Staminal filaments 1 mm long; anthers 1.5–2.5 mm long, bluish. Ovary obtusely conical, 2.5 mm long; style 4 mm long. Berry erect, globose or ovoid to oblong-conical, to 25 mm long, 5–10 mm diam., bright orange-red; fruiting pedicel 20–35 mm long. Seeds 3–4 mm long, yellow. Figs. 45A–G; 50.

Recorded from Darwin, N.T., north-eastern N.S.W. and eastern Qld. Often found at edge of rainforest or in rainforest regrowth. Map 188.

Qld: Near Yandoran, *P. Sharpe & R. Dowling* 2287 (BRI). Irvine Bank, Qld, *D. Symon* 4878 (ADW, BRI, CANB, K). N.S.W.: Gunnedah, May 1974, *R. J. Powell* (NSW).

Differs from the cultivated pepper *C. annum* L. var. *annuum*, in which the fruits are usually more than 10 mm diam. *C. annum* L. var. *annum* is native to tropical America, but is widely cultivated in temperate and tropical regions.

*Solanum shanesii* F. Muell. *Fragm. Phytogr. Austral.* 6: 144 (1868), collected near Rockhampton, Qld, in 1869 by Dallachy & O'Shanesy (iso: K, MEL), was apparently based on a garden escape. It appears to be *C. annum* var. *annuum*, *vide* D. E. Symon, *J. Adelaide Bot. Gard.* 3: 136 (1981).

**2. \*Capsicum frutescens L., Sp. Pl. 1: 189 (1753)**

T: 'Habitat in India'; lecto: L, n.v., *fide* C. B. Heiser & B. Pickersgill, *Taxon* 18: 280 (1969).

Herb or shrub to 2 m. Leaves ovate to ovate-lanceolate; lamina upto 10 cm long, 5 cm wide, frequently smaller; petiole usually 1–3 cm long. Flowers usually several in each leaf axil. Pedicels 10–20 mm long. Calyx 2–3 mm long. Corolla c. 8 mm diam., white or green. Staminal filaments 1 mm long; anthers 1.5–2 mm long, usually blue. Ovary obtusely conical, 1.5–2 mm long; style 3–4 mm long. Berry erect, narrowly conical to narrowly ellipsoid or fusiform, 10–20 mm long, 3–7 mm diam., red; fruiting pedicel 15–25 mm long. Seeds 3–5 mm long, yellow. Fig. 45H–L.

Widespread in North and South America, Pacific Islands and south-eastern Asia where it is often cultivated as condiment. Uncommon weed in eastern Qld and far north-eastern N.S.W. Map 189.

Qld: Kimguni via Mirani, Apr. 1920, *S. H. Nilsson* (BRI); near Toorilla Homestead, Port Curtis district, *N. H. Speck* 1735 (CANB, NSW).

## 19. PHYSALIS

*Physalis* L., *Sp. Pl.* 1: 182 (1753), and *Gen. Pl.* 5th edn, 85 (1754); from the Greek *phsysallis* (bladder), in reference to the inflated fruiting calyx.

Type species: *P. alkekengi* L.

Summer-growing annuals, rhizomatous perennials or short-lived shrubs, glabrous or pubescent with simple, forked or glandular hairs. Leaves alternate, 1 or 2 per node (but not opposite), when 2 unequal in size, simple, entire, toothed or lobed, petiolate. Flowers solitary in leaf axils and stem forks, bisexual, actinomorphic. Calyx tubular to campanulate, 5-lobed, enlarged in fruit. Corolla broadly campanulate to rotate, mostly yellow, often with dark spots towards the base; tube short; limb expanded, shallowly 5-lobed, folded in bud. Stamens 5, equal or unequal in height, inserted towards base of corolla-tube; anthers bilocular, basifixed, dehiscing by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a berry enclosed by inflated calyx. Seeds disc-shaped to broadly reniform.

A widespread genus of c. 100 species, most common in North and South America but with some species occurring naturally in temperate and tropical Asia. Several species with edible berries are cultivated for their fruit. One species (*P. minima* L.) possibly endemic to Australia; seven species introduced and naturalised to varying degrees as weeds of waste and cultivated ground.

U. T. Waterfall, A taxonomic study of the genus *Physalis* in North America north of Mexico, *Rhodora* 60: 107–114, 128–142, 152–173 (1958); U. T. Waterfall, *Physalis* in Mexico, Central America and the West Indies, *Rhodora* 69: 82–120, 202–239, 319–329 (1967); R. B. Fernandes, Sur l'identification d'une espèce de *Physalis* sous-spontanée au Portugal, *Bol. Soc. Brot.* 44: 343–366 (1970); D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

- 1 Herbaceous perennials with rhizomatous rootstock; indumentum of simple or forked non-glandular hairs, or glabrescent
- 2 Corolla dull white, limb distinctly 5-lobed; fruiting calyx orange or red **P. alkekengi** †
- 2: Corolla yellow, limb entire or scarcely lobed; fruiting calyx green or yellow
- 3 Tomentum including some minute forked hairs; leaves ovate-lanceolate, usually toothed or sinuate **8. P. viscosa**
- 3: Tomentum of simple hairs only; leaves elliptic, entire or with a few indistinct lobes **7. P. virginiana**
- 1: Annuals or short-lived perennials; indumentum sparse to dense, of glandular or simple (never forked) non-glandular hairs
- 4 Plants obviously pubescent, hirsute or pilose with erect, glandular or simple non-glandular hairs; corolla conspicuously spotted
- 5 Annuals; corolla 7–11 mm long; anthers 1.5–2 mm long; fruiting calyx 5-angled **6. P. pubescens**
- 5: Soft-wooded short-lived perennials; corolla 10–15 mm long; anthers 4–5 mm long; fruiting calyx 10-angled **5. P. peruviana**
- 4: Plants sparsely pubescent with erect or appressed, simple, non-glandular hairs, or becoming glabrescent; corolla marked with inconspicuous blotches

- |    |   |                                   |
|----|---|-----------------------------------|
| 6  | Anthers 3–4 mm long, becoming twisted; flowers bright yellow; berries mostly 17–30 mm diam. | <b>4. <i>P. philadelphica</i></b> |
| 6: | Anthers 2–2.5 mm long, straight; flowers dull yellow; berries usually 8–15 mm diam.         |                                   |
| 7  | Leaves narrowly elliptic; pedicels usually 20–30 mm long                                    | <b>1. <i>P. lanceifolia</i></b>   |
| 7: | Leaves ovate-lanceolate; pedicels usually 5–25 mm long;                                     |                                   |
| 8  | Pedicel 5–10 mm long; style 2–2.5 mm long; fruiting calyx circular in section               | <b>2. <i>P. ixocarpa</i></b>      |
| 8: | Pedicel usually 20–25 mm long; style 4–5 mm long; fruiting calyx angular in section         | <b>3. <i>P. minima</i></b>        |

† Cultivated species; not treated further in this work.

### 1. \**Physalis lanceifolia* Nees, *Linnaea* 6: 473 (1831)

T: Described from material native to Central and South America; *n.v.*

Annual to 50 cm, glabrescent or sparsely pubescent with minute, simple hairs. Leaves alternate, 1 or 2 per node (but not opposite); lamina narrowly elliptic, cuneate at base, usually 5–7 cm long, 2 cm wide, sometimes larger entire, sinuate or lobed; petiole up to 4 cm long, grooved above. Pedicels 15–30 mm long. Calyx 2.5–5 mm long; lobes triangular, 1–2.5 mm long. Corolla 5-angled, 5–7 mm long, yellow with darker yellow centre. Anthers 1.5–2 mm long. Style 2.5 mm long. Fruiting calyx 10-angled, 25–32 mm long, pale yellow-green. Berry globular, 12–15 mm diam. Seeds disc-shaped to broadly reniform, 1.5–2 mm long, pale yellowish-brown. Fig. 46G.

Native to southern United States of America and Mexico. A recently introduced (c. 1924) weed now occurring in south-eastern Qld (mostly in the Darling Downs district), northern N.S.W., and the Gippsland district of Vic. Confined to seasonally wet areas with heavy clay soil. Map 190.

Qld: Near Bymount, *R. W. Johnson* 2245 (BRI). N.S.W.: between Goodooga & Lightning Ridge, *K. L. Wilson* 1798 (NSW).

### 2. \**Physalis ixocarpa* Brot. ex Hornem., *Suppl. Hort. Bot. Hafn.* 26 (1819)

T: Cultivated in the Botanic Garden, Copenhagen, as a variety of *P. angulata* L.; iso: C, *n.v.*, *fide* R. B. Fernandes, *Bol. Soc. Brot.* 44: 344–351 (1970).

Annual to 50 cm, sparsely pubescent with minute, simple hairs, or glabrescent. Leaves alternate, 1 or 2 per node (but not opposite); lamina ovate-lanceolate, cuneate at base, usually c. 6 cm long, 3 cm wide, sometimes larger irregularly toothed or lobed; petiole to 6 cm long. Pedicels 6–10 mm long. Calyx 3.5–5 mm long; lobes triangular, 1–2 mm long. Corolla broadly stellate to 5-angled, 6–10 mm long, pale yellow with five dull brownish blotches. Anthers 1–1.5 mm long. Style 2–2.5 mm long. Fruiting calyx circular in section, 15–30 mm long, pale green when dry. Berry globular, 11–14 mm diam. Seeds lens-shaped, 1.5–2 mm diam., yellow. *Ground Cherry*. Fig. 46J.

A recently introduced species (c. 1925), now a widespread weed of cultivated areas in south-eastern Qld and eastern N.S.W. Usually associated with summer crops. Map 191.

Qld: Tummaville, *C. T. White* 12583 (BRI). N.S.W.: Glenfield, *E. J. McBarron* 20181 (NSW).

**3. *Physalis minima* L., *Sp. Pl.* 1: 183 (1753)**

T: From India; lecto: BM, *n.v.*; photo ADW, *fide* H. Heine, *Flore de la Nouvelle-Calédonie* 7: 131 (1976).

*P. parviflora* R. Br., *Prodr.* 447 (1810).

T: north coast of Australia, R. Brown; ?BM, *n.v.*

[*P. indica* auct. non Lam.; R. H. Anderson, *Contrib. New South Wales Nat. Herb.* 1:29 (1939)]

Illustration: H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 424 (1977).

Bushy annual to 50 cm, glabrous or with minute simple hairs. Leaves alternate, 1 or sometimes 2 per node (but not opposite); lamina ovate-lanceolate, rounded to cuneate at base, usually 4–6 cm long, 2–3 cm wide, sometimes larger, entire or shallowly toothed or lobed; petiole to 6 cm long. Pedicels usually 20–25 mm long, occasionally shorter. Calyx 3–5 mm long; lobes triangular-acute, 1–2 mm long. Corolla 5-angled, 5–8 mm long, pale creamy-yellow, usually with large brownish spots towards base. Anthers 2–2.5 mm long. Style 4–5 mm long. Fruiting calyx 10-angled with 5 minor and 5 major veins, 23–30 mm long, pale green (pale brown when dry). Berry globular, 8–14 mm diam. Seeds disc-shaped to broadly reniform, 1–1.5(2) mm long, pale yellow. *Wild Gooseberry*. Fig. 46E–F, M.

Generally considered native to Australia although widespread in tropical America, Asia and Africa. Possibly a pre-1788 introduction into Australia from the earliest European-Pacific-Central American contact. A widespread weed of disturbed areas in W.A., N.T., Qld and north-eastern N.S.W. Frequently found near rivers. Map 192.

W.A.: Brook Creek, C. A. Gardner 7186 (PERTH). N.T.: Victoria River, J. Must 1579 (CANB, CBG, DNA, NT). Qld: near Wernadinga Stn, D. E. Symon 5015 (BRI, ADW). N.S.W.: near Booragul, R. Coveny 6484 & J. Powell (ADW, BRI, NSW).

May be confused with *P. ixocarpa* Brot. ex Hornem, but distinguished by the longer pedicels, creamy-yellow corolla and angular fruiting calyx. Berries used as food by Aborigines in N.T. and northern Qld.

**4. \**Physalis philadelphica* Lam., *Encycl.* 2: 101 (1786)**

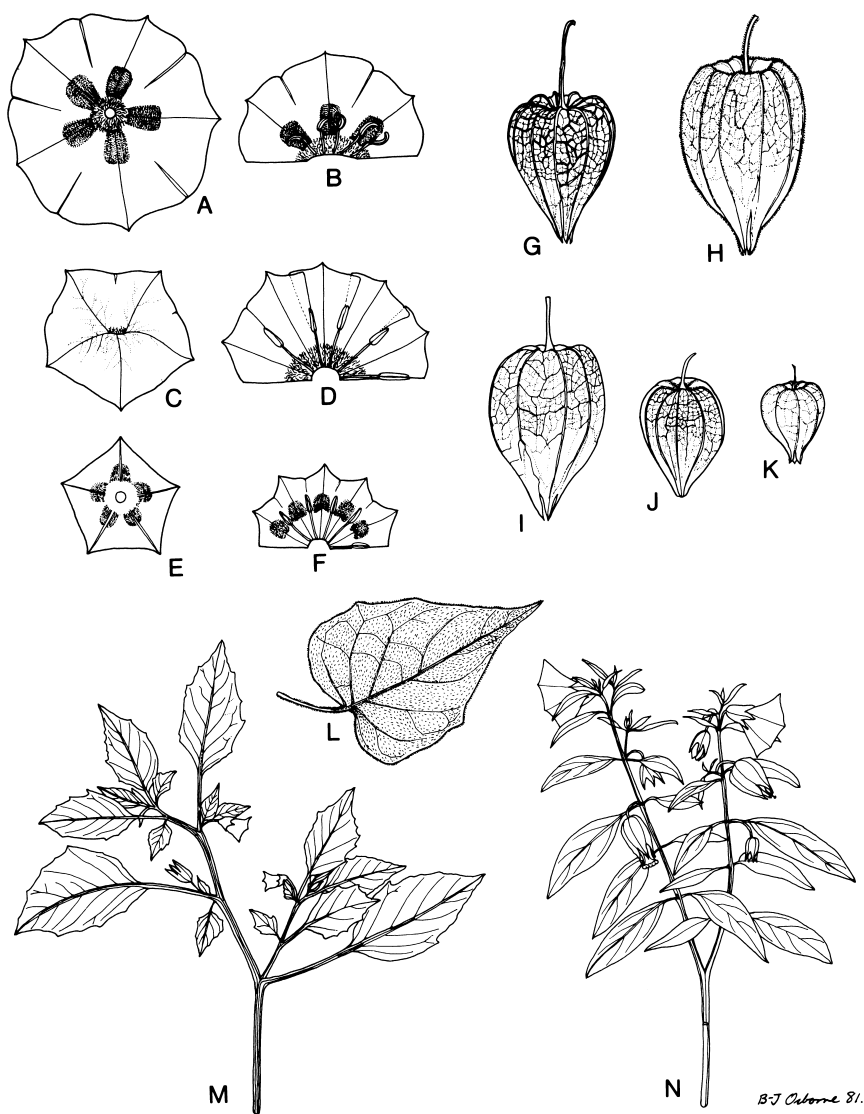
T: Described from cultivated plants; thought to originate from northern America; P *n.v.*

Annual to 50 cm, sparsely pubescent with simple hairs. Leaves alternate, 1 or 2 per node (but not opposite); lamina ovate-lanceolate, obtusely cuneate at base, up to 12 (usually c. 6) cm long, sparsely and irregularly toothed; petiole to 7 cm long with a pubescent groove above. Pedicels 3–13 mm long. Calyx 6–9 mm long; lobes broadly triangular, usually 4–5 mm long. Corolla rotate, 10–15 mm long, yellow with 5 brownish spots alternating with anthers. Anthers 3–4 mm long, twisted after anthesis. Style 8–9 mm long. Fruiting calyx 10-veined, circular in section or nearly so, 18–36 mm long, yellow-green, the veins often purplish. Berry globular, usually 20–25 mm diam. Seeds broadly reniform, 2–3 mm long, pale yellow-brown. *Tomatillo*. Fig. 46 A–B.

Uncommon weed, recorded from scattered localities in south-eastern Qld, north-eastern N.S.W., Vic. and south-western W.A. Map 193.

W.A.: Spearwood, 10 Feb. 1961, Major & Son (PERTH). Qld: near Warwick, R. Henderson 360 (BRI). N.S.W.: Border Gate near The Head, L. Bird & K. Williams (BRI 257800). Vic.: near Dimboola, 8 Apr. 1898, F. M. Reader (MEL).

Occasionally cultivated for its edible fruit.



**Figure 46.** *Physalis*. **A–B**, *P. philadelphica* (Cult. Adelaide ex Birmingham, England, D. E. Symon, ADW). **C–D**, *P. viscosa* (Cult. Adelaide ex Wolsely, S.A., D. E. Symon, ADW). **E–F**, *P. minima* (D. E. Symon 12060, ADW). **G**, *P. lanceifolia* (Cult. Adelaide ex Portugal, D. E. Symon, ADW). **H**, *P. peruviana* (Waterfall Gully, S.A., D. E. Symon, ADW). **I**, *P. minima* (D. E. Symon 4871, ADW). **J**, *P. ixocarpa* (Cult. Adelaide ex Portugal, D. E. Symon, ADW). **K**, *P. viscosa* (Cult. Adelaide ex Savernake, N.S.W., D. E. Symon, ADW). **L**, *P. peruviana* (D. E. Symon 4871, ADW). **M**, *P. minima* (W. Leutert 20, CANB). **N**, *P. viscosa* (D. E. Symon 3692, CANB). A–F  $\times 1$ ; G–K  $\times 0.7$ ; L, M  $\times 0.25$ ; N  $\times 0.5$ .



**5. \*Physalis peruviana** L., *Sp. Pl.* 2nd edn 2: 1670 (1763)

T: From Lima, Peru; LINN, *n.v.*; microfiche AD.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn 4: fig. 1077 (1957); B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 598 (1975).

Short-lived shrub to 1 m, densely pubescent with glandular or simple, non-glandular hairs. Leaves alternate, 2 per node (but not opposite); lamina ovate, cordate at base, up to 13 cm (usually c. 6 cm) long, entire or shallowly lobed; petiole to 5 cm long. Pedicels 6–12 mm long. Calyx 7–10 mm long; lobes triangular-acuminate, 4–5 mm long. Corolla 5-angled, 10–15 mm long, dull yellow with distinct purple-brown spots alternating with the anthers. Anthers 4–5 mm long. Style 5–7 mm (occasionally to 11 mm) long. Fruiting calyx 10-angled, 27–40 mm long, the lobes free at apex for up to 10 mm, pale yellow-green to gold, drying to pale brown. Berry globular, 10–20 mm diam., aromatic. Seeds disc-shaped, 1.7–2 mm long, pale yellow to orange-brown. *Cape Gooseberry*. Fig. 46H, L.

Introduced to N.S.W. from the Cape of Good Hope at end of 18th century. Now a garden escape or weed of disturbed areas, occurring in Qld, N.S.W., Vic., Tas., S.A. and W.A.; commonest in south-eastern Australia; also on Lord Howe Is. Map 194.

S.A.: Waterfall Gully, *Hj. Eichler 14580* (AD). Qld: Danbulla, *G. C. Stocker 1509* (BRI). N.S.W.: Boyne National Park, *M. Evans 2557* (ADW, CANB, MEL, NSW). Vic.: Lower Glenelg National Park, *A. C. Beaughole 39101* (MEL).

Frequently cultivated for its edible fruit.

**6. \*Physalis pubescens** L., *Sp. Pl.* 1: 183 (1753)

T: From India; LINN, *n.v.*; microfiche AD.

Annual to 50 cm, pubescent with glandular and simple, non-glandular hairs. Leaves alternate; lamina ovate to ovate-elliptic, cordate at base, up to 10 cm (usually c. 6 cm) long, toothed or with obtuse, triangular lobes; petiole to 7 cm long. Pedicels 5–10 mm long. Calyx 6–7 mm long; lobes narrowly triangular, 3–4 mm long. Corolla 5-angled 7–11 mm long, dull yellow with 5 distinct purple-brown spots towards base. Anthers 1.5–2 mm long. Style 4–5 mm long. Fruiting calyx prominently 5-angled, 25–40 mm long, very pale yellow-green, drying to light brown. Berry globular to ovoid, 12–15 mm diam. Seeds disc-shaped, 1.5 mm long, light brown.

Uncommon weed known from isolated localities in Vic. and south-western W.A. Map 195.

W.A.: Bowelling, 20 Feb. 1959, *J. D. Price* (PERTH). Vic: near Dimboola, 20 Mar. 1898, *Anon.* (MEL).

**7. \*Physalis virginiana** Miller, *Gard. Dict.* 8th edn, no. 4 (1768)

T: Described from material cultivated from seed collected in Philadelphia, U.S.A.; syn: ?BM, *n.v.*

*P. virginiana* var. *sonorae* (Torrey) Waterfall, *Rhodora* 60: 154 (1958); *P. pumila* var. *sonorae* Torrey, *Bot. Mexican Boundary* 153 (1859).

T: Fronteras, Sonora, Mexico, June 1851, *G. Thurber 418*; holo: NY *n.v.*; iso: GH, *n.v.*; *fide* U. T. Waterfall, *loc. cit.*

Rhizomatous perennial to 50 cm, glabrescent or sparsely pubescent with minute simple hairs. Leaves alternate, 1–2 per node (but not opposite); lamina elliptic, cuneate at base, up to 9 cm (usually c. 6 cm) long, entire or slightly toothed or lobed; petiole to 3 cm long, grooved above. Pedicels 8–15 mm long. Calyx usually 8–10 mm

long; lobes narrowly triangular, 5–6 mm long. Corolla rotate, 10–12 mm long, greenish-yellow with dark spots between anthers. Anthers 2.5–4 mm long. Style 6–8 mm long. Fruiting calyx 10-angled, 15–25 mm long, pale green. Berry globular, c. 10 mm diam. Seeds disc-shaped to broadly reniform, 1.5–2 mm long, brown to yellow-brown. *Perennial Ground Cherry*.

Primarily a weed of cultivation in eastern Australia, occurring on the central tablelands and slopes of N.S.W., the Darling Downs district of Qld, and in scattered localities in Vic. Map 196.

Qld: Near Pittsworth, 29 Jan. 1971, *C. Porter* (BRI). N.S.W.: near Gunnedah, 27 Dec. 1977, *A. R. Leys* (NSW). Vic: Dookie, 1907, *H. Pye* (MEL).

## 8. *\*Physalis viscosa* L., *Sp. Pl.* 1: 183 (1753)

T: From Virginia, U.S.A.; LINN, *n.v.*; microfiche AD.

Illustrations: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1078 (1957); W. T. Parsons, *Noxious Weeds Victoria*, fig. 246 (1973), as *P. lanceolata* Michaux.

Rhizomatous perennial to 30 cm, sparsely pubescent with minute, forked hairs at least on calyx margin. Lower leaves alternate; lamina ovate-lanceolate, up to 5 cm long; upper leaves often 2 per node (but not opposite), lanceolate, c. 3 cm long; margin toothed or sinuate, sometimes entire; base cuneate; petiole to 2 cm long, narrowly winged above. Pedicels 7–12 mm long. Calyx 6–10 mm long; lobes triangular, 2–4 mm long. Corolla rotate or 5-angled, 11–15 mm long, pale yellow, often with conspicuous olive-yellow blotches towards base. Anthers 3–4 mm long. Style 9–10 mm long. Fruiting calyx 10-angled, 15–20 (occasionally to 30) mm long, dull yellow-green, drying to pale brown or straw-colour. Berry globular, 10–15 mm diam. Seeds disc-shaped, 1.7–2.3 mm long, pale yellow or light brown. *Sticky Cape Gooseberry*, *Sticky Ground Cherry*. Fig. 46C–D, K, N.

Widespread in Vic. and southern N.S.W.; localised in south-eastern Qld, near Adelaide, S.A., and Perth, W.A. A weed of waste ground particularly along railway lines, and of cultivated areas, especially under irrigation. Map 197.

W.A.: Bunbury, Mar. 1942, *C. A. Gardner* (PERTH). S.A.: Darlington, *Hj. Eichler 12166* (AD). Qld: Goondiwindi, *R. Roe 28* (BRI, CANB). N.S.W.: Savernake, 7 Apr., 1978, *M. Toms* (ADW, NSW). Vic.: near Gunbower, *H. Aston 519* (MEL).

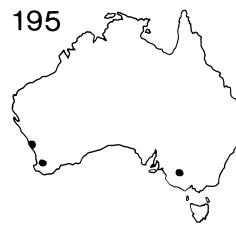
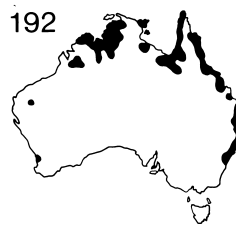
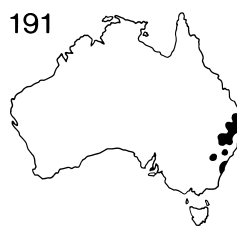
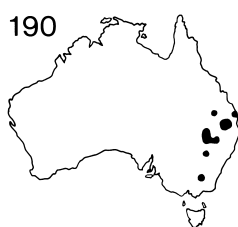
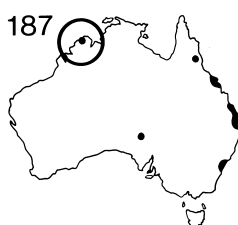
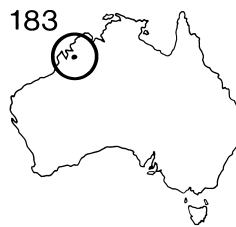
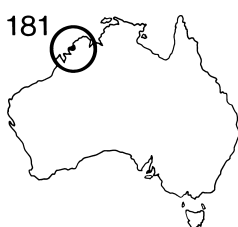
A declared noxious weed in Vic.

## 20. WITHANIA

*Withania* Pauquy, *Diss. Bellad.* 14 (1825) (*nom. cons.*); after Henry Witham, an English palaeobotanist of the early 19th century.

Type species: *W. frutescens* (L.) Pauquy; *Atropa frutescens* L.

Shrubs, glabrous or pubescent. Leaves alternate, or opposite on flowering stems, simple, entire, petiolate. Flowers solitary or in clusters, axillary, bisexual, actinomorphic. Calyx campanulate, 5-lobed, persistent and inflated in fruit; lobes triangular. Corolla campanulate, 5-lobed; lobes valvate in bud. Stamens 5, equal in height, inserted near base of corolla-tube; anthers bilocular, cohering, dehiscing by longitudinal slits. Ovary bilocular. Fruit a semi-succulent berry, enclosed by inflated calyx. Seeds disc-shaped to almost reniform.



**181.** *Solanum cataphractum*

**184.** *Solanum asymmetriphyllum*

**187.** *Lycopersicon lycopersicum*

**190.** *Physalis lanceifolia*

**193.** *Physalis philadelphica*

**182.** *Solanum carduiforme*

**185.** *Solanum tudunungae*

**188.** *Capsicum annum*  
var. *glabriusculum*

**191.** *Physalis ixocarpa*

**194.** *Physalis peruviana*

**183.** *Solanum leopoldense*

**186.** *Solanum vansittartense*

**189.** *Capsicum frutescens*

**192.** *Physalis minima*

**195.** *Physalis pubescens*

A genus of c. 10 species occurring predominantly from North Africa and the Mediterranean basin to India. One species naturalised in Australia.

D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

**\**Withania somnifera* (L.) Dunal, in DC., *Prodr.* 13(1): 453 (1852)**

*Physalis somnifera* L., Sp. Pl. 1: 182 (1753).

T: From Mexico, Crete and Spain; *n.v.*

Illustration: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: fig. 1079 (1957).

Erect shrub to 1 m. All parts grey-pubescent with dendritic hairs. Leaves ovate, the lamina up to 8 cm long, and 4.5 cm wide, usually c. 5 cm long, 3 cm wide; petiole c. 1 cm long. Inflorescence a congested cluster of 4–6 flowers; pedicels 3–5 mm long. Calyx 4–6 mm long at time of flowering; lobes shortly triangular with linear apices, 2–3 mm long. Corolla 5–6 mm long, dull yellow-green; lobes triangular, 1.5–3 mm long, spreading. Anthers 1 mm long. Ovary obtusely conical, 1–1.5 mm long; style 3 mm long. Berry globular, 5–10 mm diam., shining red, surrounded by urn-shaped inflated calyx, the tube 15–20 mm long. Seeds more or less disc-shaped, 1.5–2.2 mm long, light brown. *Winter Cherry*. Fig. 47A–B.

An uncommon weed known from Eyre Peninsula in S.A. and the north coast of N.S.W. Grows in shallow rocky soil. Map 198.

S.A.: Near Port Lincoln, Dec. 1950, W. C. Johnson (AD); near Port Lincoln, D. E. Symon 11837 (ADW). N.S.W.: Vacy, Sept. 1949, J. N. Doyle (NSW).

Cultivated in India as a drug plant.

## Trib. VIII. NICANDREAE

Trib. *Nicandreae* Wettst. in Eng. & Prantl, *Nat. Pflanzenfam.* 4,3b: 10 (1895).

Type genus: *Nicandra* Adans.

Herbs. Calyx-lobes auriculate. Corolla separated from calyx by rather long internode, broadly campanulate, actinomorphic; aestivation imbricate, cochlear or quincuncial. Stamens 5; filaments geniculate at attachment to corolla, inserted at base of anther; anthers dehiscent by longitudinal slits, the thecae adnate except in lower quarter. Ovary 4–5-locular; disc present. Fruit a berry; stone-cells present; embryo strongly curved.

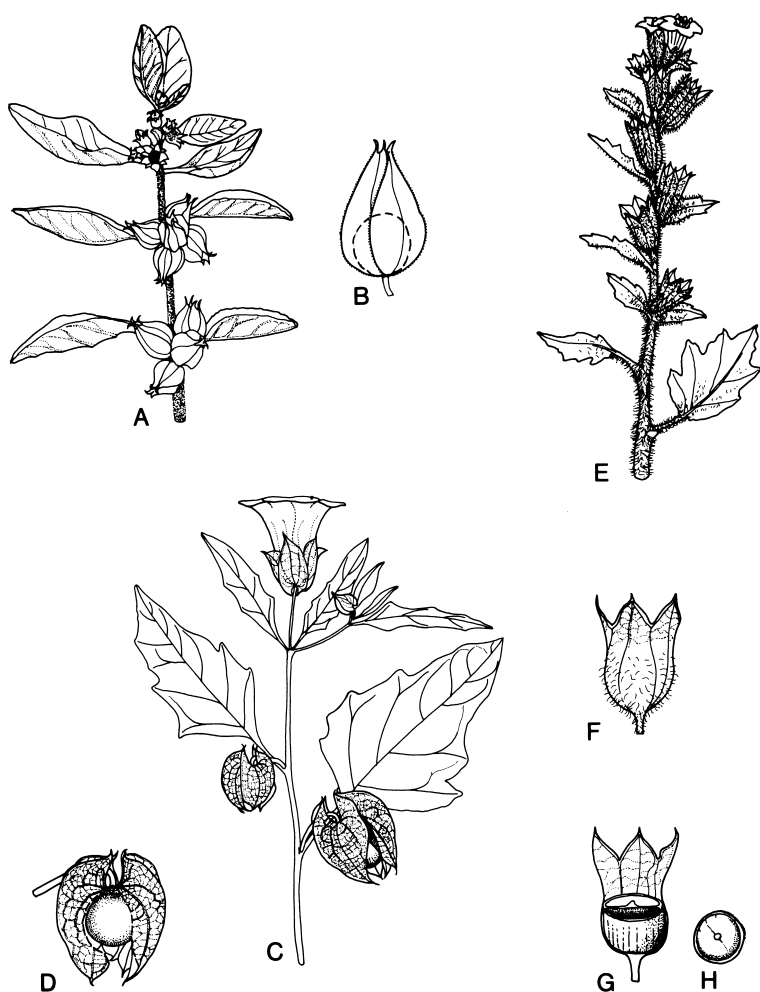
Contains only the monotypic genus *Nicandra* from Peru.

## 21. NICANDRA

*Nicandra* Adans., *Fam. Pl.* 2: 219 (1763) (*nom. cons.*); after Nicander, a poet of Colophon, who wrote about plants c. 100 BC.

Type species: *N. physalodes* (L.) Gaertner; *Atropa physalodes* L.

Summer-growing annual herbs, glabrous, or sparsely pubescent with non-glandular hairs. Leaves alternate, simple, entire or irregularly toothed, petiolate. Flowers solitary, in leaf axils, bisexual, actinomorphic. Calyx 5-lobed; lobes ovate, sagittate at base; persistent in fruit. Corolla broadly campanulate, pale blue to mauve; limb



B-J Osborne 81.

**Figure 47.** A–B, *Withania somnifera* (A: D. E. Symon 11837, ADW,  $\times 0.5$ ; B: Cult. Adelaide ex Port Lincoln, S.A., D. E. Symon, ADW,  $\times 1.25$ ). C–D, *Nicandra physalodes* (C: Adelaide, S.A., P. Horton, ADW; D: L. Haegi 1606, ADW); both  $\times 0.5$ . E, *Hyoscyamus albus* (Hobart, Tas., W. W. Spicer, HO),  $\times 0.5$ . F–H, *Hyoscyamus niger* (L. Haegi 570, ADW),  $\times 1$ ; H–cap of capsule.

shallowly 5-lobed, the lobes folded in bud. Stamens 5, equal in height, inserted near base of corolla-tube; anthers bilocular, dorsifixed, dehiscing by longitudinal slits. Ovary 3–5-locular. Fruit a dryish berry, enclosed by calyx. Seeds broadly reniform to almost disc-shaped.

A monotypic genus native to Peru, widely cultivated as an ornamental, and naturalised in Australia as a garden escape.

P. Horton, Taxonomic account of *Nicandra* (Solanaceae) in Australia, *J. Adelaide Bot. Gard.* 1: 351–356 (1979).

**\**Nicandra physalodes* (L.) Gaertner, *De Fruct. Sem. Pl.* 2: 237 (1791)**

*Atropa physalodes* L., *Sp. Pl.* 1: 181 (1753).

T: 'Habitat in Peru. *D. B. Jussieu*'; lecto: LINN 246/3, n.v., microfiche AD, *fide* E. Schönbeck-Temesy, *Fl. Iranica* 100: 2 (1972).

Illustrations: B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 603 (1975); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland* 423 (1977); P. Horton, *op. cit.* fig. 1.

Annual herb to c. 2 m. Leaves variable; lamina narrowly to broadly ovate, 2–30 cm long; petiole to 9 cm long. Pedicels 6–24 mm long. Calyx 7–22 mm long; margins of the lobes appressed to form longitudinal wings. Corolla-lobes 12–30 mm long, obtuse or slightly notched. Staminal filaments 3–3.5 mm long, densely pubescent at base. Berry globular, 11–22 mm diam. occasionally smaller, pale yellow; fruiting calyx papery with prominent, reticulate veins. Seeds 1.2–2.1 mm long, brown. *Apple of Peru*. Figs. 47C–D, 49.

Occurs in Qld, N.S.W., Vic., Tas., S.A. and W.A., mainly as a summer weed in coastal and near-coastal areas. An important weed of maize crops in northern Qld. Map 199.

W.A.: Busselton, Feb. 1969, *S. Wilkes* (PERTH). S.A.: Bethel, 6 Apr. 1970, *B. Frost* (AD). Qld: Brisbane, 3 June 1926, *C. T. White* (BRI). N.S.W.: near Penrith, *L. Haegi* 1606 (NSW). Vic.: Neerim, 29 Feb. 1912, *H. S. Wheeler* (MEL).

**Trib. IX. DATUREAE**

Trib. *Datureae* Don, *Gen. Hist.* 4: 399 (1838).

Type genus: *Datura* L.

Herbs or soft-wooded shrubs. Calyx tubular, spathaceous, circumscissile at base in fruit. Corolla infundibular, actinomorphic; aestivation conduplicate-contorted, the limb plicate. Stamens 5; filaments inserted at base of anthers; anthers dehiscing by longitudinal slits, the thecae adnate. Ovary bilocular or incompletely 4-locular. Fruit a 4-valved capsule or indehiscent; embryo strongly curved.

Contains 1 or 2 genera, the species chiefly South American, several eurasian and Australian.

**22. DATURA**

*Datura* L., *Sp. Pl.* 1: 179 (1753), and *Gen. Pl.* 5th edn, 83 (1754); from the Hindi *dhatura*, the name given to *D. fastuosa* L. and *D. metel* L.

Type species: *D. stramonium* L.

Summer-growing annual herbs or short-lived perennials, glabrous or pubescent with glandular or simple, non-glandular hairs. Leaves alternate, simple, entire or lobed, petiolate. Flowers solitary in forks of stems, bisexual, actinomorphic. Calyx tubular, the lobes 5 (occasionally 3, 4 or up to 9); base persistent in fruit. Corolla funnel- or trumpet-shaped, rarely multiple, white or variously coloured; limb shortly 5-lobed or appearing 10-lobed, folded and twisted in bud. Stamens usually 5, equal in height, inserted in lower half of corolla-tube. Anthers bilocular, basifixed, dehiscing by longitudinal slits. Ovary bilocular, or falsely 4-locular in lower half; stigma saddle-shaped. Fruit a 2–4-locular, spiny or tuberculate capsule, opening regularly or irregularly from apex. Seeds approximately D-shaped.

A genus of 10 species occurring naturally in tropical and warm-temperate Central and South America, China, Asia and north Africa. Some species have a long history of use as drug plants. One species, *Datura leichhardtii* F. Muell. ex Benth., generally considered endemic to Australia; five species naturalised and declared noxious weeds in most States. Sometimes toxic to stock.

W. E. Safford, Synopsis of the genus *Datura*, *J. Wash. Acad. Sci.* 11: 173–189 (1921); A. G. Avery, S. Satina & J. Rietsema, Blakeslee: The genus *Datura*, *Chronica Botanica* 20 (1959); L. Haegi, Taxonomic account of *Datura* L. (Solanaceae) in Australia with a note on *Brugmansia* Pers., *Austral. J. Bot.* 24: 415–435 (1976).

Key adapted from L. Haegi, *op. cit.*, 421–422.

- |    |   |                                  |
|----|---|----------------------------------|
| 1  | Leaves lobed, the lobes usually toothed or sinuate; capsule erect; seeds black or grey  |                                  |
| 2  | Flowers 6–10 cm long; capsule with more than 100 slender spines of various lengths, randomly distributed                                      | <b>1. <i>D. stramonium</i></b>   |
| 2: | Flowers 4.5–6 cm long; capsule with 40–60 stout spines, upper longer than lower   | <b>2. <i>D. ferox</i></b>        |
| 1: | Leaves entire to sinuate or lobed, the lobes entire; capsule deflexed; seeds brown or yellow  |                                  |
| 3  | Plants glabrous or sparsely pubescent with non-glandular hairs  |                                  |
| 4  | Branches green; flowers 4.5–7 cm long; capsule with numerous sharp spines   | <b>3. <i>D. leichhardtii</i></b> |
| 4: | Branches tinged with purple; flowers 14–20 cm long; capsule with numerous short, blunt tubercles  | <b>6. <i>D. metel</i></b>        |
| 3: | Plants tomentose with non-glandular and/or glandular hairs  |                                  |
| 5  | Hairs glandular, erect; stigma well below level of anthers; margin of corolla limb angular  | <b>4. <i>D. inoxia</i></b>       |
| 5: | Hairs mostly non-glandular and retrorse, some glandular and erect; stigma usually exserted well above anthers; margin of corolla limb rounded | <b>5. <i>D. wrightii</i></b>     |

**1. \*Datura stramonium L., Sp. Pl. 1: 179 (1753)**

T: Habitat in America; LINN 243/1, *n.v.*, *fide* E. Schönbeck-Temesy, *Fl. Iranica* 100: 45 (1972)

*D. tatula* L., *Sp. Pl.* 2nd edn, 256 (1762); *D. stramonium* var. *tatula* (L.) Torrey, *Fl. North & Middle U.S.* 1: 232 (1824).

T: Not Australian; *n.v.*

Illustrations: G. H. Clarke, *Dept. Agric. S. Austral. Bull.* 406: 13 (1949) as *D. tatula* L.; J. N. Whittet, *Weeds (New South Wales Dept. Agric.)*, fig. 146 (1958); G. R. Meadly, *Weeds W. Austral.*, 134, 135, fig. 8 (1965); N. T. Burbidge & M. L. Gray, *Fl. Austral. Cap. Terr.*, fig. 323 (1970); W. T. Parsons, *Noxious Weeds Victoria.*, figs 236, 238A(2) (1973); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland*, 177 (1977).

Stout annual herb, glabrous or sparsely pubescent with non-glandular hairs. Mature leaves rhomboid to angularly ovate, the lamina up to 36 cm long, deeply lobed, the lobes few and usually coarsely toothed or sinuate. Calyx 3–4 (occasionally to 5.5) cm long, 5-lobed, the lobes 6–8 mm long. Corolla 6–8 (occasionally to 10) cm long, white or pale lavender; limb 5-lobed, the lobes ending in a slender point c. 10 mm long. Stamens not exerted; anthers 3–6 mm long. Style 4–6 mm long; stigma below, level with or above anthers. Capsule ovoid, to 4.5 cm long, erect, spiny; spines 100–200, slender, conical, sharp, variable in length, the longest less than half length of capsule; persistent base of calyx to 10 mm long. Seeds 2.5–4.5 mm long, black or grey. *Common Thornapple*. Figs 51; 52C.

Origin uncertain, but widely naturalised in temperate and warm-temperate regions of the world. Widespread in Australia, occurring in eastern Qld, N.S.W., A.C.T., Vic., eastern Tas., S.A. and south-western W.A.; also on Lord Howe Is. Weed of waste ground, disturbed areas in agricultural districts, and along creek beds in semi-arid native pastures. Map 200.

S.A.: Wanilla, C. R. Alcock 2675 (AD, ADW). Qld: Thallen, S. L. Everist 841 (BRI). N.S.W.: near Merimbula, L. Haegi 1723 (NSW). Vic.: East Gippsland, A. C. Beaughtole 37044 (MEL). Tas.: Hobart, 16 Feb. 1966, D. I. Morris (HO).

Seeds sometimes toxic, contaminating grain and causing death of poultry and pigs. The names *D. tatula* L. and *D. stramonium* var. *tatula* (L.) Torrey were used for lavender-flowered forms in earlier Australian literature.

**2. \*Datura ferox L., Amoen. Acad. 3: 403 (1756)**

T: 'Habitat in China'; *n.v.*

Illustrations: J. N. Whittet, *Weeds (New South Wales Dept. Agric.)*, fig. 30 (1958); L. G. R. Meadly, *Weeds W. Austral.*, 135, fig. A (1965); W. T. Parsons, *Noxious Weeds Victoria.*, fig. 238A(1) (1973); S. L. Everist, *Poison. Pl. Austral.*, t. 47 (1974); H. E. Kleinschmidt & R. W. Johnson, *Weeds Queensland*, t. vi (1977).

Stout annual herb, glabrous or sparsely pubescent with non-glandular hairs. Mature leaves from broadly-ovate and somewhat angular to rounded-triangular, the lamina up to 14 cm long, 16 cm wide, with a few shallow usually toothed or sinuate lobes. Calyx to 3.5 cm long, 5-lobed, the lobes 4–7 mm long. Corolla 4–6 cm long, white, 5-lobed, the lobes ending in a point 1–2 mm long. Stamens not exerted; anthers 3–4 mm long. Style c. 3 cm long; stigma below anthers. Capsule ellipsoid or nearly so, to 4 cm long, erect, spiny; spines usually 40–60, stout, conical, sharp, usually longer near capsule summit, the longest at least half length of capsule; persistent base of calyx base to 8 mm long. Seeds 4–5 mm long, black or grey. *Fierce Thornapple*, *Longspine Thornapple*. Fig. 52F.





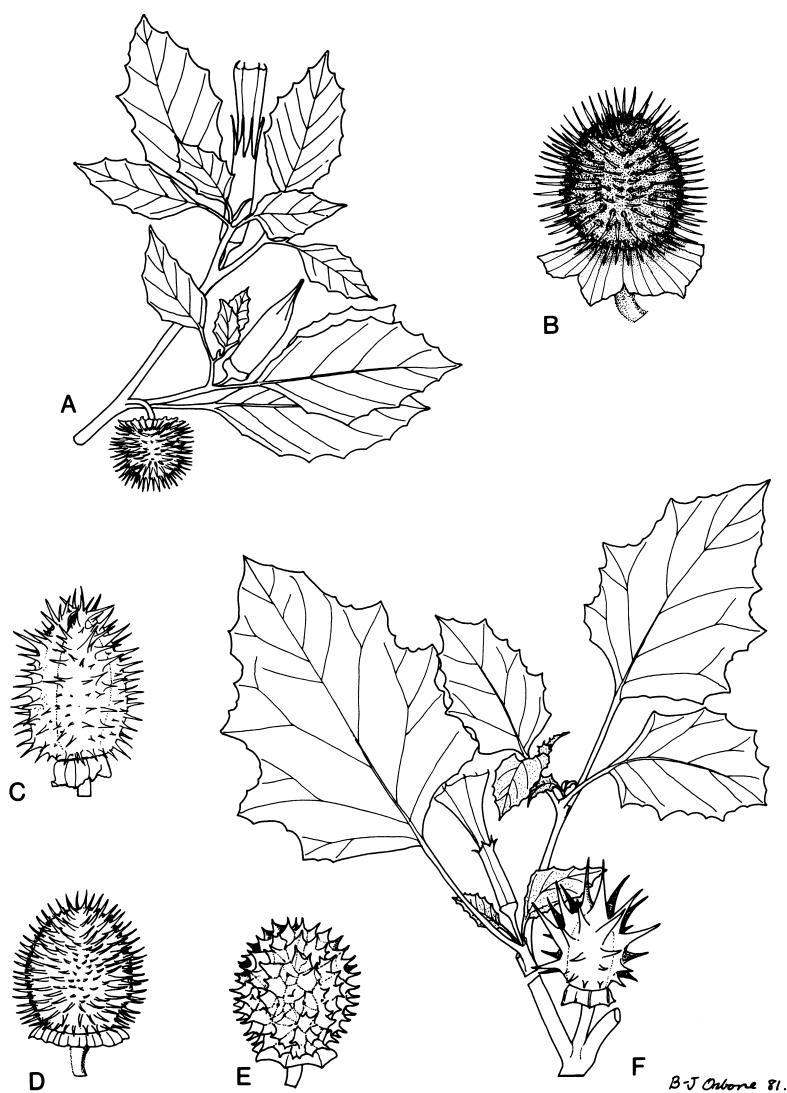
**Figure 48.** *Lycium ferocissimum*.  
Photograph — R. W. Purdie.

**Figure 49.** *Nicandra physalodes*.  
Photograph — L. Haegi.



**Figure 50.** *Capsicum annum* var.  
*glabriusculum*. Photograph — R. W.  
Purdie.

**Figure 51.** *Datura stramonium*.  
Photograph — M. Fagg.



**Figure 52.** *Datura*. **A**, *D. leichhardtii* (L. Haegi 579, CANB). **B**, *D. inoxia* (R. A. Perry & M. Lazarides 2959, CANB). **C**, *D. stramonium* (Canberra, A.C.T., M.Fagg, ?CBG). **D**, *D. wrightii* (L. Haegi 623, CANB). **E**, *D. metel* (Cult. Adelaide, J. Pike, ADW). **F**, *D. ferox* (L. Haegi 606, CANB). All  $\times 0.5$ .

Native to China but now widely distributed in warm regions of the world. In Australia, occurs in Qld, N.S.W., Vic., S.A., W.A., and N.T.; also reported to occur in Tas. A weed of waste ground, and disturbed areas in agricultural and pastoral districts; often a serious weed of summer grain crops in Qld and N.S.W. Map 201.

W.A.: Serpentine, Apr. 1965, L. & E. Fawcett (PERTH). N.T.: near Adelaide River, 7 Feb. 1971, G. Brown (NT). S.A.: Adelaide, L. Haegi 605 (AD); Qld: near Monto, 3 Nov. 1976, E. M. Ross (BRI). N.S.W.: Finley, D. E. Symon 9805 (ADW, CANB, NSW).

The seeds sometimes contaminate harvested grain. Natural hybrids between *D. ferox* and *D. stramonium* L. occur.

### 3. *Datura leichhardtii* F. Muell. ex Benth., *Fl. Austral.* 4: 468 (1868)

T: Gulf of Carpentaria, *Landsborough s.n.*; syn: MEL; Ashburton River, *Walcott s.n.*; syn: *n.v.*; Gilbert River, *F. Mueller s.n.*; syn: K, MEL; Comet River, *Leichhardt s.n.*; syn: MEL; Suttor river, *D'Orsay s.n.*; lecto: K, iso: K, MEL, *fide* L. Haegi, *Austral. J. Bot.* 24: 428 (1976); Rockingham Bay, *O'Shanesy s.n.*; syn: MEL; Armadillo, *Barton s.n.*; syn: MEL.

Illustrations: G. M. Chippendale & L. R. Murray, *Poison. Pl. Northern Territory*, fig. 41 (1963); G. R. Meadly, *Weeds W. Austral.*, 135 fig. D (1965); S. L. Everist, *Poison. Pl. Austral.*, t. 48 (1974); L. Haegi, *op. cit.* fig. 3.

Stout annual herb, glabrous or sparsely pubescent with non-glandular hairs. Mature leaves rhomboid to angularly ovate, the lamina up to 8 cm long, more or less regularly serrate to sinuate. Calyx to 4 cm long, 5-lobed; lobes 7–10 mm long. Corolla 4–7 cm long, usually cream; limb appearing 10-lobed, alternate lobes shallow-triangular or ending in a slender point 5–7 mm long. Stamens not exerted; anthers 3–4 mm long. Style to 4.5 cm long; stigma level with or below anthers. Capsule globose or nearly so, 2–3 cm long, deflexed, spiny; spines numerous, conical, sharp, of various lengths, the longest 4–9 mm; persistent base of calyx to 7 mm long. Seeds 4–5 mm long, light brown to grey-brown. *Native Thornapple*. Fig. 52A.

Widespread in semi-arid areas in Qld, N.S.W., S.A., W.A., and N.T. Frequently associated with water courses and flood plains. Generally considered endemic to Australia but may have originated in central America. Map 202.

W.A.: Hamersley Range, J. V. Blockley 293 (PERTH). N.T.: Temple Bar Creek, J. Must 1400 (DNA). S.A.: Flinders Range, W. R. Barker 300 (AD). Qld: near Windorah, S. L. Everist 7441 (BRI). N.S.W.: near Willangee Stn, 1974, J. Pickard site B (NSW).

Sometimes poisonous to sheep.

### 4. \**Datura inoxia* Miller, *Gard. Dict.* 8th edn, no. 5 (1768)

T: Cultivated from seeds collected in Vera Cruz, Mexico, *Chelsea Phys. Gard. no.* 1843; neo: BM, *fide* A. S. Barclay, *Bot. Mus. Leaflet* 18: 255 (1959).

[*D. metel* auct. non L.: J. M. Black, *Fl. S. Austral.* 2nd edn, 4: 755 (1957)]

Illustrations: J. M. Black, *op. cit.* fig. 1081, as *D. metel* L.; W. T. Parsons, *Noxious Weeds Victoria.*, fig. 238A(3) (1973); B. J. Grieve & W. E. Blackall, *How to Know W. Austral. Wildfl.* 4: 603 (1975).

Stout annual herb, tomentose with erect, glandular hairs. Mature leaves broadly ovate, the lamina up to 20 cm long, almost entire, slightly sinuate, or irregularly lobed towards base. Calyx 5–11 cm long, 3–6-lobed; lobes 13–20 mm long, sometimes incompletely separated. Corolla 12–19 cm long, white with green veins; limb undulate, appearing 10-lobed, alternate lobes broadly triangular or ending in a slender point 5–10 mm long. Stamens not exerted; anthers 8–10 mm long. Style 10–14 cm long; stigma well below anthers. Capsule globose or nearly so, 3–5 cm long,

deflexed, spiny; spines numerous, slender, sharp, all about equal in length, to 10 mm long. Persistent base of calyx to 20 mm long, very prominent. Seeds 4–5 mm long, brown. *Downy Thornapple*. Fig. 52B.

Native to Mexico, South America and the West Indies, but now widely distributed in warmer regions of the world. In Australia, a weed of disturbed areas in Qld, N.S.W., Vic., S.A., W.A., and N.T. Map 203.

W.A.: Bayswater, 24 Jan. 1961, V. Veitch (PERTH). N.T.: Alice Springs, 23 June 1967, P. Bonning (NT). S.A.: Wallaroo, B. Copley 1053 (AD). Qld: Mt Morgan, C. T. White 11027 (BRI). N.S.W.: near Balranald, D. E. Symon 9874 (NSW).

### 5. *\*Datura wrightii* Regel, *Gartenfl.* 8: 193, t. 260 (1859)

T: Described from Texas, North America, C. Wright 526; neo: US, n.v., fide A. S. Barclay, *Bot. Mus. Leaflet* 18: 254 (1959).

Annual herb, tomentose with retrorse, non-glandular hairs and some erect, glandular hairs. Mature leaves ovate to angularly ovate, the lamina up to 16 cm long and 10 cm wide, entire or irregularly lobed. Calyx 6–9 cm long, 5-lobed; lobes 10–25 mm long, sometimes incompletely separated. Corolla 14–20 cm long, white, usually tinged with lavender towards margin, 5-lobed; lobes ending in slender point 5–13 mm long. Stamens shortly exserted; anthers 10–14 mm long. Style 15–17 cm long; stigma above level of anthers. Capsule globose, to 3.5 cm diam., deflexed, spiny; spines numerous, sharp, all about equal in length, usually 3–5 mm long; persistent base of calyx to 10 mm long, prominent. Seeds 5–6 mm long, yellow-brown to grey-brown. *Hairy Thornapple*. Fig. 52D.

Occurs naturally in California, Mexico, and western Texas. Occasionally grown as an ornamental. Uncommon garden escape in N.S.W., Vic., S.A., and W.A. Map 204.

W.A.: Northam, Royce 5675 (PERTH). N.T.: Alice Springs, P. K. Latz 6722 (NT). S.A.: Mannum, D. E. Symon 1942 (ADW). N.S.W.: Finley, D. E. Symon 9804 (NSW). Vic.: Yarrowonga, Mar. 1953, R. H. Nation (MEL).

A variable species; leaf margin, style length and spine length occasionally approach those of *D. innoxia* Miller with which it has sometimes been misidentified under the misapplied name *D. metel* L.

### 6. *\*Datura metel* L., *Sp. Pl.* 1: 179 (1753)

T: From Asia, Africa; n.v.

Annual herb, glabrous or sparsely pubescent with non-glandular hairs. Mature leaves ovate to broadly ovate and angular, lamina up to 16 cm long and 15 cm wide, slightly sinuate to coarsely serrate. Calyx 4–7 cm long, 5 (occasionally up to 9)-lobed; lobes 8–15 mm long. Corolla usually double or triple, the inner one 14–20 cm long, deep purple outside, pale lavender to white inside; limb 5 (occasionally to 9)-lobed, the lobes ending in slender point 10–25 mm long. Stamens not exserted; anthers 8–12 mm long. Style 10–14 cm long; stigma 2–4 cm below anthers. Capsule globose or nearly so, 3–4 cm diam., deflexed, tuberculate; tubercles 100–200, conical, all about equal in length, 2–5 mm long. Persistent base of calyx to 3 mm long. Seeds 4–5 mm long, yellow. Fig. 52E.

Believed to have originated in Asia; widely cultivated in the tropics and as an indoor plant in temperate regions. In Australia, an uncommon garden escape in Qld, N.S.W., S.A., W.A., and N.T. Map 205.

W.A.: Melville, A. S. *George* 4377 (PERTH). N.T.: cult. Alice Springs, 8 June 1958, G. Chippendale (NT). S.A.: cult. Blackwood, S.A., from seed 320 km from Alice Springs, N.T., A. Ashby 87 (AD). Qld: Thursday Island, 4 Oct. 1971, M. Williams (BRI). N.S.W.: cult. Brewarrina, May 1926, J. R. Burns (NSW).

The name *D. metel* commonly misapplied to *D. inoxia* Miller and *D. wrightii* Regel in early Australian literature.

## Trib. X. HYOSCYAMEAE

Trib. *Hyoscyameae* Miers, *J. Bot.* 5: 148 (1846).

Type genus: *Hyoscyamus* L.

Herbs. Corolla infundibular-campanulate, slightly zygomorphic; aestivation imbricate or quincuncial. Stamens 5; anthers longitudinally dehiscent. Ovary bilocular. Fruit a capsule with circumscissile operculum; calyx enlarged, indurated; embryo coiled or spiral.

Contains several small genera found mainly in Eurasia.

## 23. HYOSCYAMUS

*Hyoscyamus* L., *Sp. Pl.* 1: 179 (1753) and *Gen. Pl.* 5th edn, 84 (1754); from the Greek *hys* (a hog) and *kyamos* (a bean), alluding to the belief that it poisoned swine.

Type species: *H. niger* L.

Annual or perennial herbs, pubescent with glandular or simple, non-glandular hairs. Leaves alternate, simple, entire or toothed or lobed, petiolate or sessile. Inflorescence a dense unilateral spike. Flowers bisexual, slightly zygomorphic, each subtended by a leafy bract. Calyx tubular-campanulate, 5-lobed, enlarging in fruit. Corolla broadly funnel-shaped, yellowish; limb 5-lobed, the lobes folded in bud. Stamens 5, subequal, inserted near base of corolla-tube; anthers bilocular, basifixed, dehiscing by longitudinal slits. Ovary bilocular; stigma capitate. Fruit a capsule, smooth or nearly so, opening by an apical lid, enclosed in enlarged calyx. Seeds reniform to orbicular.

A genus of c. 20 species native to Europe and north Africa, and extending eastwards to central Asia. One species, *H. niger* L., formerly widely cultivated as a source of alkaloids for medicinal drugs. Two species of apparently transitory occurrence in Australia, recorded infrequently as spontaneous weeds of waste places.

D. E. Symon, The solanaceous genera, *Browallia*, *Capsicum*, *Cestrum*, *Cyphomandra*, *Hyoscyamus*, *Lycopersicon*, *Nierembergia*, *Physalis*, *Petunia*, *Salpichroa* and *Withania*, naturalised in Australia, *J. Adelaide Bot. Gard.* 3: 133–166 (1981).

1: Cauline leaves sessile; corolla pale yellow with purple veins

**1. *H. niger***

1: Cauline leaves petiolate; corolla cream or white

**2. *H. albus***

**1. \*Hyoscyamus niger L., *Sp. Pl.* 1: 179 (1753)**

T: 'Habitat in Europae'; LINN 244.1, *n.v.*, *fide* E. Schönbeck-Temesy, *Fl. Iranica* 100: 66 (1972).

Foetid annual or biennial herb to 50 cm. Basal leaves ovate, petiolate, the lamina up to 13 cm long, with 2–4 triangular lobes on each side; cauline leaves smaller, sessile and stem clasping. Flowers subsessile. Calyx 10–15 mm long, the lobes triangular, 2–3 mm long. Corolla 20–30 mm diam., pale yellow with conspicuous purple veins. Anthers somewhat exserted. Fruiting calyx broadly urn-shaped, to 25 mm long, veins prominent. Seeds c. 1.5 mm long, brown. *Black Henbane*. Fig. 47F–H.

Known only from early collections from scattered localities in eastern N.S.W., Vic. and southern S.A. Map 206.

N.S.W.: Cult. Sydney, 22 Jan. 1917, *E. N. Ward* (NSW).

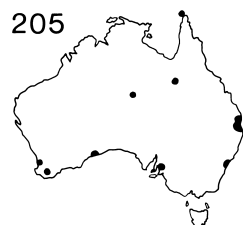
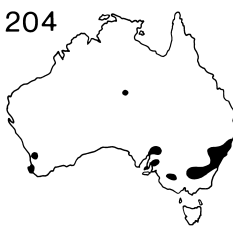
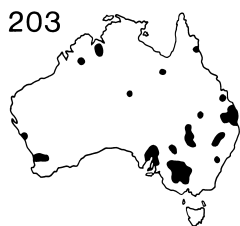
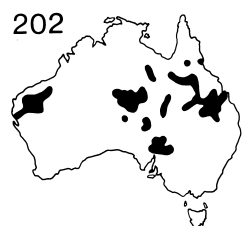
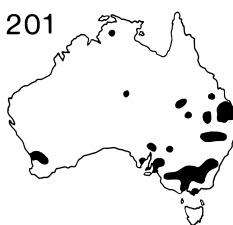
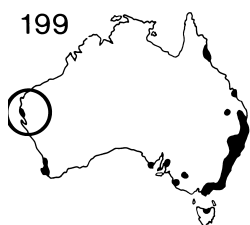
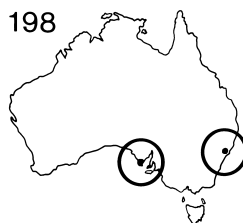
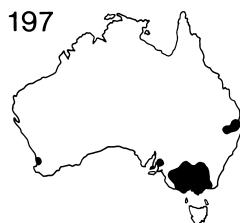
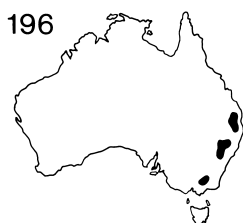
**2. \*Hyoscyamus albus L., *Sp. Pl.* 1: 180 (1753)**

T: From southern Europe; LINN. 244.2 *n.v.*, *fide* E. Schönbeck-Temesy, *Fl. Iranica* 100: 69 (1972).

Annual, biennial or perennial herb to 50 cm. Leaves orbicular-ovate, the lamina 4–10 cm long, deeply toothed; petiole 1–5 cm long. Lowest flowers with pedicels to 8 mm long, other flowers sessile. Calyx 10–15 mm long, the lobes broadly triangular, 1.5–2.5 mm long. Corolla to 30 mm long, usually cream or white, the throat tinged with green or purple. Anthers included or slightly exserted. Fruiting calyx broadly tubular-campanulate, slightly swollen in lower half, 20–25 mm long. *White Henbane*. Fig. 47E.

Known mostly from early collections from scattered localities in south-eastern Qld, Vic. and Tas. Map 207.

Qld: Brisbane, 13 Oct. 1976, *D. Martin* (BRI). Tas.: Hobart, Dec. 1876, *W. W. Spicer* (HO).



196. *Physalis virginiana*  
 199. *Nicandra physalodes*  
 202. *Datura leichhardtii*  
 205. *Datura metel*

197. *Physalis viscosa*  
 200. *Datura stramonium*  
 203. *Datura inoxia*  
 206. *Hyoscyamus niger*

198. *Withania somnifera*  
 201. *Datura ferox*  
 204. *Datura wrightii*  
 207. *Hyoscyamus albus*

## Abbreviations and Contractions

Author abbreviations follow the Draft Index of Author Abbreviations compiled at the Herbarium, Royal Botanic Gardens, Kew (HMSO, London, 1980).

Journal titles are abbreviated in accordance with G.H.M. Lawrence *et al.*, *Botanico-Periodicum-Huntianum* (Hunt Botanical Library, Pittsburgh, 1968).

Other literature is abbreviated in accordance with F.A. Stafleu & R.S. Cowan, *Taxonomic Literature*, 2nd edn (Bohn, Scheltema & Holkema, Utrecht, 1976–), except that upper case initial letters are used for proper names and significant words. The *Flora of Australia* is abbreviated to *Fl. Australia*.

Abbreviations of herbaria are in accordance with P.K. Holmgren, W. Keuken & E. K. Schofield, *Index Herbariorum* Part I, 7th edn (Bohn, Scheltema & Holkema, Utrecht, 1981). Those most commonly cited in the *Flora* are:

AD	State Herbarium of South Australia, Adelaide
ADW	Waite Agricultural Research Institute, Adelaide
BM	British Museum (Natural History), London
BRI	Queensland Herbarium, Brisbane
CANB	Australian National Herbarium, Canberra
CBG	Australian National Botanic Gardens Herbarium, Canberra
DNA	Northern Territory Herbarium, Darwin
HO	Tasmanian Herbarium, Hobart
JCT	James Cook University of North Queensland, Townsville
K	Royal Botanic Gardens, Kew
MEL	National Herbarium of Victoria, Melbourne
NSW	National Herbarium of New South Wales, Sydney
NT	Northern Territory Herbarium, Alice Springs
PERTH	Western Australian Herbarium, Perth
QRS	Australian National Herbarium, Atherton
US	Smithsonian Institution, Washington, D.C.

Abbreviations of Australian States and Territories and nearby countries as used in statements of distribution and citation of collections.

A.C.T.	Australian Capital Territory
N.Caled.	New Caledonia
N.S.W.	New South Wales
N.T.	Northern Territory
N.Z.	New Zealand
P.N.G.	Papua New Guinea
Qld	Queensland
S.A.	South Australia
Tas.	Tasmania
Vic.	Victoria
W.A.	Western Australia



**General abbreviations**

alt.	altitude
app.	appendix
<i>auct.</i>	<i>auctoris</i> (of an author or authors)
c.	<i>circa</i> (about)
cm	centimetre
col.	colour
coll.	collector
cult.	cultivated
diam.	diameter
E	east
ed.	editor
edn	edition
et al.	et alii/and others
eds	editors
fam.	<i>familia</i> /family
fig./figs	figure/figures (in other works)
Fig.	Figure (referring to a Figure in this Volume of the <i>Flora</i> )
holo	holotype
iso	isotype
km	kilometre
lat.	latitude
lecto	lectotype
<i>loc. cit.</i>	<i>loco citato</i> (in the same work and page as just cited)
long.	longitude
L.S.	longitudinal section
m	metre
mm	millimetre
N	north
<i>n</i>	haploid chromosome number
<i>2n</i>	diploid chromosome number
nom. cons.	nomen conservandum (conserved name)
nom. illeg.	nomen illegitimum (illegitimate name)
nom. inval.	nomen invalidum (invalid name)
nom. nud.	nomen nudum
nom. rej.	nomen rejiciendum (rejected name)
n. ser.	new series
n.v.	non vidi (not seen)
<i>op. cit.</i>	<i>opere citato</i> (in the work cited above)
p./pp.	page/pages
p.p.	pro parte (in part)
S	south
sect.	<i>sectio</i> /section
ser.	<i>series</i> /series
<i>s. lat.</i>	<i>sensu lato</i> (in a wide sense)
sp./spp.	species (singular/plural)
s. str.	<i>sensu stricto</i> (in a narrow sense)
Stn	(pastoral) Station
subg.	subgenus
subsp.	subspecies
suppl.	supplement
syn	syntype
synon.	synonym

### *Abbreviations and Contractions*

T	Type (collection)
t.	<i>tabula</i> (plate)
trib.	<i>tribus</i> /tribe
W	west
x	basic chromosome number

### **Symbols**

†	taxon included in key but not treated further in text
*	naturalised taxon
[ ]	misapplied name or <i>nomen invalidum</i>

## **Publication date of the previous volume**

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For the publication date of Volume 29, see Volume 8.

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