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Solanum transiens (Solanaceae), a new species from north-eastern New South Wales

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Abstract

Solanum transiens A.R.Bean, a new species of *Solanum* from the Woolgoolga area of north-eastern New South Wales is described, illustrated and compared to allied species.

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Introduction

Solanum L. is one of the largest plant genera in the Australian flora. A revision of the genus in Australia by Symon (1981) recognised 94 native species. Since then, many species have been either discovered, reinstated or newly recognized through changes in circumscription (e.g. Symon 1995, Bean 2004, Bean 2011, Martine et al. 2016). According to the 2021 edition of the Australian Plant Census (APC 2021), there were 175 accepted indigenous *Solanum* species in Australia. A further three species (*S. nectarifolium, S. scalarium* and *S. singulare*) have been described from Australia since 2021.

There has not yet been any molecular phylogenetic study focusing on Australian *Solanum* species. The species described here is a member of *Solanum* subg. *Leptostemonum* (Dunal) Bitter (the 'spiny' solanums), of which there are 51 species in New South Wales, 44 indigenous and 7 introduced. Morphologically, the new species belongs to Group 25 of Bean (2004), containing species that have lobed leaves, flowers all of similar size and prickliness, prickly calyces and relatively large (mostly) green mature fruits, including for example *S. campanulatum, S. prinophyllum* and *S. petrophilum*.

The new *Solanum* species is a very recent discovery, first observed and photographed by Adrian Gale in August 2024, who posted photographs on the iNaturalist website (A Community for Naturalists · iNaturalist). To my knowledge, no previous herbarium specimens exist.

Methods

This paper is based on a study of herbarium specimens at BRI, examination of images of herbarium specimens held at NSW, field observations, and an examination of images on the iNaturalist website.

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Taxonomy

Solanum transiens A.R.Bean **sp. nov.**

Type: New South Wales. North Coast: Palm Tree Road, Conglomerate State Forest, NW of Woolgoolga, 29 August 2025, *A.R. Bean 35694, P. Sheringham & A. Gale* (holo: BRI AQ1058281 (1 sheet + spirit); iso: BM, CANB, MEL, NSW, NY).

Figs. 1, 2.

Erect rhizomatous shrub, 0.9–1.8 m high. Branchlets green or brown; prickles 23–45 per decimetre, straight, acicular, 4–9 mm long, 13–18 times longer than wide, glabrous; stellate hairs moderately dense, 0.5–0.7 mm diameter, stalks 0–0.15 mm long, lateral rays 6–8, porrect, central ray 1–2 times as long as laterals, not gland-tipped, finger hairs absent; small glandular hairs absent. Juvenile leaves with 2–4 pairs of deep obtuse lobes, prickles numerous, straight, acicular, present on midvein and lateral veins. Adult leaves with lamina lanceolate to narrowly elliptic, with 2–3 pairs of shallow obtuse to acute lobes or occasionally entire, 5.6–11.2 cm long, 1.2–3.0 cm wide, 3.2–4.7 times longer than broad, apex acute, base cuneate, oblique part 0–7 mm long; petioles 1.3–2.2 cm long, 12–20% length of lamina, not winged, prickles present. Upper leaf surface green; prickles present on midvein and lateral veins or on midvein only, 2–14, straight, acicular, 5–8 mm long; stellate hairs distributed throughout, hair density very sparse, 0.9–2.5 mm apart, 0.3–0.5 mm across, stalks absent, lateral rays 4–8, porrect, central ray 1.5–2 times as long as laterals, not gland-tipped, simple hairs absent; small glandular hairs absent. Lower leaf surface greenish-white, prickles 0–5 along midrib, acicular; stellate hairs moderately dense to dense, 0.4–0.5 mm apart, 0.5–0.7 mm diameter, stalks 0–0.1 mm long, lateral rays 6–8, porrect, central ray 1–2 times as long as laterals, not gland-tipped, simple hairs absent, small glandular hairs absent. Inflorescence 2–5-flowered, supra-axillary, cymose, common peduncle 10–23 mm long; flowers 5-merous, all bisexual or some male flowers present; pedicels at anthesis 13–26 mm long, same thickness throughout, prickles present. Calyx tube at anthesis 2.0–3.5 mm long; calyx lobes at anthesis rostrate, 2–5.5 mm long, calyx prickles 15–25 in longitudinal rows; calyx stellate hairs sparse to moderately dense, white, 0.4–0.6 mm across, stalks 0–0.1 mm long, lateral rays 6–8, central ray 1.5–2.5 times as long as laterals, not gland-tipped, simple hairs absent, small glandular hairs absent. Corolla purple, 17–21 mm in radius, rotate, inner surface glabrous or with a line of hairs along each lobe. Stamens 5, anthers 6.4–7.0 mm long, filaments c. 1.5 mm long. Ovary with small glandular hairs; style 9.5–11 mm long with small glandular hairs near base, strongly bent near base or erect near base then slightly bent at halfway point. Fruiting calyx lobes less than half length of fruit, prickles present. Fruit (close to maturity) globular, c. 21 mm diameter, 2-locular, pale green with dark green streaks; pedicels c. 30 mm long. Mature seeds not seen.

Specimens examined: New South Wales. North Coast. Plum Pudding Road, Conglomerate State Forest, 7 Feb 2025, *P. Sheringham 53* (BRI); c. 1 km along Palm Creek Road, with intersection of Plum Pudding Road, Conglomerate State Forest, 14 May 2025, *P. Sheringham 57* (BRI).

iNaturalist observations: 238526139, 238554393, 313956973, 261701567.

Diagnostic features. Solanum transiens is morphologically similar to *S. curvicuspe* Domin, *S. pungetium* R.Br. and *S. stenopterum* A.R.Bean.

S. transiens differs from *S. curvicuspe* by the 23–45 prickles per decimetre on the stems (0–5 prickles per dm for *S. curvicuspe*), the moderately dense indumentum on the lower leaf surface with stellate hairs 0.5–0.7 mm across (very dense, stellate hairs 0.25–0.35 mm across for *S. curvicuspe*), the calyx with 15–25 prickles (prickles absent from calyx in *S. curvicuspe*).

S. transiens differs from *S. pungetium* by the upright habit (prostrate or semi-prostrate for *S. pungetium*), the leaves 3.2–4.7 times longer than wide (1.6–2.3 times for *S. pungetium*), the inflorescence 2–5-flowered (1–2-flowered for *S. pungetium*), the common peduncle 10–23 mm long (common peduncle absent for *S. pungetium*, when 2 flowers present, both pedicels arising from the stem), and the corolla radius 17–21 mm (12–16 mm for *S. pungetium*).

S. transiens differs from *S. stenopterum* by shallowly lobed leaves (at least some leaves deeply lobed in *S. stenopterum*), petioles 13–22 mm long (5–13 mm long for *S. stenopterum*), the inflorescence 2–5-flowered (1–2-flowered for *S. stenopterum*), the common peduncle 10–23 mm long (common peduncle absent for *S. stenopterum*, when 2 flowers present, both pedicels arising from the stem), the anthers 6.4–7 mm long (3.5–5 mm long for *S. stenopterum*), and the style 9.5–11 mm long (7.5–8.5 mm long for *S. stenopterum*).

The only other native prickly *Solanum* species occurring in the Woolgoolga area is the widespread *S. stelligerum*, which can be readily distinguished by its entire leaves, small red fruits and lack of prickles on its calyx.

Phenology. Flowers have been recorded in August, September, October and February; fruits in February.

Distribution & habitat. Solanum transiens is endemic to New South Wales and so far known only from the Conglomerate State Forest near Woolgoolga. It grows on loamy or sandy-loam soils on ridges or hillslopes, in tall eucalypt forest often dominated by *Eucalyptus pilularis,* and with a shrubby understorey including *Hibiscus splendens, Acacia irrorata, Astrotricha latifolia,* hardy rainforest species such as *Synoum glandulosum* and *Apocissus hypoglauca,* and the weed *Lantana camara.*

Figure 1. *Solanum transiens*. A. flowering branchlet. B. part of upper leaf surface, showing the stellate hairs. C. individual stellate hair. D. side view of flower. E. oblique view of flower showing stamens and style. F. style and longitudinal section of ovary. All from *Bean 35694 et al.* (BRI). Del. N. Crosswell.

Conservation status. Solanum transiens is known from a single locality in the Conglomerate State Forest (now part of the Great Koala National Park) where a total of 115 plants are known in two sub-populations at Plum Pudding Road and Palm Tree Road. According to the IUCN Red list criteria (IUCN 2024), *S. transiens* qualifies as Critically Endangered (Criteria B1, B2 a, c (iv), C2(b)), with fewer than 250 individuals, known from a single location, area of occupancy less than 10 square km, and with extreme fluctuation in the number of individuals.

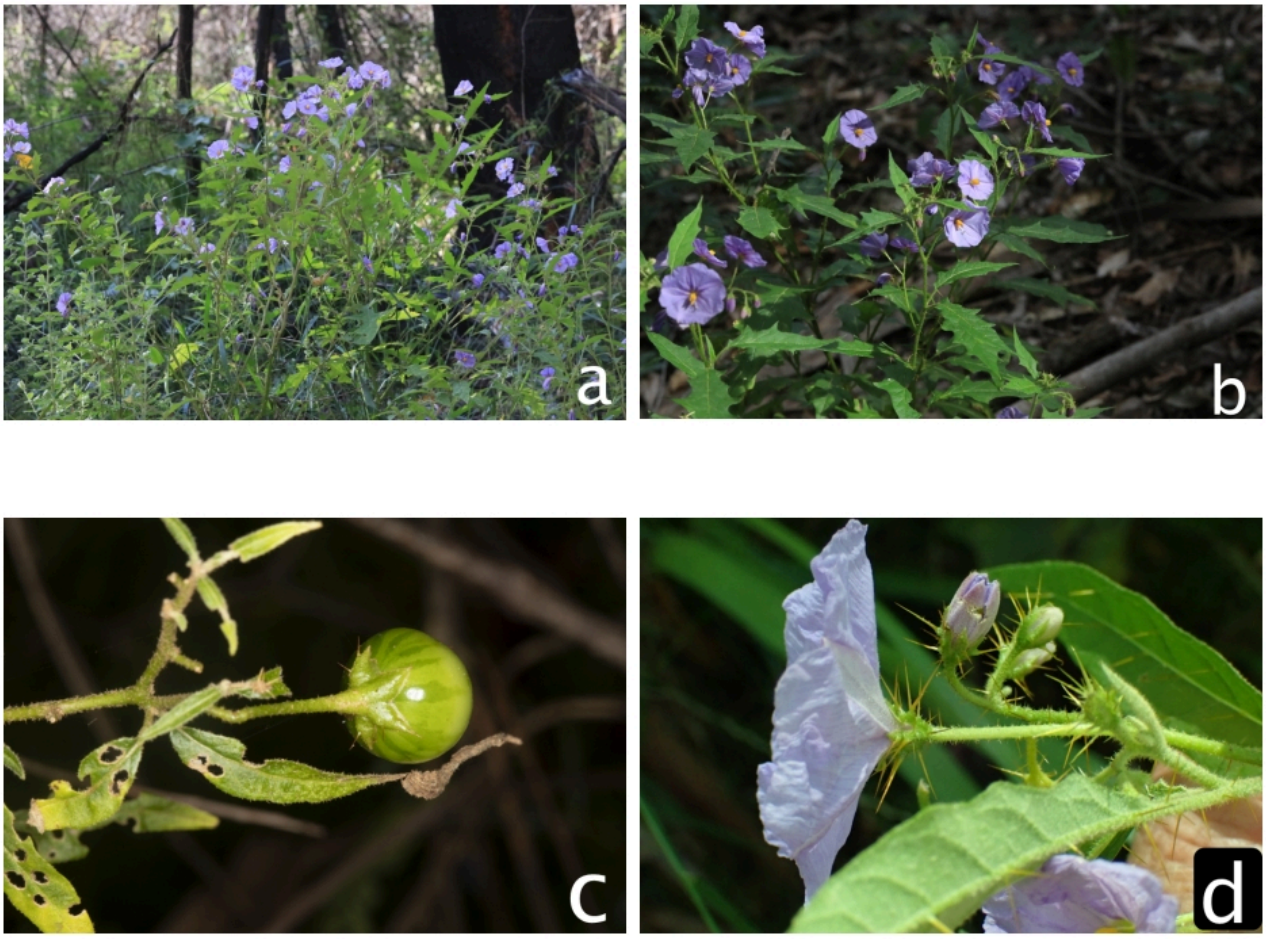

Figure 2. *Solanum transiens* **a.** habit; **b.** flowering branches **c**. fruit, close to maturity; **d.** side view of flower (a-b by A. Gale, c by P. Sheringham, d by A.R. Bean).

The weed *Lantana camara* is common in the habitat and threatens *S. transiens* by competing for light and nutrients.

Etymology. The species epithet is from the Latin *transire* meaning to go across or pass through, giving rise to the English word transient, meaning temporary or passing quickly. This is in reference to the apparent short life span of this species.

Notes. A sub-population of *S. transiens* plants in full flower was observed and photographed by A. Gale in August 2024. P. Sheringham visited this site in February 2025, when he counted 79 plants of which several were dead with mature fruits still attached. When the same site was visited in August 2025, no plants at all could be found, not even dead ones. The inescapable conclusion is that *S. transiens* is short-lived, flowering and fruiting for perhaps a few months and then dying. Its transient nature would also help to explain the late discovery of the species. The seeds of Australian *Solanum* species are long lived in the soil and presumably *S. transiens* is no exception; the species would undoubtedly benefit from a fire event of sufficient intensity to remove competing shrubs and herbs.

Disclosures

No conflict of interest

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