

NSW SCIENTIFIC COMMITTEE

Preliminary Determination

The Scientific Committee, established by the *Threatened Species Conservation Act* 1995 (the Act), has made a Preliminary Determination to support a proposal to list the shrub *Solanum sulphureum* A.R.Bean as an ENDANGERED SPECIES Part 1 of Schedule 1 of the Act. Listing of Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Solanum sulphureum* A.R. Bean has been described by Bean (2009) as: "Erect, rhizomatous perennial shrub 0.9–2.5 m high. Adult branchlets yellow, rusty or brown; prickles 2–15 per decimetre, straight, acicular, 5–11 mm long, 8–14 times longer than wide, glabrous; stellate hairs dense or very dense, 0.6–1 mm diameter, stalks 0.2–1.2 mm long; lateral rays 7 or 8, porrect or ascending, central ray 0.7– 1 times as long as laterals, not gland-tipped; type 2 hairs dense. Juvenile leaves 9–12 cm long, 6–8.5 cm wide, with 2 or 3 pairs of lateral lobes, apex acute, base obtuse to cordate; prickles present on midvein and lateral veins. Adult leaves ovate, entire, lamina 6.5–12.3 cm long, 2.3–5.8 cm wide, 2.1–2.8 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–4 mm long, obliqueness index 0–5 percent; petioles 0.8–3.1 cm long, 12–27 % length of lamina, prickles absent or present. Upper leaf surface green, prickles absent or present on midvein only, or occasionally on lateral veins also, prickles 0–7, straight, acicular, 8–12 mm long; stellate hairs distributed throughout, protostellae present, density sparse to moderate. Upper leaf surface ordinary stellae 0.2–0.6 mm apart, 0.4–0.7 mm across, stalks 0.1–0.8 mm long, lateral rays 4–8, porrect or ascending, central ray 0.8–1.5 times as long as laterals, central ray not gland-tipped; simple hairs absent; type 2 hairs present throughout, 0.05–0.1 mm apart. Lower leaf surface greenish white, white or grey; prickles absent or present on midvein only, 0–3, straight, acicular; stellate hairs dense or very dense; stellae 0.1–0.25 mm apart, 0.6–1.2 mm diameter, stalks 0.2–1.2 mm long; lateral rays 7 or 8, rays porrect; central ray 0.7–1.3 times as long as laterals, not gland-tipped; simple hairs absent; type 2 hairs present throughout, 0.05–0.2 mm apart. Inflorescence supra-axillary, cymose (pseudo-racemose), common peduncle absent or present, 0–7 mm long, rachis prickles absent or present, 7–11-flowered, with some bisexual and some male flowers. Flowers 5-merous; tube at anthesis 3–4 mm long; calyx lobes at anthesis deltate, 2.5–4 mm long; calyx prickles at anthesis absent or present, 0–5 per flower; stellate hairs very dense, yellow or brown or rusty, 0.6–0.7 mm across, stalks 0.1–0.5 mm long, lateral rays 7 or 8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; simple hairs absent. Corolla purple, c. 14 mm long, shallowly lobed, inner surface glabrous. Anthers 4.0–4.3 mm long. Ovary with type 2 hairs only; functional style c. 8 mm long, protruding between anthers, with type 2 hairs only. Fruiting calyx lobes less than half length of mature fruit; prickles absent or present, 2–7 mm long. Mature fruits 1–4 per inflorescence, globular, 14–19 mm diameter, yellow or yellowish green, 1-locular (septum absent or incomplete); placenta stalked, anvil-shaped; mesocarp juicy, succulent; exocarp 0.7–1.1 mm thick; pedicels at fruiting stage 19–22 mm long, 1.1–1.5 mm thick at mid-point. Seeds pale yellow, 2.2–2.5 mm long."
2. *Solanum sulphureum* is distinguishable from other *Solanum* species found on the North Coast of NSW by the entire ovate adult leaves, the dense stellate hairs with stalks up to 1.2 mm long, the few-flowered cymose inflorescence, the calyx with few or no prickles

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and with stellate hairs 0.6–0.7 mm diameter, and the globose yellow fruits 14–19 mm diameter with pedicels 19–22 mm long (Bean 2009).

3. *Solanum sulphureum* is endemic to NSW and all known populations are within the Greater Taree City Council local government area.
4. Most collections of *Solanum sulphureum* appear to have been made at the interface between wet sclerophyll forest (*sensu* Keith 2004) and pasture, while Bean (2009) states that “It inhabits sunny breaks in rainforest, rainforest regrowth on pasture land, or eucalypt forest with rainforest understorey. The soils are loams or clay-loams, shallow or deep. All collections have been from low altitudes (<200 metres).” Bean (2004) notes that similar species of *Solanum* colonise disturbed areas where increased light reaches the ground. A large area of potential habitat is the interface between wet sclerophyll forest and land cleared for farming and roads.
5. *Solanum sulphureum* is known from nineteen records, including six voucher specimens, representing eight populations. Two of these populations are known only from old records but have not been found since. The total number of mature individuals of *S. sulphureum* is unknown but, based on the currently known estimates and the number of sites, there might be fewer than 250 mature individuals. Small population numbers are a feature of closely related *Solanum* species, but often there are large increases after disturbance (Bean 2001). *Solanum* species may remain present in the soil seed bank or as rhizomes for some years after above ground parts have perished (Bean 2004).
6. The geographic distribution of *Solanum sulphureum* is highly restricted. The extent of occurrence (EOO) for *S. sulphureum* is 471 km² based on a minimum convex polygon enclosing all known occurrences of the species, the method of assessment recommended by IUCN (2014). The area of occupancy (AOO) is estimated to be 28 km² based on seven 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014).
7. Ongoing threats to *Solanum sulphureum* include destruction by land managers during weed management or vegetation clearing, and competition with non-native species such as *Lantana camara*. 'Invasion, establishment and spread of Lantana (*Lantana camara* L. *sens. lat*)' is listed as a Key Threatening Process under the *Threatened Species Conservation Act 1995*.
8. *Solanum sulphureum* is not eligible to be listed as a Critically Endangered species.
9. *Solanum sulphureum* is eligible to be listed as an Endangered species as, in the opinion of the Scientific Committee, it is facing a very high risk of extinction in New South Wales in the near future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2010*:

Clause 7 Restricted geographic distribution and other conditions

The geographic distribution of the species is estimated or inferred to be:

- (b) highly restricted,
- and
- (d) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:

ESTABLISHED BY THE THREATENED SPECIES CONSERVATION ACT 1995

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Exhibition period: 12/12/14 – 06/02/15

Proposed Gazettal date: 12/12/14

References:

Bean AR (2001) A Revision of *Solanum brownii* Dunal (Solanaceae) and its allies. *Telopea* **9** 639–661.

Bean AR (2004) The taxonomy and ecology of *Solanum* subg. *Leptostemonum* (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales. *Austrobaileya*. **6** 639-816

Bean AR (2009) A new species of *Solanum* (Solanaceae) from the mid north coast of New South Wales. *Telopea* **12** 439–442

IUCN Standards and Petitions Subcommittee (2014) Guidelines for Using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee.

<http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

Keith DA (2004) From ocean shores to desert dunes: the vegetation of New South Wales and the ACT (Department of Environment and Conservation: Hurstville)