

An extension of the known range of the shrub *Solanum cookii* Symon in the northern Brigalow Belt

Rhiannon M. Williams and Cameron W. de Jong

SLR Consulting Pty Ltd, Cairns QLD 4870 Australia. Email: rmair13@hotmail.com

Abstract

A population of the shrub *Solanum cookii* Symon was discovered in a small, isolated patch of semi-evergreen vine thicket on granite scree north of Collinsville in the northern Brigalow Belt, Queensland. This is a 140 km southward extension to the known range for this species and is in an area of lower annual rainfall than it has previously been recorded in. This observation highlights the importance of small, disjunct patches of semi-evergreen vine thicket in dry landscapes for maintaining biodiversity.

Copyright all content: © 2023, Williams and de Jong. This is an open access article distributed under the terms of the *Creative Commons Attribution License*, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Handling editor: Donald Franklin

Citation: Williams and de Jong. 2023. An extension of the known range of the shrub *Solanum cookii* Symon in the northern Brigalow Belt. *North Queensland Naturalist* 53: 69-72.

There are over 100 species in the genus *Solanum* in Australia (including native and exotic species), occupying a range of habitats from coastal rainforest to the arid interior and occurring throughout the continent. The highest diversity of Australian *Solanum* species occurs in the tropics (Purdie *et al.* 1982). Many of these species are of conservation significance (at State and/or Commonwealth Government level), owing to restricted ranges, various threatening processes and because many species are under-represented in herbaria and are poorly known (Purdie *et al.* 1982; Fensham *et al.* 2019).

Solanum cookii is an erect or sprawling shrub, usually growing between 0.1 and 2 m tall (Bean 2004; Zich *et al.* 2020). It has been recorded in rainforests, vine thickets and wet eucalypt forests, usually at altitudes of 400–1100 m (Bean 2004; Zich *et al.* 2020). Prior to the findings presented in this paper, the known distribution for *Solanum cookii* was from the McIlwraith Range, Cape York Peninsula to Mt Elliot, south of Townsville (Cooper 2004; AVH 2023) (Fig. 1).

In February 2022, *Solanum cookii* was observed in remnant semi-evergreen vine thicket on a west-facing granite scree slope 12 km north of Collinsville in the Brigalow Belt bioregion (Figs. 2, 3).

It was observed at approximately 355 m above sea level, in a vegetation community conforming to Queensland regional ecosystem 11.12.4 (Semi-evergreen vine thicket and microphyll vine forest on igneous rocks (Neldner *et al.* 2019; Queensland Herbarium 2021)). Features used to distinguish it from similar *Solanum* species included the large ovate and lobed leaves, the long prickles on the leaves (along the mid and lateral veins), petioles, stems and inflorescences, the stellate hairs on the branchlets and underside of the leaves, and the white flowers. A specimen was lodged with the Queensland Herbarium in March 2022, where the species identification was confirmed, and the specimen was retained for the Herbarium collection as a permanent record. This record extends the known range of the species by approximately 140 km, the nearest prior records of this species being from Bowling Green Bay National Park and Mingela State Forest. These records occur in similar habitats, including vine thickets (regional ecosystems 11.12.4 and 9.12.34) and wet sclerophyll forest (regional ecosystem 11.12.13) (DES 2022).

This new record of *Solanum cookii* is also in an area with lower average annual rainfall than other published records. Most records are in the Wet

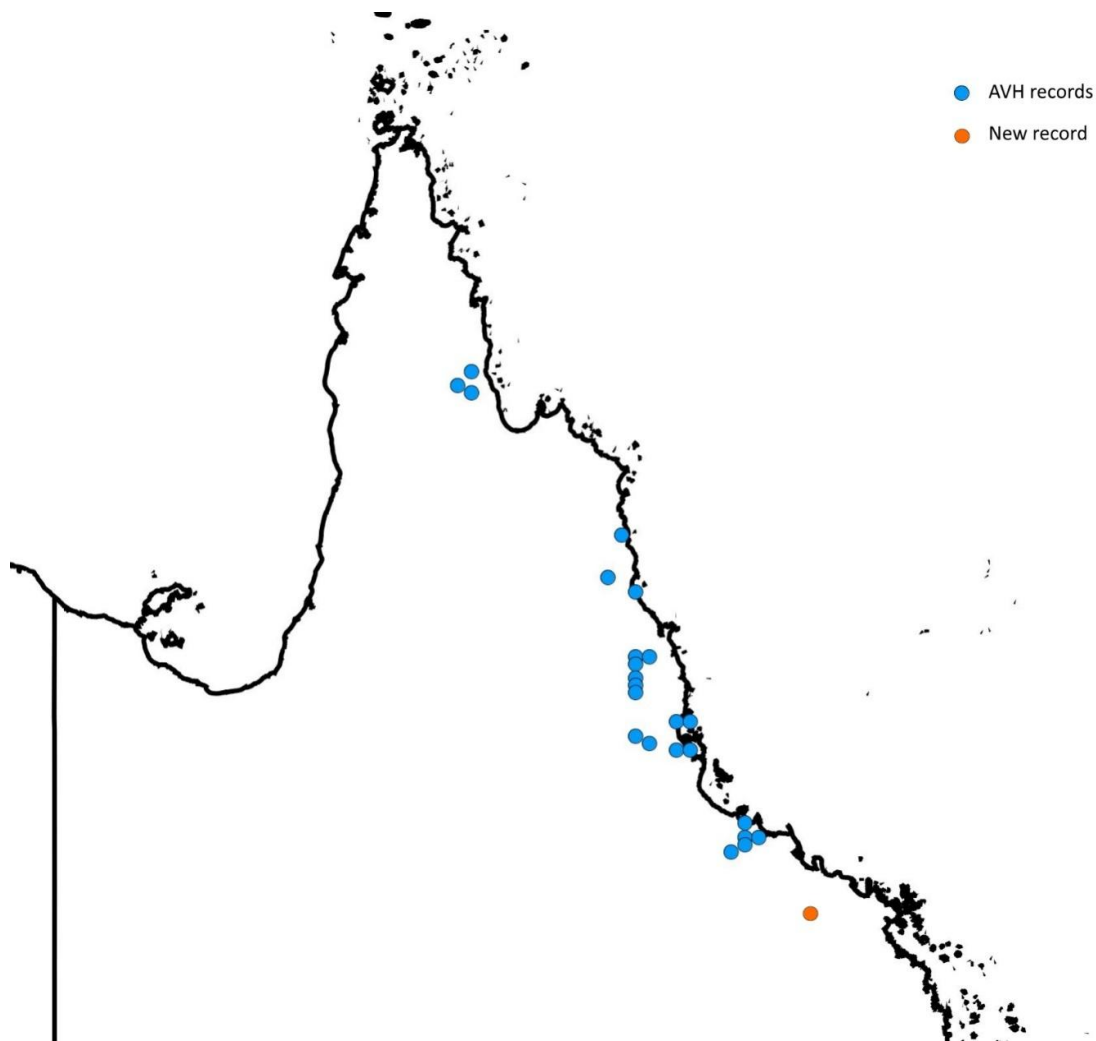


Figure 1. Records of *Solanum cookii* in North Queensland (AVH 2023).

Tropics and Cape York bioregions, which overall receive higher average annual rainfall than the Brigalow Belt bioregion (BoM 2023a). The average annual rainfall at the closest Bureau of Meteorology (BoM) weather station to this new record (Collinsville Post Office (BoM 2023b)) is 702 mm. For other records in the Brigalow Belt bioregion (Bowling Green Bay National Park and Mingela State Forest), average annual rainfall from the closest BoM weather stations is 902 mm (Lansdown CSIRO (BoM 2023c)) and 1185 mm (Majors Creek station (BoM 2023d)).

The semi-evergreen vine thicket in which this population was observed had a dense canopy dominated by White Fig (*Ficus virens* var. *virens*) and Small-leaved Fig (*Ficus obliqua*). Other common canopy species included Peanut Tree (*Sterculia quadrifida*), Tulipwood (*Harpullia pendula*) and woody vines such as Native Grape (*Cissus oblonga*) and Burny Vine (*Malaisia*

scandens subsp. *scandens*). Within this habitat, *Solanum cookii* occurred on rocky substrates with limited soil development, under a dense canopy where limited sunlight reached the understorey (Figs. 2, 3). The species was uncommon; only three individuals were observed during several days of detailed vegetation community assessments in vine thicket habitat.

Regional ecosystem 11.12.4 is widespread in the region, mostly occurring as small, isolated patches on rocky hill and mountain tops, with some larger areas protected in National Parks (Bowling Green Bay, Mount Abbot and Mount Aberdeen). These areas of semi-evergreen vine thicket can be relatively inaccessible, in rugged and undeveloped terrain, and hence have been subject to limited flora survey effort. *Solanum cookii* has not yet been recorded in Mount Abbot or Mount Aberdeen National Parks (Bean 1994; AVH 2023), despite the presence of extensive areas of potentially suitable



Figure 2. Semi-evergreen vine thicket habitat 12 km north of Collinsville.



Figure 3. *Solanum cookii* growing on rock substrate.

habitat. These national parks are located between published records and the new record of this species presented here; therefore, it is possible that populations of *Solanum cookii* also occur within them.

Semi-evergreen vine thickets provide habitat for many range-restricted and conservation-significant flora species, including *Solanum* species (e.g. *Solanum sporadotrichum*). The findings in this paper provide evidence that further survey of semi-evergreen habitats in north Queensland is needed to better understand their ecological and biodiversity values. It also highlights the importance of protecting even small fragments of these communities.

Acknowledgements

We would like to thank Dave Hall and Lindsay Rohr for their support; and Marjorie Cutting and Tony Bean for their helpful feedback on the manuscript.

References

- Australasian Virtual Herbarium (AVH). 2023. Occurrence records. <https://avh.chah.org.au>, viewed 25 April 2023.
- Bean AR. 1994. An analysis of the vascular flora of Mt Abbot near Bowen, Queensland. *Proceedings of the Royal Society of Queensland* 104: 43-66.
- Bean AR. 2004. The taxonomy and ecology of *Solanum* subg. *Leptostemonum* (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales, Australia. *Austrobaileya* 6: 639-816.
- Bureau of Meteorology (BoM). 2023a. *Average Annual Rainfall 30-year Climatology (1991–2020)*. <http://www.bom.gov.au/climate/maps/averages/rainfall/>, viewed 25 April 2023.
- Bureau of Meteorology (BoM). 2023b. *Monthly rainfall, Collinsville Post Office Weather Station (number 033013)*. <http://www.bom.gov.au/climate/data/>, viewed 25 April 2023.
- Bureau of Meteorology (BoM). 2023c. *Monthly rainfall, Lansdown CSIRO Weather Station (number 033226)*. <http://www.bom.gov.au/climate/data/>, viewed, 25 April 2023.
- Bureau of Meteorology (BoM). 2023d. *Monthly rainfall, Majors Creek Weather Station (number 033151)*. <http://www.bom.gov.au/climate/data/>, viewed 25 April 2023.
- Cooper W. 2004. *Fruits of the Australian Tropical Rainforest*. Nokomis Publications: Clifton Hill, Vic.
- Department of Environment and Science (DES). 2022. *Biodiversity Status of 2019 Remnant Regional Ecosystems – Queensland. Version 12.2*. Queensland Department of Environment and Science: Brisbane.
- Fensham R, Halford J, Hansen C, Laffineur B, Williams B. 2019. Threatened species in a threatened ecosystem: the conservation status of four *Solanum* species in the face of ongoing habitat loss. *Oryx* 53: 439-449.
- Neldner VJ, Butler DW, Guymer GP. 2019. *Queensland's Regional Ecosystems: Building and Maintaining a Biodiversity Inventory, Planning Framework and Information System for Queensland, Version 2.0*. Queensland Herbarium, Queensland Department of Environment and Science: Brisbane.
- Purdie RW, Symon DE, Haegi L. 1982. Solanaceae. In *Flora of Australia Volume 29*, ed. AS George, pp. 69-177. Australian Government Publishing Service: Canberra.
- Queensland Herbarium. 2021. *Regional Ecosystem Description Database (REDD). Version 12.1*. Queensland Department of Environment and Science: Brisbane.
- Zich FA, Hyland BPM, Whiffin T, Kerrigan RA. 2020. '*Solanum cookii*'. *Australian Tropical Rainforest Plants, Edition 8*. <https://apps.lucidcentral.org/rainforest/>, viewed 1 December 2022.