

NSW SCIENTIFIC COMMITTEE

Tylophora linearis P.I.Forst (Apocynaceae)

Review of Current Information in NSW

February 2008

Current status:

Tylophora linearis is currently listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Endangered in Queensland under the *Nature Conservation Act 1992* (NC Act). The NSW Scientific Committee recently determined that *Tylophora linearis* meets criteria for listing as Vulnerable in NSW under the *Threatened Species Conservation Act 1995* (TSC Act), based on information contained in this report and other information available for the species.

Species description:

A description of *T. linearis*, based on a combination of notes given in both Harden & Williams (1992) and Forster *et al.* (2004), is as follows: Slender almost glabrous twiner, latex clear. Leaves with lamina linear, 1-5 cm long, 0.5-3 mm wide, apex shortly acute, base gradually attenuate into the petiole; lamina flat but the margins incurved at the base; glands usually absent from the base of the midvein; petiole 0.6-3 mm long. Flowers purplish inside, 3-6 mm in diam., corolla lobes ovate or narrow-ovate, 2-3 mm long; in umbels of 3-8 flowers, usually simple, occasionally 2 together on a common peduncle; peduncles 4-8 mm long, pedicels slender, 2.5-5 mm long. Fruit fusiform, 95-100 mm long, c. 5 mm diameter, glabrous.

Taxonomy:

Tylophora linearis was originally described by Forster (1992) from the Temora district in central NSW. The morphological description was based on limited collections of relatively old herbarium specimens. A more accurate account of the morphology was later given by Forster *et al.* (2004) which included several changes to the growth habit and latex colour, and the first description of the fruit.

Distribution and number of populations:

Tylophora linearis occurs from southern Queensland (Glenmorgan district), where it is very rare and poorly known, into central NSW as far south as Temora (Figure 1). Most records are from the Dubbo region with scattered populations also recorded in the Baradine and Barraba districts. At the time of the original description 16 years ago, just four localities were known, but targeted searches in 2003 revealed several additional populations in Goobang National Park (NP), Coolbaggie Nature Reserve (NR), and Eura, Pilliga West, Cumbil and Goonoo State Forests (SF) (Forster *et al.* 2004). The last population (Goonoo SF) has recently been gazetted as a conservation reserve (i.e. Goonoo Community Conservation Area). The total number of confirmed populations now stands at 10 and details of each of these are summarised in Appendix 1.

NSW SCIENTIFIC COMMITTEE

Three records of *T. linearis* listed in the Wildlife Atlas database following a vegetation survey of Goobang NP in the 1990's are now considered to be erroneous (expert advice). They were based on observations of infertile material and vouchers of these have since been redetermined as other species. Searches of these three localities have also failed to find any *T. linearis* (expert advice). Records in the Yeti database from a further three localities are yet to be verified. These include Daffeys Creek SF and the former Bebo SF where only infertile material was observed (expert advice).

NSW SCIENTIFIC COMMITTEE

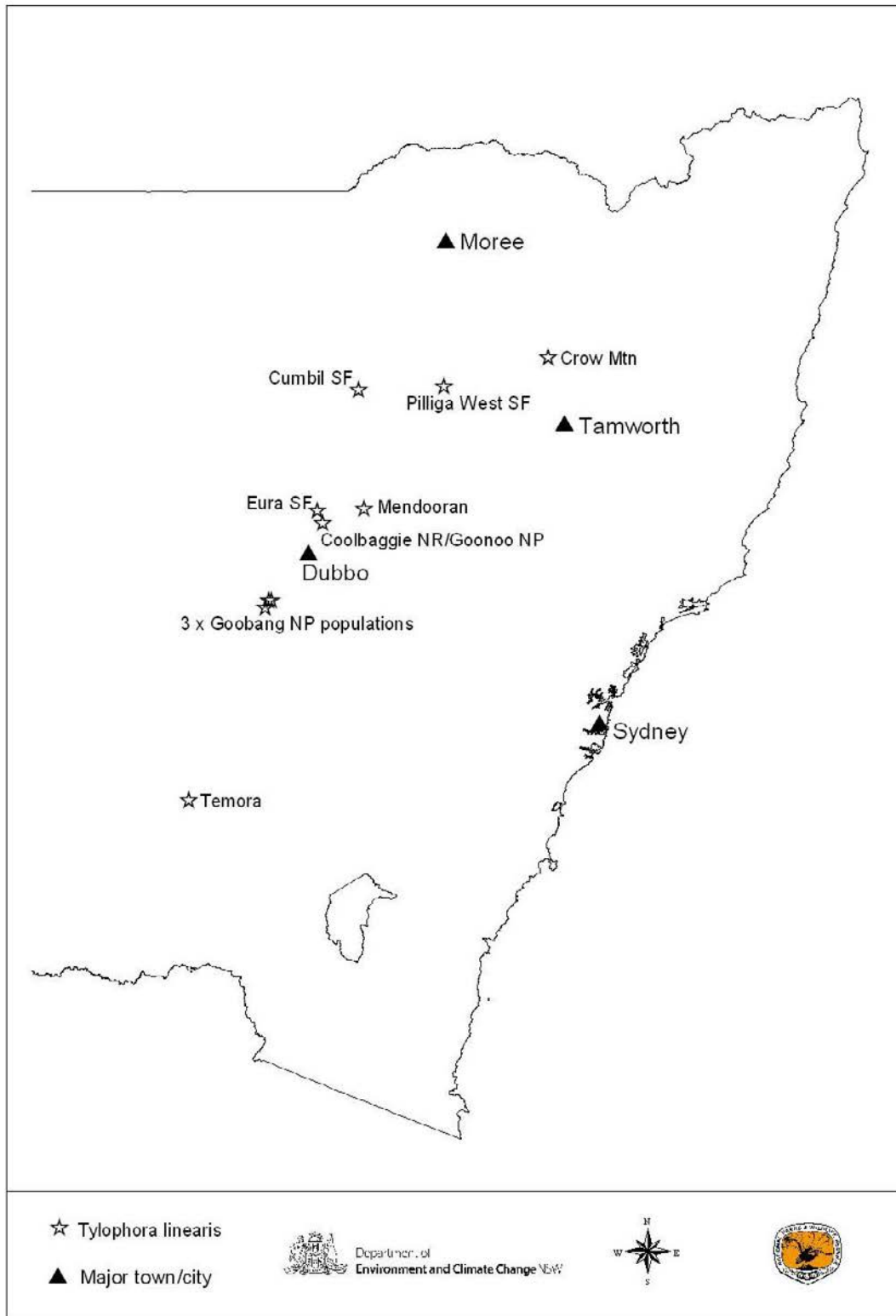


Figure 1: Confirmed distribution of *Tylophora linearis* in the eastern half of NSW.

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Ecology:

Little was known about the ecology of *T. linearis* until the recent field observations in the Dubbo-Baradine area were documented by Forster *et al.* (2004).

Key habitat requirements

The species is now known to occur in dense shrublands occasionally overtopped by *Callitris glaucophylla* and various species of *Eucalyptus*. *Melaleuca uncinata* appears to be the most common shrub in the habitat of the *T. linearis* populations around Dubbo. Most populations occur on the western slopes of NSW with some possibly occurring in flatter terrain on the western plains. Altitudes are generally in the range of 300-400 m asl.

Life history

It is thought that *T. linearis* has the ability to survive fires as it has been observed resprouting from the lower stems within 12 months of a moderately intense wildfire (Forster *et al.* 2004). Flowering cues are unknown but are suspected to be partly related to rainfall. As with most Asclepiads, *T. linearis* is assumed to be insect-pollinated.

Number of mature individuals:

It is almost impossible to accurately estimate the total number of mature individuals of *T. linearis*. The first difficulty is that *T. linearis* usually suckers from beneath the ground and many shoots in close proximity may only represent a few different plants (expert advice). The Cumbil SF population, for example, was recorded to have over 100 shoots within 0.5 ha but it was impossible to determine how many plants this represented without carefully excavating each shoot (expert advice). Many of the shoots were suspected to join up underground from relatively few mature plants. The second difficulty is that not all mature asclepiads flower each year (expert advice) so it is possible that many of the smaller, young shoots recorded by Forster *et al.* (2004) may in fact be of mature individuals that were simply not flowering at the time.

Appendix 1 gives population details for eight of the 10 confirmed populations. Much of this data is in the form of shoot counts so the number of mature individuals remains unclear. The total number of shoots is around 500 although a plausible estimate of the number of individual plants may be about half that. It should be noted, however, that it is believed that there are likely to be many more populations and individuals of *T. linearis* in the Dubbo district than is currently recorded (expert advice). A plausible estimate of the total number of mature individuals of *T. linearis* in NSW would be in excess of 250 and no greater than 500.

Threats:

Currently, there are no apparent threats affecting *T. linearis* (expert advice 2008). Most plants occur in reserved areas and/or state forests for which logging will be excluded from the known populations (expert advice). Feral pigs and goats could potentially affect some of the northern populations (e.g. Pilliga West and Cumbil SFs) although they have not been actually been observed disturbing any of the plants (expert advice). ‘Predation, habitat degradation,

NSW SCIENTIFIC COMMITTEE

competition and disease transmission by Feral Pigs, *Sus scrofa*' and 'Competition and habitat degradation by Feral Goats, *Capra hircus*' are listed as Key Threatening Processes under the TSC Act in NSW.

Extreme fluctuations:

There is currently no evidence available as to whether population numbers of *T. linearis* fluctuate dramatically over time. Plants of *T. linearis* are perennials that are known to survive severe droughts and can resprout after fire, however, so it is likely that there are no extreme fluctuations in the population size of *T. linearis*.

Population reduction and continuing declines:

There is currently insufficient evidence to suggest any reduction or continuing decline in the population numbers of *T. linearis*. It is quite possible that the Type population near Temora has become extinct (expert advice) but it is impossible to tell as the original locality given (i.e. "Temora") is too imprecise. Most known populations occur in shallow, rocky areas on soils of low fertility and this type of habitat has not been altered/destroyed as much as the more favourable environments for agriculture. In recent times (i.e. 1993 onwards) the total number of known plants has increased dramatically as a result of an increasing knowledge base, rather than changes in populations. Overall, the population appears to be stable.

Extent of Occurrence (EOO) & Area of Occupancy (AOO):

The EOO of *T. linearis* in NSW is approximately 65 000 km². This assumes that all of the historically recorded populations are still extant, and the EOO ranges from Temora north to the Queensland border. The AOO of *T. linearis* is approximately 36 km² (based on a 2x2 km grid, the spatial scale of assessment recommended by the IUCN 2008). This is calculated on seven of the populations being well-spaced (i.e. 4 km² each) and the three populations in Goobang NP collectively covering an area of approximately 8 km².

Severe fragmentation:

While there may have been some loss of habitat, *T. linearis* is unlikely to be severely fragmented as the species is known from several large, relatively undisturbed remnants. The cryptic nature of the species, and its preference for growing in areas of little agricultural value, suggest that it may be still present in numerous areas which are currently considered gaps for the species.

References:

- Harden GJ, Williams JB (1992) *Asclepiadaceae*. In 'Flora of New South Wales. Vol. 3.' (Ed. GJ Harden) pp. 525-537. (University of New South Wales Press: Sydney)
- Forster PI (1992) A taxonomic revision of *Tylophora* R.Br. (Asclepiadaceae: Marsdenieae) in Australia. *Australian Systematic Botany* **5**, 29-51.

NSW SCIENTIFIC COMMITTEE

Forster PI, Binns D, Robertson GR (2004) Rediscovery of *Tylophora linearis* P.I.Forst. (Apocynaceae: Asclepiadoideae) from New South Wales, with revision of its conservation status to vulnerable. *Austrobaileya* **6**, 941-947.

Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: www.environment.nsw.gov.au .

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

NSW Scientific Committee (2008) *Tylophora linearis* Review of current information in NSW. February 2008. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.

NSW SCIENTIFIC COMMITTEE

Appendix 1: Location, habitat and population details for all 10 confirmed populations of *Tylophora linearis*.

Pop.	Location	Habitat	Last Survey	Population notes	Info Source
1	Crow Mtn.,		Nov. 1911		NSW Herb. specimen
2	Pilliga West SF,	<i>Euc. pilligaensis</i> - <i>Callitris glaucophylla</i> – <i>Allocasuarina luehmannii</i> woodland with an understorey of <i>Acacia hakeoides</i>	May 2003	About 20 shoots over 0.2 ha.	BRI Herb. specimen Forster <i>et al.</i> (2004)
3	Cumbil SF.,	Regrowth <i>Callitris glaucophylla</i> forest with occasional <i>Euc. melanophloia</i> and <i>E. crebra</i> , plus many shrubs and grasses.	8/5/2003	>100 shoots over an area of about 0.5 ha.	Forster <i>et al.</i> (2004)
4	SW of Mendooran going towards Dubbo.	In association with <i>Acacia hakeoides</i> , <i>A. lineata</i> , <i>Myoporum</i> sp. and <i>Casuarina</i> sp.	Nov. 1969		NSW Herb. specimen
5	Eura SF,	<i>Euc. crebra</i> , <i>E. sideroxylon</i> , <i>Callitris glaucophylla</i> woodland with dense shrubs including <i>Melaleuca uncinata</i> .	23/04/2003	At least 270 shoots in over 150 clumps over 0.5 ha.	Atlas database Forster <i>et al.</i> (2004)
6	Boundary of Coolbaggie NR/Goonoo CCA,	<i>Euc. crebra</i> , <i>E. dumosa</i> woodland with a dense shrub layer including <i>Melaleuca uncinata</i> .	23/05/2003	55+ individuals, mostly mature adults.	Atlas database expert advice.
7	Goobang NP (northern)	<i>Euc. microcarpa</i> woodland with a dense shrub layer including <i>Melaleuca uncinata</i> .	22/05/2003	2	Atlas database expert advice.
8	Goobang NP (central)	<i>Euc. microcarpa</i> woodland with a dense shrub layer including <i>Melaleuca uncinata</i> .	22/05/2003	c. 10 adults with lots of younger plants	Atlas database expert advice.
9	Goobang NP (southern)	<i>Euc. microcarpa</i> woodland with a dense shrub layer including <i>Melaleuca uncinata</i> .	22/05/2003	c. 12	Atlas database expert advice.
10	Temora		Nov. 1915		NSW Herb. specimen

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