



# *Tetratheca glandulosa*

## Smith

The following information is provided to assist authors of Species Impact Statements, development and activity proponents, and determining and consent authorities, who are required to prepare or review assessments of likely impacts on threatened species pursuant to the provisions of the *Environmental Planning and Assessment Act 1979*. These guidelines should be read in conjunction with the NPWS *Information Circular No. 2: Threatened Species Assessment under the EP&A Act: The '8 Part Test' of significance* (November 1996) and the species profile

## Survey

*Tetratheca glandulosa* is inconspicuous when not flowering. An initial assessment of habitat should be made based known habitat requirements. If suitable habitat is present, a targeted survey for the plant should be conducted. Survey for *T. glandulosa* should be conducted during the plant's main flowering period (July-November). Surveys outside of this period may detect occasional flowers, but should not be relied upon as a confident assessment of the plant's presence/absence and/or population size.

*T. glandulosa* is similar in appearance to the more common *T. ericifolia* and the two species are frequently confused. The two species may be distinguished by examining leaf arrangement (whorls of 4-6 in *T. ericifolia* compared to opposite or alternate - rarely whorled - in *T. glandulosa*). Hybrids between *T. glandulosa* and *T. ericifolia* have been recorded.

Potential habitat should be sampled using a "random meander" method (Cropper 1993) by a person(s) experienced in the identification of this and similar species. Set transects should also be conducted - the number of transects will depend on the subject site's size and accessibility - and be representative of the potential

habitat present. Meanders and transects should occur within both open and closed habitats, and dense thickets of vegetation. Any report prepared should map the location(s) of the meanders and transects.

If a new population is discovered, the surveyor should take a GPS reading of the location, make an accurate population count, map the location of the plants in a site sketch, and complete and lodge an Atlas of NSW Wildlife Flora Record Card with the NPWS.

More detailed mapping of the location of the population at a site may be required, depending on the nature and scale of the development. If the size of a population is estimated using statistical extrapolation, the method used to derive the population estimate should be fully detailed.

## Life cycle of the species

The lifecycle of *T. glandulosa* is likely to be disrupted should any of the following occur:

**Habitat loss and degradation:** Habitat clearance destroys individuals and fragments and/or isolates any sub-populations remaining on adjacent land. Edge effects including may result in localised extinctions overtime.

**Fire:** Frequent fire (successive fires <5 years apart) and/or the absence of fire for >20 years are both likely to impact on the lifecycle of the species.

The exclusion of fire from isolated occurrences of *T. glandulosa* may present a threat in the long term as many of the component species of *T. glandulosa* habitat require fire for regeneration (Rose and Fairweather 1997). In addition, areas of native vegetation that have been left unburnt for several decades appear to support only small populations as it is likely to be shaded-out by the dense *Banksia* thickets.

**Seedbank disturbance:** There have been no studies that document the fecundity (quantity of seed produced) of *T. glandulosa*. Soil erosion and siltation are two specific processes that are likely to disrupt the lifecycle of *T. glandulosa* through disturbance to the seedbank by increased runoff. Any disturbance that removes and/or frequently disturbs the soil may effect the soil seedbank.

**Fragmentation:** Fragmentation can lead to the break down of essential ecological processes within ecosystems, with consequences for species such as reduced reproductive success and a subsequent decline in the rate of recruitment.

### **Threatening processes**

”High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition” is a key threatening process listed in the TSC Act 1995 (NSW) which is relevant *T. glandulosa*.

Other identified threats to *T. glandulosa* include habitat loss, habitat modification as a consequence of development adjacent to bushland (in particular, unrestricted vehicle access, increased shading from buildings, intensified runoff, soil erosion and sedimentation, and increased weed invasion), and fire control activities (in particular, frequent hazard reduction activities, track construction and maintenance).

### **Viable local population**

The NPWS defines ‘local population’ for *T. glandulosa* as occurrences of the plant between which it is assumed that there is an exchange of genetic material. Keith et al (1997), uses a 1km “rule of thumb” to define a local population ie all *T. glandulosa* individuals occurring within 1km of the subject site (between which there is likely to be genetic exchange - eg pollen exchange) will constitute the ‘local population’.

*T. glandulosa* is stoloniferous which means that individual plants in a population may be clonal, effectively reducing the apparent size of any given population (Lacey, pers. obs.)

It should be assumed that a particular population is viable regardless of its size,

until further assessment indicates otherwise.

### **Significant area of habitat**

Assessment of significance of habitat for *T. glandulosa* requires consideration of:

- Location of the population in relation to current distributional limits;
- Number and density of individuals occurring at the site and their proximity to other populations in the locality. The NPWS considers that areas of habitat which contain populations greater than 100 plants should be considered significant across the species’ range. Populations that constitute less than 100 plants may also be significant depending on the subregional distribution of other populations in the locality.
- Management potential of the site and the likelihood of ameliorating any existing threatening processes;
- Nature of the impact ie whether the habitat will be permanently removed or temporarily modified.

### **Isolation and fragmentation**

Populations of *T. glandulosa* have been fragmented by vegetation clearance for urban development, agricultural and other landuses throughout its distribution. Continuity of habitat within populations, should be maintained and enhanced as far as possible to facilitate exchange of genetic material.

Within each local population, there may be several subpopulations between which there is suitable habitat to encourage expansion of and interchange between these components. Smaller, isolated subpopulations are likely to require intensive management as they are more vulnerable than populations that occur in larger, continuous and connected vegetation remnants. Management of *T. glandulosa* should aim to maintain the continuity of habitat (ie. native vegetation) between sub-populations. In doing so, this will prevent the creation of new isolated populations which are at greater risk of local extinction.

## Regional distribution

*T. glandulosa* habitat occurs over a relatively contiguous north-south range of approximately 65km in the Sydney Basin Bioregion. The presence of *T. glandulosa* is usually related to the influence of geology (ie. remnant shale cappings over sandstone) and previous management practices (eg. development, fire regimes etc). It is probable that *T. glandulosa* also occurs in areas of inaccessible habitat throughout the reserves from which it is currently known.

## Limit of known distribution

The limits of *T. glandulosa*'s distribution are Sampson's Pass (Yengo NP) in the north; West Pymble (Lane Cove NP) in the south; Ingleside (Pittwater LGA) in the east; and East Kurrajong (Wollemi NP) in the west. Surveys conducted by the NPWS indicate that the species is unlikely to occur in substantial numbers outside of these limits. Historical records place *T. glandulosa* as far south as

Manly, however all of the former populations south of Lane Cove have been destroyed by urban development.

## Adequacy of representation in conservation reserves

*T. glandulosa* is likely to be adequately conserved north of the Hawkesbury River, as there are several large populations in Dharug NP, Parr SRA, Yengo NP and Ourimbah State Forest. Populations south of the Hawkesbury are similarly adequately conserved in Berowra Valley RP, Marramarra NP and Ku-ring-gai NP. Populations in the far south of the species distribution (ie. Ku-ring-gai and Waringah Local Government Areas) and the west of the species distribution (ie. Baulkham Hills Local Government Area) are considered to be inadequately conserved.

## Critical habitat

Critical habitat cannot be declared for *T. glandulosa* as it is not listed in Schedule 1 of the TSC Act 1995 (NSW).

## For further information contact

Threatened Species Unit, Central Directorate, NSW NPWS, PO Box 1967, Hurstville NSW 2220. Phone: 9585 6678 or visit our website at [www.npws.nsw.gov.au](http://www.npws.nsw.gov.au)

## References

- Cropper, S.C. (1993) *Management of Endangered Plants*. CSIRO Australia, Melbourne.
- Keith, D., Chalson, J.M., & Auld, T. D. (1997) *Assessing the status of threatened plants: a new methodology and an application of the vascular flora of NSW*. Final report: Project No. 450. Commonwealth Endangered Species Program, Environment Australia.
- Rose, S. & Fairweather, P.G. (1997) Changes in floristic composition of urban bushland invaded by *Pittosporum undulatum* in northern Sydney, Australia. *Australian Journal of Botany* 45(1): 123-149.

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