



LEGEND

• 1 Recorded species location (point) Subpopulation location reference number * **Confirmed Absence** Extent of Occurrence (EOO) Minimum Convex Polygon Recorded species location (patch) Potential Habitat Highest Likelihood of Occurrence ** Cadastre (hundreds) Cadastre (parcels) Main map: land parcels >1km², Inset: all land parcels shown NT Park/Reserve Contours (Inset) scale 1:25 000

Index (25m intervals) Intermediate (5m intervals)

* Subpopulation location reference number

Details about species population density are described in the table, *Population Status of Typhonium praetermissum*, *November 2015*, in the attached Guidelines for Map Use. ** Highest Likelihood of Occurrence

Represent the <u>most suitable</u> areas for *Typhonium praetermissum* within the land units thought to be most closely associated with the distribution of the species in the Darwin region. These areas represent the margins of the lateritic plateau and associated low hills and rises, generally with lower upper-storey tree cover and more open ground-layer vegetation. Areas were defined using a 200m buffer from edges of suitable land unit polygons. Unsuitable Land Use types were erased to create the final dataset.

Data Source

- <u>Flora Data and Surveys:</u> Flora and Fauna Division, Department of Land Resource Management EcOz Environmental Consultants Pty Ltd 2015
- Potential Habitat: - Rangelands Division, Department of Land Resource Management Greater Darwin Land Units (scale 1:25 000) Finniss Land Units (scale 1:25 000)
- Major, Minor Streams: (scale 1:250 000) - \mathbbm{C} Commonwealth of Australia (Bureau of Meteorology) 2012
- NT Parks and Reserves:
- Cadastre/Roads/Placenames/Contours/Imagery:
- Department of Lands, Planning and Environment Aerial Photography NTLIS WMS Image Server, DLPE

CONTENTS

Page 1 of this document contains an Interactive PDF Map. Use Adobe Reader and open the left panel to review individual map layers. Users are encouraged to hide/show layers to find out more about this species distribution, particularly in the inset maps, where some layers may mask layers underneath. Scroll to Page 2 to read the Guidelines for Map Use.

USE OF MAP

Maps of Threatened Species Distributions in the Greater Darwin Area should be interpreted with the attached Guidelines for Map Use. Scroll to page 2. This map provides the most up to date available information regarding the known distribution and extent of the species at the time of publication. Refer to the <u>NT GOV website</u> to view Threatened Species Information Sheets. Refer to http://eflora.nt.gov.au our online resource for Northern Territory's flora.

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Map compiled: 4/07/2016 ${\sf Caroline}\ {\sf Green}\ {\sf and}\ {\sf Nicholas}\ {\sf Cuff}, {\sf Department}\ {\sf of}\ {\sf Land}\ {\sf Resource}\ {\sf Management}$





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Typhonium praetermissum



Department of Land Resource Management <u>Flora and Fauna Division</u> July 2016, Version 1.0

Threatened Species of the Greater Darwin Region - Typhonium praetermissum

Guidelines for Map Use

Data used to compile this map product is current at the date of publication. Users are encouraged to check the project <u>Metadata record</u> for more recent versions of this map product.

1. Potential habitat mapping is principally derived from historical land resource survey information collected using a range of methods and technologies since the 1970's. Consequently the accuracy of this data at fine scales may be limited by the resolution of the original data.

More detail: Potential habitat mapping is derived from Land Unit Mapping of the Greater Darwin Region and Lower Finniss River at 1:25 000 scale derived using aerial photography interpretation and digitized on a range of mapping bases between the mid-1970's and the 1990's. It should be noted that the potential habitat mapping has an inherent level of spatial inaccuracy associated with the scale and methods of production used to derive the original Land Unit Mapping. These spatial inaccuracies are principally a function of the age of the surveys and the technology available at the time to produce the ORIGINAL maps, the mapping base (topographic or cadastral) on which the original hard-copy mapping was produced and the process of transferring these products to digital media at a later date. The scale of the original mapping was 1:25 000 and enlarging the mapping beyond this scale <u>does not</u> provide further detail. Site based assessment at an appropriate intensity should accompany use of this map data for all areas.

2. Potential habitat data displayed on the map is limited by the currency of the original layers used to derived the extent of potential habitat. Extent of remaining potential habitat is current to 2008.

More detail: Current understanding of the landscape level ecology of *Typhonium praetermissum* and the distribution of known records suggests a strong association with a suite of Land Units of the upland lateritic plateaux and low hills typical of the region. These particular land units have been used as a first level criterion for the identification of potential habitat. Areas of potential habitat were refined by intersecting the most up-to-date land-use information to exclude areas of intensive land-use and/or cleared areas now unlikely to support viable potential habitat for the species. Data on the extent of remaining potential habitat is current to 2008 and it is likely that the area of remaining intact viable habitat is less than that indicated on the map.

3. The map should be used as a guide to identifying the probability that the species is present in any particular area and not a definitive assessment of distribution. The map can be used to assess the risk associated with a particular activity at a location and the likelihood that the activity may result in a significant impact upon a population of a threatened species.

More detail: The land units identified as potential habitat on the map represent those land units <u>most likely</u> to support populations of *T. praetermissum* based on current ecological knowledge at the date of publication. They <u>do not</u> identify all areas where the species may occur and conversely

T. praetermissum is <u>highly unlikely</u> to occur in all the areas identified on the map as potential habitat. The map should be used as a guide to identifying the probability that the species is present in any particular area <u>and not a definitive assessment</u> of distribution. The map can be used to assess the risk associated with a particular activity at a location and the likelihood that the activity may result in a significant impact upon a population of a threatened species.

4. Highest likelihood of occurrence of *Typhonium praetermissum* appear to be around the margins of the most suitable potential habitat. These areas are displayed on the map as a 200 m green hatched zone overlying the boundaries of the suitable habitat. Therefore, inherent inaccuracies in the mapping data, discussed previously, may result in known locations of Typhonium praetermissum falling outside of the potential and most suitable habitat areas.

More detail: At a finer spatial resolution, current understanding of the site level distribution of *T. praetermissum* indicates that the occupancy envelope for the taxon appears to be centred on the transitional margins of the potential habitat and into adjacent land units. Anecdotal evidence suggests that this is possibly related to the micro-scale topographic and soil properties associated with the transition from more elevated deeply weathered erosional landforms into adjacent depositional ones. Therefore, a buffer (200 m) was applied to the boundaries of the potential habitat polygons to indicate the areas on the ground where models and field data suggest there is the <u>highest likelihood</u> of encountering *T. praetermissum* in the field. Consequently, occurrences of T. praetermissum, may fall <u>outside</u> the mapped areas modelled to most likely support the species as a result of issues associated with inaccuracies in the potential habitat mapping and site-scale variations in habitat conditions and/or error associated with the positional accuracy of the species record. As with any natural resource spatial product, it is recommended that this information be used as a guide to the most likely areas in which *T. praetermissum* may be encountered and should be accompanied by appropriately timed field survey to clarify the presence or absence of the species from a particular location more definitively.

5. Confirmed absence locations represent detailed floristic survey sites sampled at an appropriate time of year where *Typhonium praetermissum* was not recorded.

More detail: Targeted search locations (absence) data are full-floristic sites sampled within the greater Darwin region over a number of years between November and March. These sites represent locations sampled at an appropriate time of year where *T. praetermissum* was not recorded. Surveyed sites were largely sampled using a standardised methodology (Brocklehurst et al. 2007) by experienced NTG botanical staff and represent the best available information on the known distribution of the taxon within the Darwin Region. This does not definitively imply that the species was not present at the location given the cryptic life history of the taxon and the seasonal conditions at the time of sampling. However, it can be considered to represent the temporal 'window' of maximum-likelihood that the species would have been detected if it was present at the time of sampling.

6. Occurrence locations (point data) of *T. praetermissum* represent vouchered individual specimens or discrete locations at which the species has been recorded in the field.

Occurrence locations (patch data) represents the boundary of a defined area in which the species has been recorded and some measure of abundance of density calculated. These two types of data are not mutually exclusive and where they overlap will be likely to represent targeted survey efforts conducted in different years and with different methodologies in the same area.

7. Mapping reliability (Confidence Rating) has been assigned to areas in which varying intensities of field assessment have been undertaken or are considered to represent suitable habitat for the species. These generically range from 'High' being high-intensity,

targeted, species specific surveys or areas in which confirmed sub-populations are known to occur through to 'Low' where reconnaissance level or incidental surveys have been undertaken or habitat is considered unsuitable.

More detail: In the broader regional context (represented on the location map) areas within the greater Darwin region where appropriately timed general surveys have not encountered the species are considered a moderately reliable indication of species presence/absence based on the intensity of field data collection.

At the finer scale within the Extent of Occurrence (EoO – represented by the inset maps), the confidence levels have been combined with the potentially suitable areas (i.e. highest likelihood of occurrence) to give an indication of the confidence in not only the level of survey undertaken, and therefore, the presence/absence of the species, but also the presence of habitat suitable for the species. Areas where targeted surveys have been undertaken are considered highly reliable, whereas areas of low reliability within the EoO are indicative of unsuitable habitat (e.g. wetlands or built up areas)

References

Name	More Information
Mapped Distribution for Threatened Species of the Greater Darwin Region Project description, metadata record	• <u>Metadata</u>
Westaway, J. and Cowie, I. (2012) <i>Threatened Species of the Northern Territory Typhonium praetermissum</i> Department of Land Resource Management, Palmerston. (sourced from <u>Flora NT website</u>)	<u>Web</u> <u>Information</u> <u>sheet</u>
 Brocklehurst, P., Lewis, D., Napier, D. and Lynch, D. (2007) Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping. Technical Report No. 02/2007D, Department of Natural Resources, Environment and the Arts, Palmerston Northern Territory. 	<u>Report (NT</u> <u>Library)</u>
Land Unit Mapping of the Greater Darwin Region (survey scale 1:25,000) This is a compilation of 16 land resource surveys (from 1979 to 1986) Report links are noted in the Metadata record.	• <u>Metadata</u>
 Hill J.V., Fett D., Perrett F. (2002) (survey scale 1:25,000) <i>Land Resources of the Lower Finniss</i> Technical Report 19/2002, Natural Systems Division, Department of Infrastructure Planning and Environment, NT. 	 <u>Metadata</u> <u>Report (NT</u> <u>Library)</u>

Population status of *Typhonium praetermissum* (November 2015)

Sub-population Reference no	Status	Size	Trend	Pressures	Uncertainties	Land Unit	Current Knowledge State
1 Gunn Point	Extant	< 100 individuals	Unknown presume d stable	Unknown likely none immediate	Current trend of sub-population.	3b (adjacent 3a)	Located and surveyed in 2016 wet season Identity verified Further work required at the locality to more definitively identify the extent of the sub- population.
2 Karama	Extant	c. 15 individuals	Unknown	Management Weed incursion	Geocode of location is not precise. Extent and size of sub-population requires further confirmation.	Зb	Relocated in 2014/15 wet season Gamba grass in close proximity to sub-population (EcOZ, 2015)
3a Palmerston	Extant	< 100 individuals	Declining	Development Weed incursion	Medium to long term security of sub- population uncertain. Documented decline since 2005 – further clarification of trends required. Evidence of invasive species (Gamba/Mission) incursion on site – management regime uncertain.	3b	Well documented but little ownership or recognition of significance. Documented decline from >50 to < 20 individuals between 2005 and 2015 primarily due to habitat destruction. Suitable habitat area is likely to have been further reduced by 2016 due to development. Weed management issues contributing to declines with ground-layer density increasing through the incursion of Mission and Gamba Grass onto the site.
3b Holtze Area	Extant	>100 individuals; patches vary	Currently stable	Pending development	Mechanisms for conservation on-site given potential development unknown at this point in time. Extent of population likely to be larger than currently known.	Зс	Identity verified Well documented but high level of uncertainty over long-term security. Single largest known sub-population at this point in time (EcOZ, 2015; HOLTZE, November 2015). Further work required at the locality to more definitively identify the extent of the sub- population.
4 Virginia	Unknown	< 10 individuals	Unknown	Unknown	Extent and status of the sub- population unknown.	2a1	_
5 Mira Road	Extant?	< 10 individuals	Unknown	Development?	Current status of sub-population. Longer-term security and viability of sub-population.	2a1	Only one individual confirmed during inspection for subdivision (EcOZ, 2015). Current status of sub-population unknown.

Sub-population Reference no	Status	Size	Trend	Pressures	Uncertainties	Land Unit	Current Knowledge State
6 Noonamah North	Extant	>100 individuals; patches vary	Unknown	Pending development	Mechanisms for conservation on-site given potential development unknown at this point in time.	3с	Well documented Identity verified Large sub-population, uncertain if connected with Noonamah South?
7 Noonamah South	Extant	<100 individuals; patches vary	Unknown	Pending development	Mechanisms for conservation on-site given potential development unknown at this point in time.	Зb	Well documented Identity verified Large sub-population, uncertain if connected with Noonamah North?
8 Raft Point	Extant	< 10 individuals	Unknown	Unknown - likely none immediate	Current trend of sub-population. Longer-term security and viability of sub-population	1c (adjacent 2a1)	Located and surveyed in 2016 wet season Identity verified Further work required at the locality to more definitively identify the extent of the sub- population. Ecological relations with currently unnamed species of Typhonium on Cox Peninsula requires further investigation

Extent of Occurrence ¹	(excluding ocean)
1 513 km ²	Total EoO;
291 km²	Potential habitat within currently known extent; &
182 km ²	Potential habitat with highest likelihood of occurrence within the currently known extent. However, field evidence suggests only a small portion of this will be actually suitable potential habitat (e.g. green hatched area on Insets which are a +/-200 m buffer from the escarpment edge).

Area of Occupancy¹ **22** Number of 2 km² cells within which mapped records occur

Estimated Area of Occupancy at Reference Scale: 88 km²

¹ International Union for Conservation of Nature (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. <u>http://www.iucnredlist.org/documents/RedListGuidelines.pdf</u>