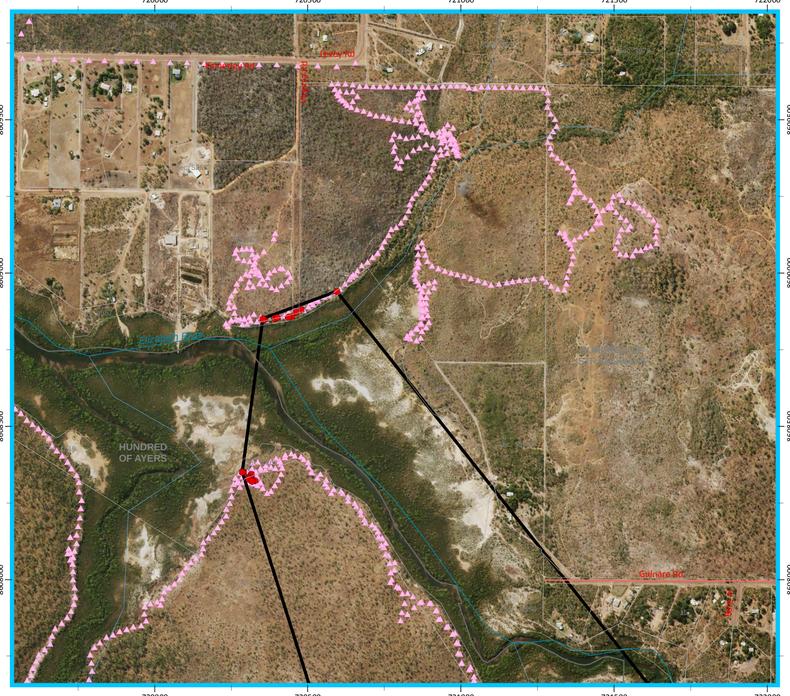
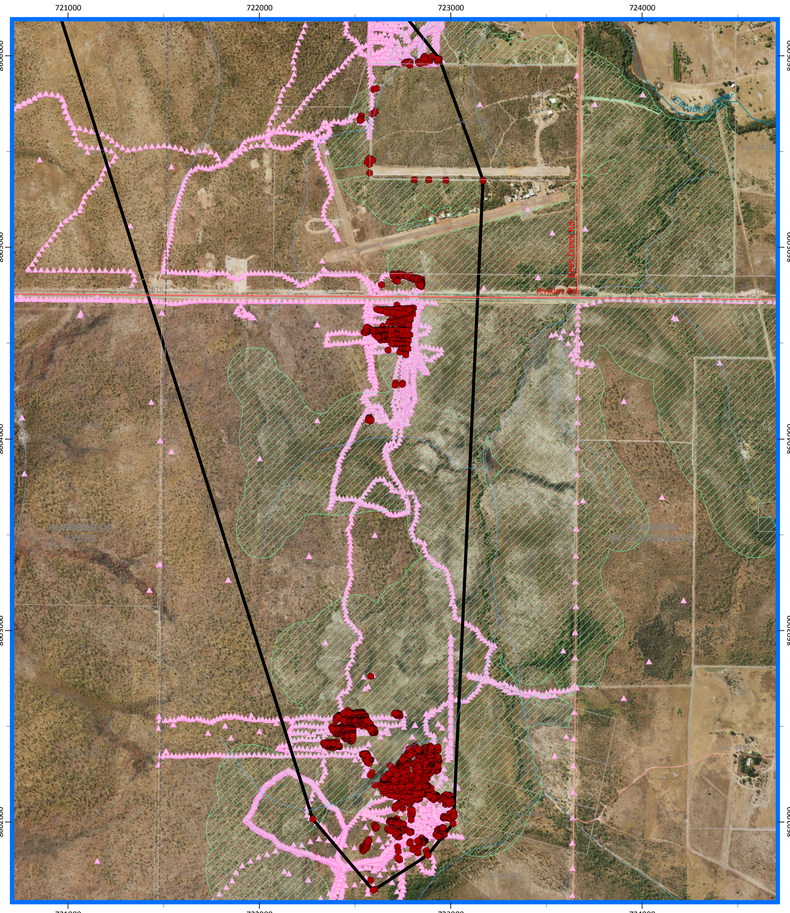
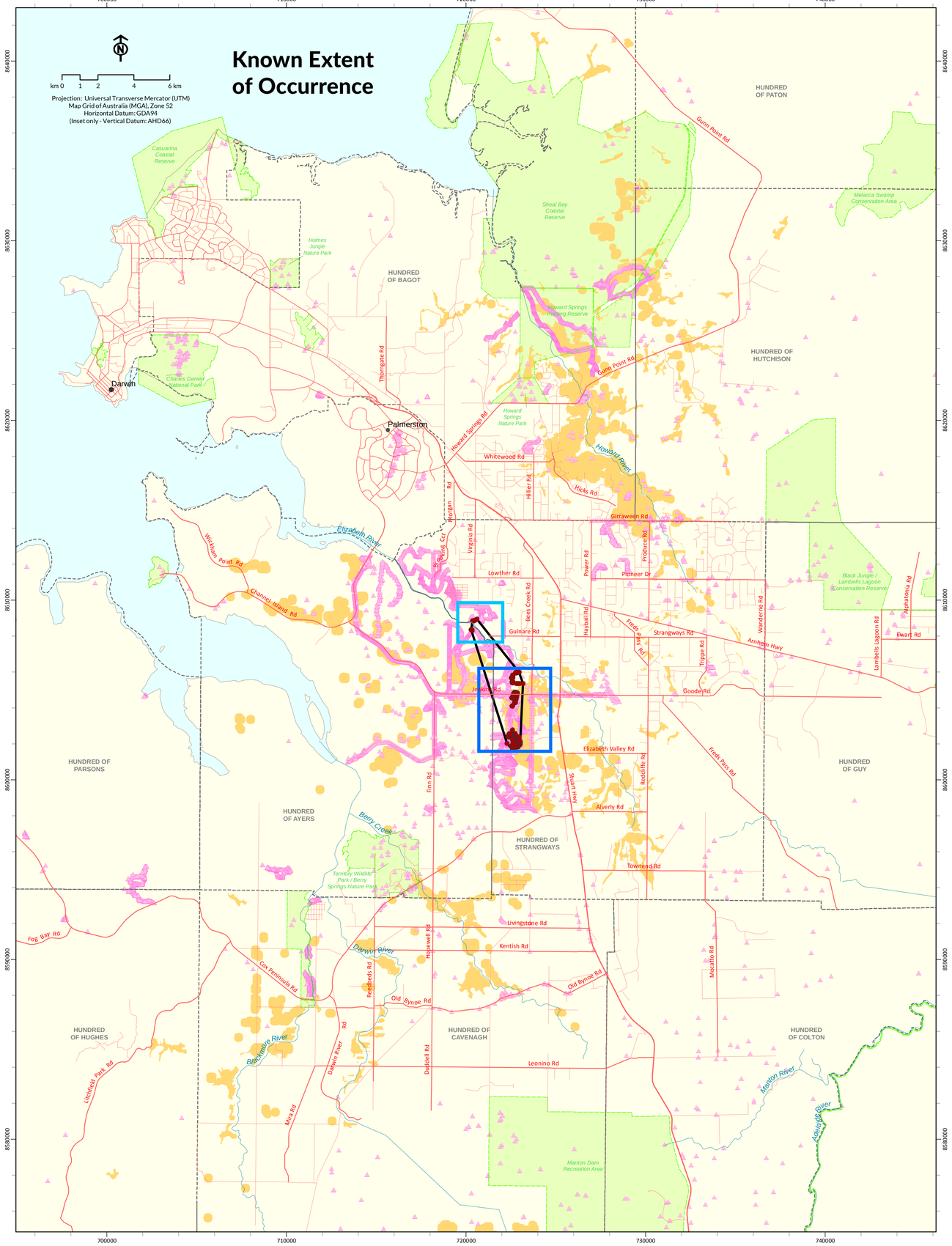
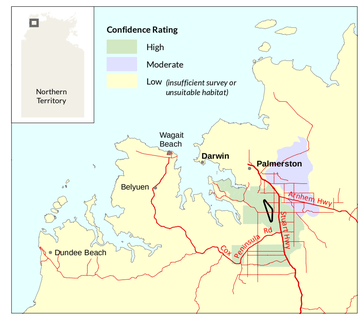


Inset - Intensive Search Area: Virginia



Inset - Intensive Search Area: Amys Creek





Broad Mapping Reliability

LEGEND

- Recorded species location (point)
- Confirmed Absence
- Extent of Occurrence (EOO) *Minimum Convex Polygon*
- Potential Habitat
- Highest Likelihood of Occurrence **
- Catchment
- NT Park/Reserve
- Cadastre (hundreds)
- Cadastre (parcels) *Main map: land parcels >1km², Inset: all land parcels shown*

Contours (Inset) scale 1:25 000
- Index (25m intervals)
- Intermediate (5m intervals)

**** Highest Likelihood of Occurrence**

Represent the most suitable areas for *Atalaya brevialata* within Blackmore, Elizabeth and Howard River catchments and thought to represent the largest possible area within which the species could conceivably be encountered (based on current collection data and ecological knowledge). These suitable areas have been determined based on expert interpretation of existing land resource information (Greater Darwin Land Units) to identify the land units with the highest likelihood of supporting suitable habitat and ancillary data provided by the TERN Soil Grid of Australia. This included:

- Valley Bottom Flatness Index – an index of topographic landscape position derived from the Shuttle Radar Topographic Mission 3" digital elevation model;
- Radiometric measure of Thorium;
- Modelled percent sand in the soil surface; &
- Silica concentration – based on interpolated surface lithology information.

The areas were delineated using a 200m buffer from edges of land identified as having the combination of all these characteristics to account for the coarse to moderate resolution of the input data. Unsuitable Land Use types were erased to create the final dataset.

Data Source

Flora Data and Surveys:
- Flora and Fauna Division, Department of Land Resource Management

Potential Habitat:
- Rangelands Division, Department of Land Resource Management
  Greater Darwin Land Units (scale 1:25 000)

Catchments:
- Water Resources Division, Department of Land Resource Management

Major, Minor Streams: (scale 1:250 000)
- © Commonwealth of Australia (Bureau of Meteorology) 2012

NT Parks and Reserves:
- Parks and Wildlife Commission of the Northern Territory

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 NT GOV website to view Threatened Species Information Sheets.

Refer to http://eflora.nt.gov.au our online resource for Northern Territory's flora.

Map compiled: 5/07/2016
Caroline Green and Nicholas Cuff, Department of Land Resource Management

NORTHERN TERRITORY GOVERNMENT

For further information, please contact;
Flora and Fauna Division
Department of Land Resource Management (DLRM)
CSIRO Complex, 564 Vanderlin Drive, Berrimah NT 0828
Web: https://landresources.nt.gov.au/

Threatened Species Distribution in the Greater Darwin Region

Atalaya brevialata

Department of Land Resource Management
Flora and Fauna Division
July 2016, Version 1.0

back to map

Threatened Species of the Greater Darwin Region – *Atalaya brevialata*

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 Metadata record for more recent versions of this map product.

1. **Potential habitat mapping** is a combination of historical land resource survey information, modelled terrain and soil property information and airborne geophysics data supplied by CSIIRO (via the TERN Soil Grid of Australia). Land resource information was collected using a range of methods and technologies since the 1970's. Similarly, the soil property, terrain and airborne geophysics data are provided at a range of scales between 30 and 90m ground resolution. Consequently, the accuracy of this data at fine scales may be limited by the resolution of the original data. Site based assessment at an appropriate intensity should accompany use of this map data for all areas

   More detail: Current understanding of the landscape level ecology of *Atalaya brevialata* and the distribution of known records suggests a strong association with a suite of Land Units that mark the transition from the upland lateritic plateaux into adjacent sand-dominated drainage systems. These particular land units have been used as a first level criterion for the identification of potential habitat. Potential habitat mapping incorporates Land Unit Mapping of the Greater Darwin Region 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 does not provide further detail.

   A number of parameters derived from the TERN Soil Grid of Australia project were used to identify areas of suitable terrain or soil surface properties that field evidence suggests are important determinants of *A. brevialata* site occupancy. These included:

   - Multi-resolution Valley Bottom Flatness (MrVBF) index, a topographic index designed to identify areas of deposited material at the resolution of approximately 1 arc-second (30 m resolution) from the NASA Shuttle Radar Topographic Mission digital elevation model (https://data.csiro.au/dap/landingpage?pid=csiro%3A5681);
   - Thorium count (ppm) from airborne geophysical survey collected at approximately 3 arc-second (90 m resolution);
   - Modelled surface (0-5 cm depth) sand fraction (200 µm - 2 mm mass fraction of the less than 2 mm soil material determined using the pipette method) modelled at approximately 3 arc-second (90 m resolution); and

- Inferred percent Silica content derived at approximately 3 arc-second (90 m resolution) from Lithological mapping.

2. **The extent of potential habitat displayed on the map** is current at the publication date of the latest available land use data for the region.

   More detail: Areas of remaining potential habitat were identified 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 identified as potential habitat on the map represents that most likely to support populations of *Atalaya brevialata* based on current ecological knowledge at the date of publication. They do not identify all areas where the species may occur and conversely *A. brevialata* is highly unlikely 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 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.

4. **Highest likelihood of occurrence** of *Atalaya brevialata* appear to be around the margins of potential habitat. These suitable areas are displayed on the map as a hatched zone overlying land identified from the potential habitat mapping as having the combination of features with the highest likelihood of supporting the species (i.e. suitable land unit, high silica values, high proportion of sand in surface soil horizon, low thorium count, high MrVBF value).

   These areas were buffered by 200 m to capture the transitional edges at the margins of the most suitable potential habitat where species is known to occur. Therefore, inherent inaccuracies in the mapping data, discussed previously, may result in known locations of *Atalaya brevialata* 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 *A. brevialata* indicates that the occupancy envelope for the taxon appears to be centred on the transitional margins of the potential habitat and micro-scale elevations in the sandy drainage depressions where site drainage is improved. 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 highest likelihood of encountering *A. brevialata*. Consequently, occurrences of *A. brevialata*, may fall outside 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 *A. brevialata* 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 *Atalaya brevialata* was not recorded.

More detail: Targeted search locations (absence) data are full-floristic sites sampled within the greater Darwin region over a number of decades as part of separate survey and mapping projects. These sites represent locations sampled at an appropriate time of year where *A. brevialata* 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 seasonal conditions at the time of sampling. However, these sites can be considered to represent the maximum-likelihood that the species would have been detected if it was present at the time of sampling.

6. **Occurrence locations (point data)** of *Atalaya brevialata* represent vouchered individual specimens or discrete locations at which the species has been recorded in the field. Records are current as of the publication date (June 2016).

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	• Metadata
Cowie I. and Wightman G.M. Notes about *Atalaya brevialata* (sourced from Flora NT website)	• Web information sheet
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.	• Report (NT Library)
Land Unit Mapping of the Greater Darwin Region (scale 1:25,000) This is a compilation of 16 land resource surveys (from 1979 to 1986) Report links noted in Metadata	• Metadata

Population status of *Atalaya brevialata* (July 2016)

Sub-population Reference no	***Status***	***Size***	***Trend***	***Pressures***	***Uncertainties***	***Current Knowledge State***
Virginia	Extant	< 100 individuals	Stable?	Potential development Management Weed incursion	Full extent of sub-population may require further clarification with additional survey potentially likely to identify additional individuals north of the Elizabeth River in similar suitable habitat. Longer-term security and viability of sub-population.	Sub-population occupies short lower slopes between the gently undulating lateritic plain and the marine plain.
Amys Creek	Extant	>2500 individuals	Stable	Potential development Weed incursion	Sub-population located on freehold land with only a small proportion of the global population located on Crown land and none within existing reserves. Ongoing uncertainty remains regarding the conservation of the sub-population in the longer term.	Largest subpopulation currently known. Population status and ecology relatively well understood. Numbers appear to be stable over duration of short term field survey within the known population. Appears to respond well after fire (resprouting species) with flowering and fruiting shortly after fire in build-up/early wet season. Plants appear to occupy the margins of the gently undulating lateritic plains adjacent to areas of seasonally saturated silica-rich nutrient poor sandplains.

Extent of Occurrence [1] (excluding ocean)

- **9 km^2** Currently known total EoO;
- **3.75 km^2** Conservatively estimated potential habitat within currently known extent; &
- **2.5 km^2** Potential habitat with highest likelihood of occurrence within the currently known extent.

Area of Occupancy: 5 Number of 2 km^2 cells within which mapped records occur

Estimated Area of Occupancy at Reference Scale: 20 km^2

Estimated Area of occupancy at Ecological Scale (50m Grid): 0.4 km^2

[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. http://www.iucnredlist.org/documents/RedListGuidelines.pdf