



Termitaria as Regolith and Landscape Attributes: a case study from Titania Au-Prospect, Northern Territory

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CRCLEME

The Tanami Landscape

TERMITES!!!



Termites – Soil Engineers of the Tanami!

A photograph of a desert landscape featuring a large, conical termite mound made of reddish-brown soil. A person wearing a hat, sunglasses, and a high-visibility vest stands to the left of the mound for scale. The background shows sparse desert vegetation and a clear blue sky. A semi-transparent grey box with yellow text is overlaid on the mound.

**Problem?! Or
possible indicator
of past
landscapes?**

Aims of Presentation

Key research issues → What do we want to know?

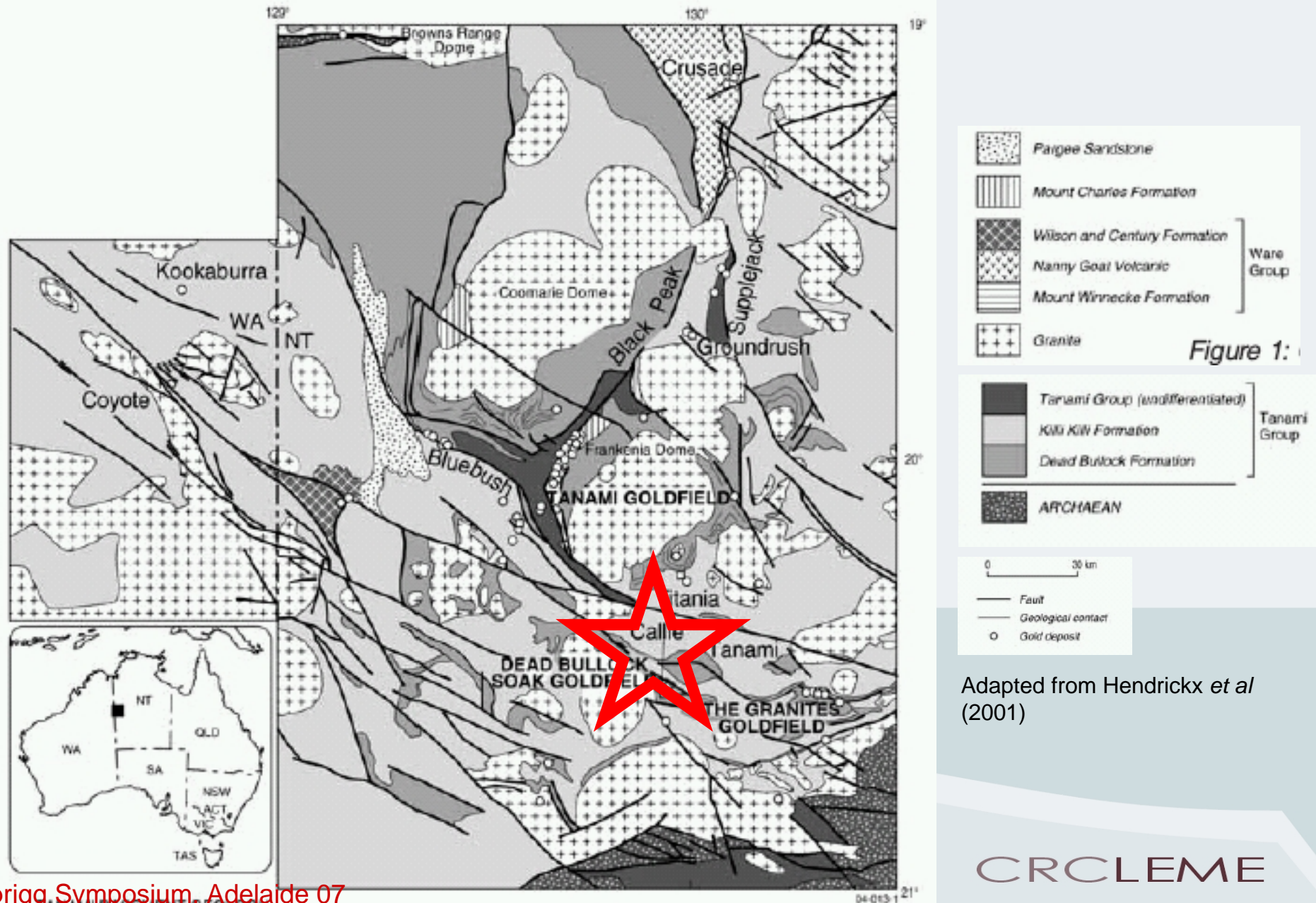
QUESTION – How can we relate the spatial distribution of termitaria to the subsurface geology?

FOCUS – Interaction of mound-building termite species with specific landscape settings.

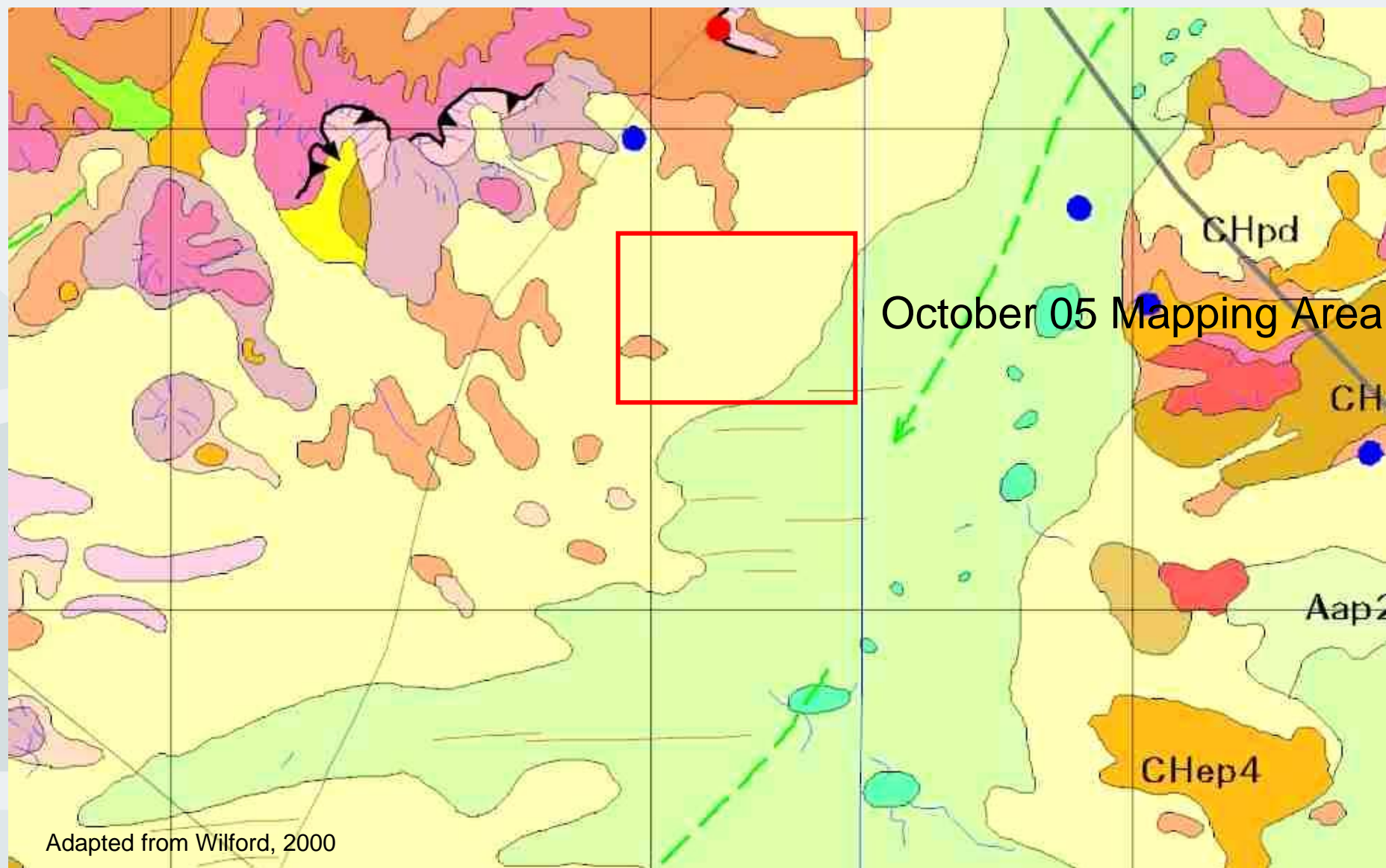
AIM – Show that termitaria may be used as palaeosurface indicators.



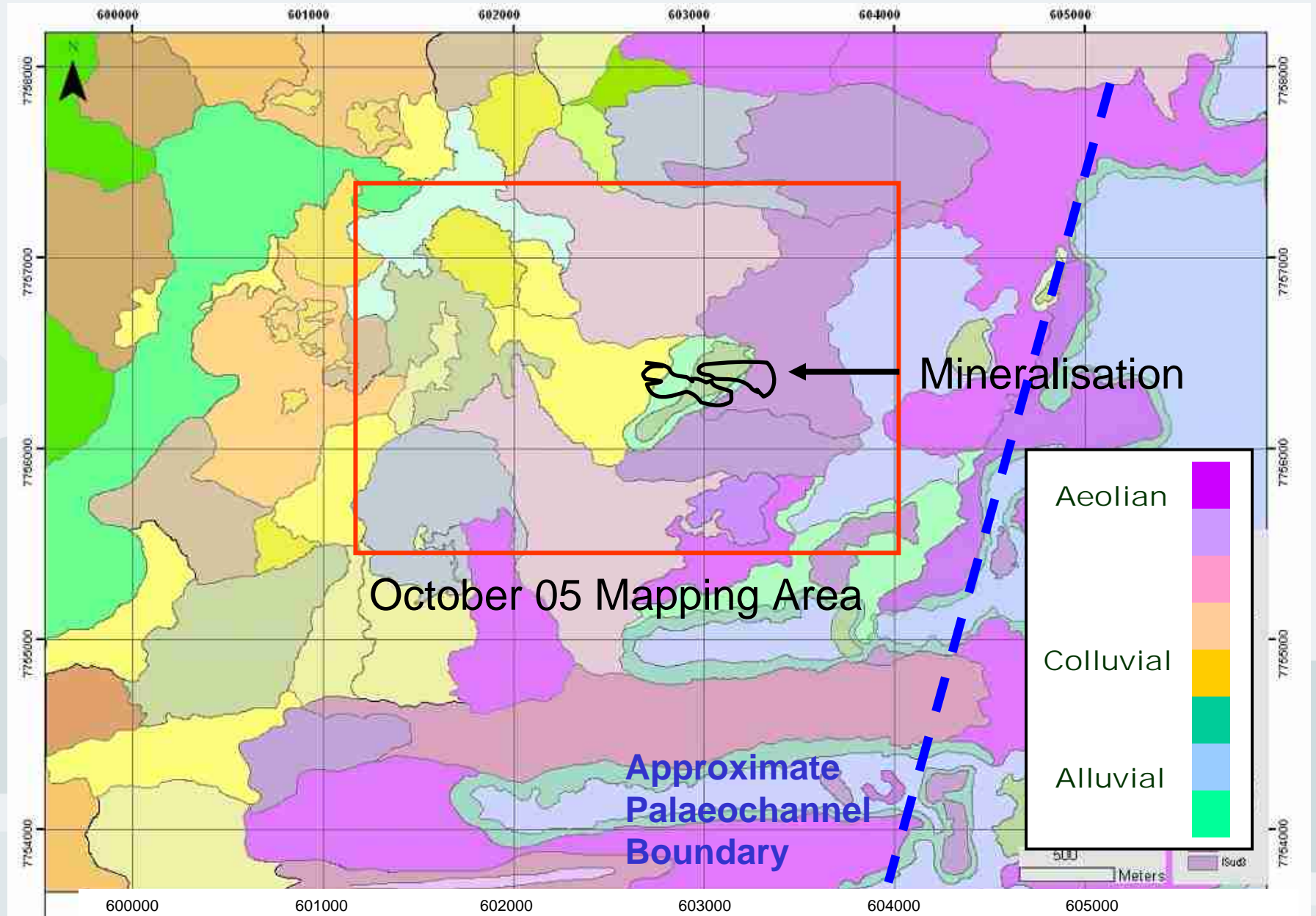
Location & Geology of the Titania Prospect



Regional Regolith Geology



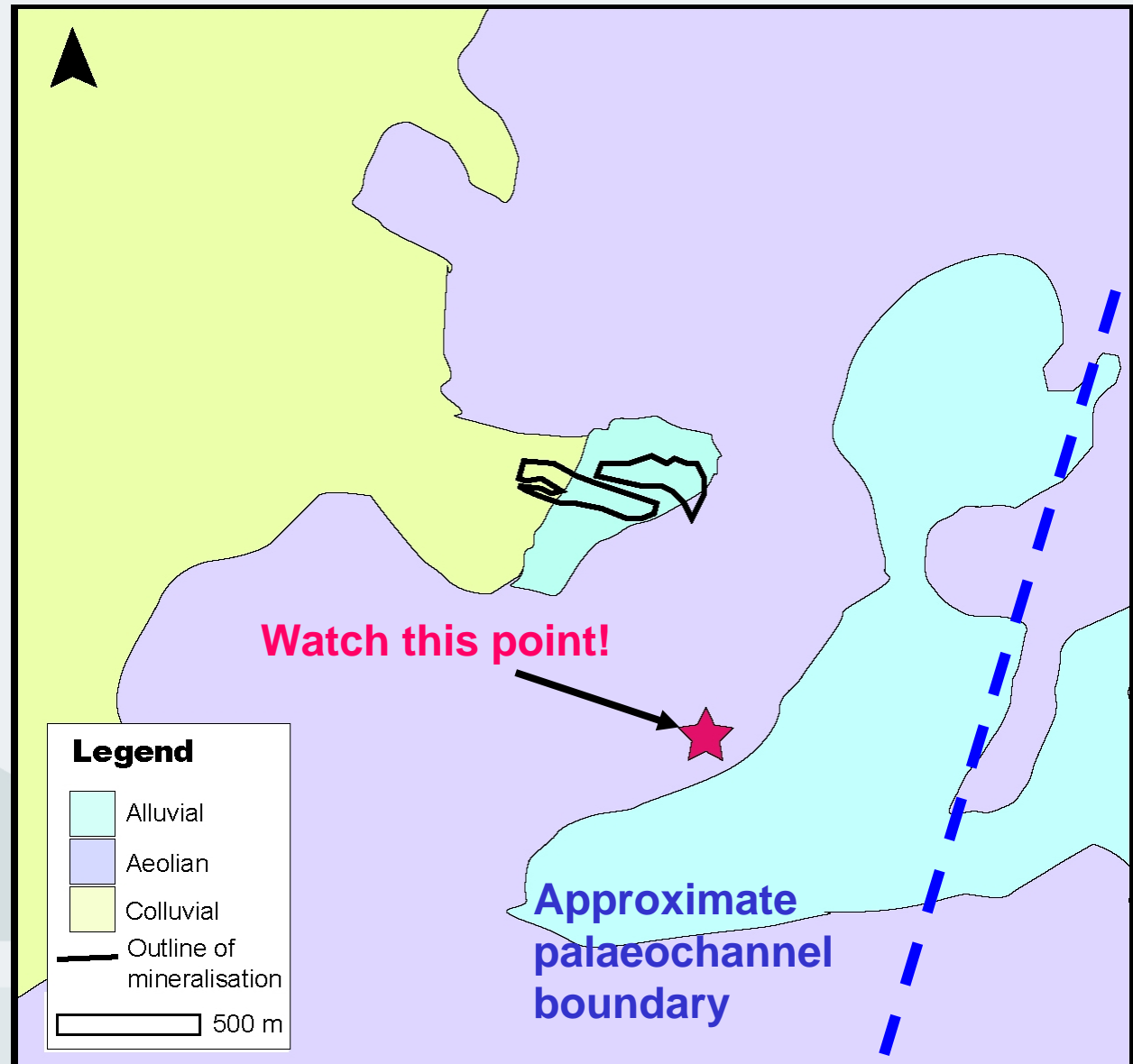
Regolith Geology of the Titania Prospect



Simplified Regolith Geology

Main points to consider:

- 3 main types regolith-landform units; aeolian, alluvial and colluvial.
- Mineralisation occurs close to palaeochannel boundary.
- The termites featured at Titania DO have constrained landscape preferences...





Regolith-landform Attributes

Termitaria have a long residence time in the landscape (Williams, 1968; Lee & Wood, 1971)

Regolith profiles are inverted through the bioturbating actions of termitaria and other soil organisms (Le Roux *et al*, 1991) – direct input into local surficial materials

Potential has been shown previously (Petts & Hill, 2005) for termitaria as indicators of regolith-landform setting

→ *N. triodiae*. - alluvial settings

→ *D. rubriceps* and *Amitermes* spp. - aeolian settings.



Sprigg Sym





Common Mound-building Termites at Titania



Nasutitermes triodiae

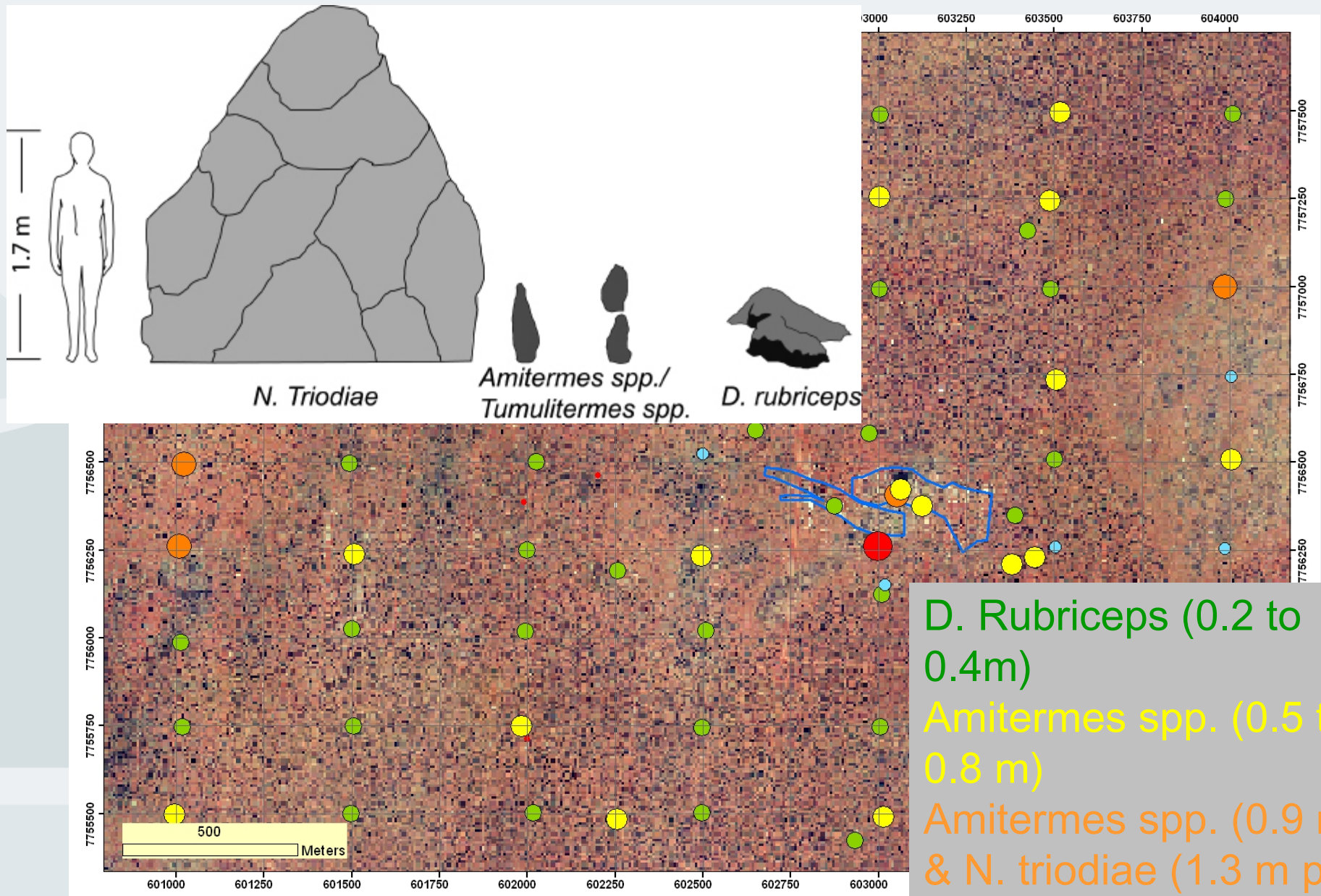


Drepanotermes rubriceps

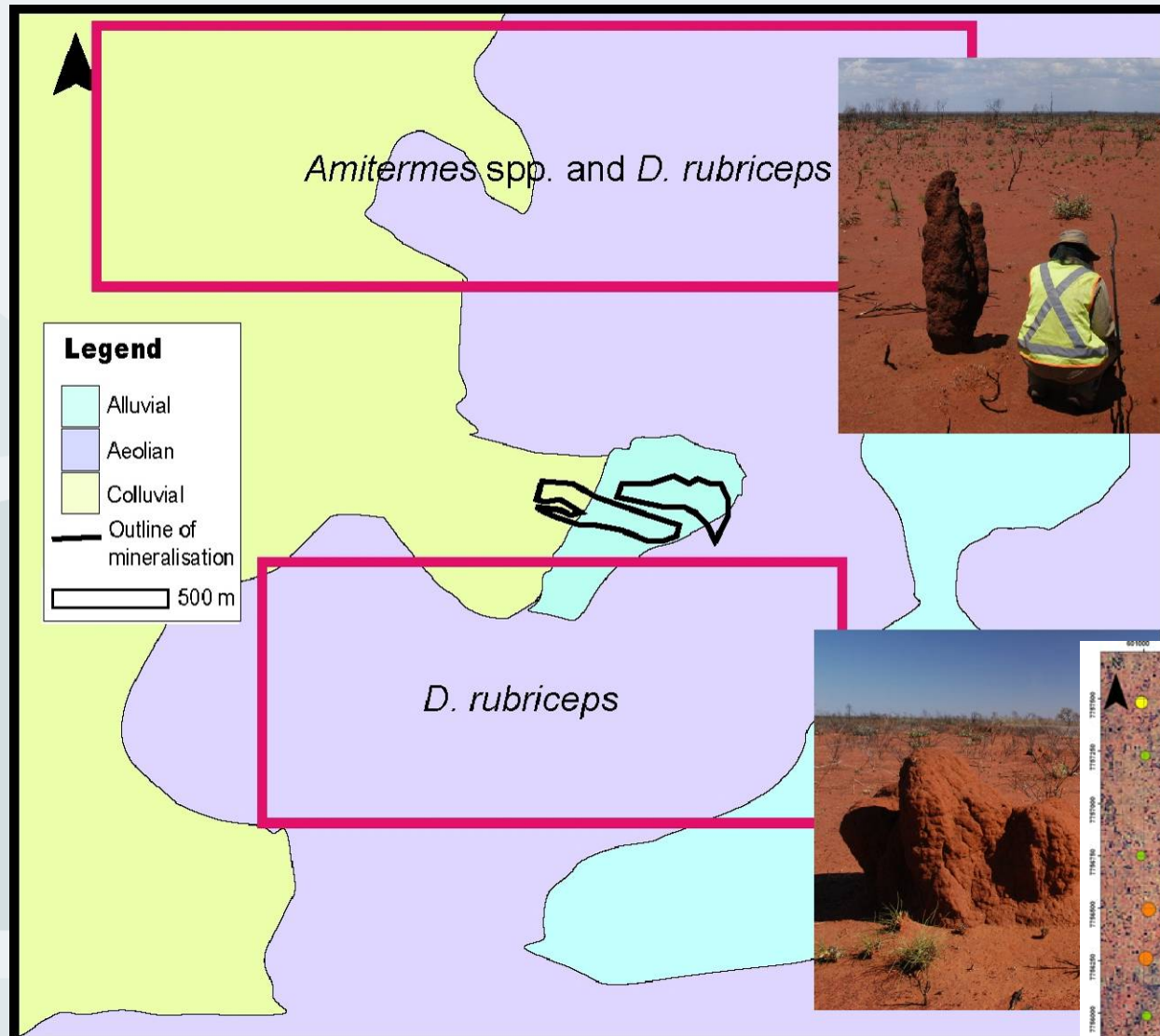


Amitermes spp.

Spatial Distribution of Termitaria

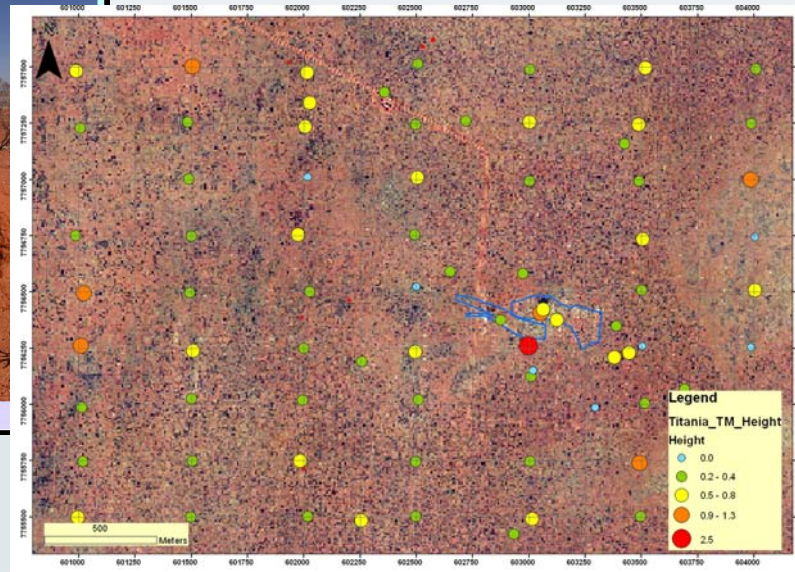


Regolith-landform associations



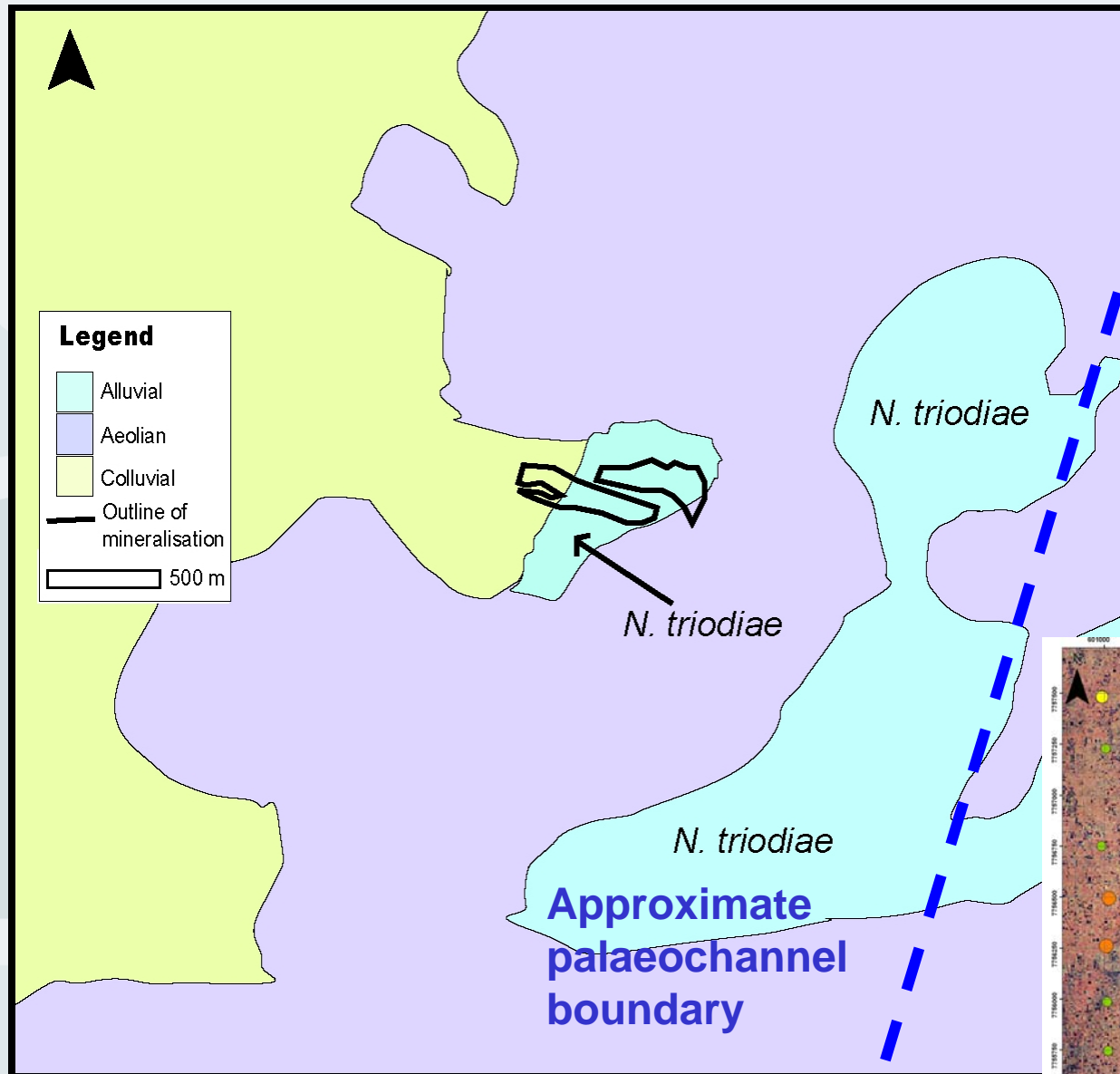
Amitermes spp.
PREFER mixed
grasslands (both
alluvial and aeolian
regolith-landscape
settings)

D. rubriceps
PREFER well-
drained, sandy soils



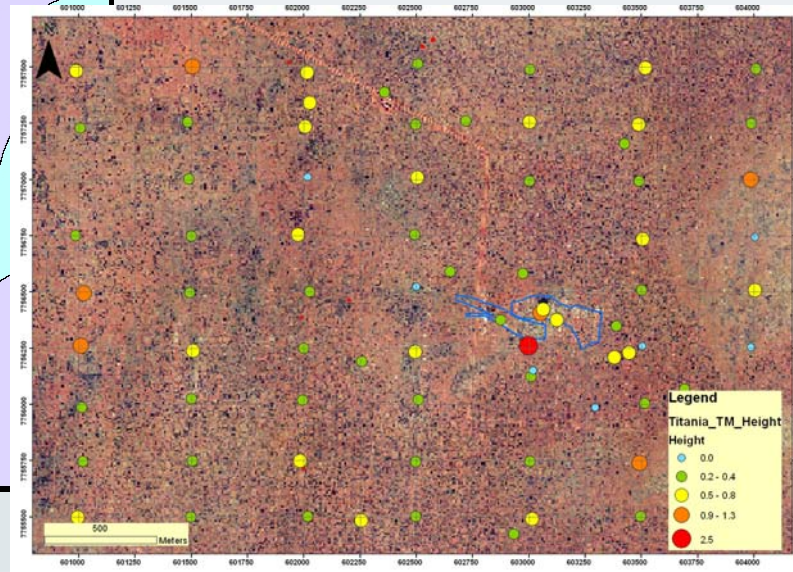


Regolith-landform associations

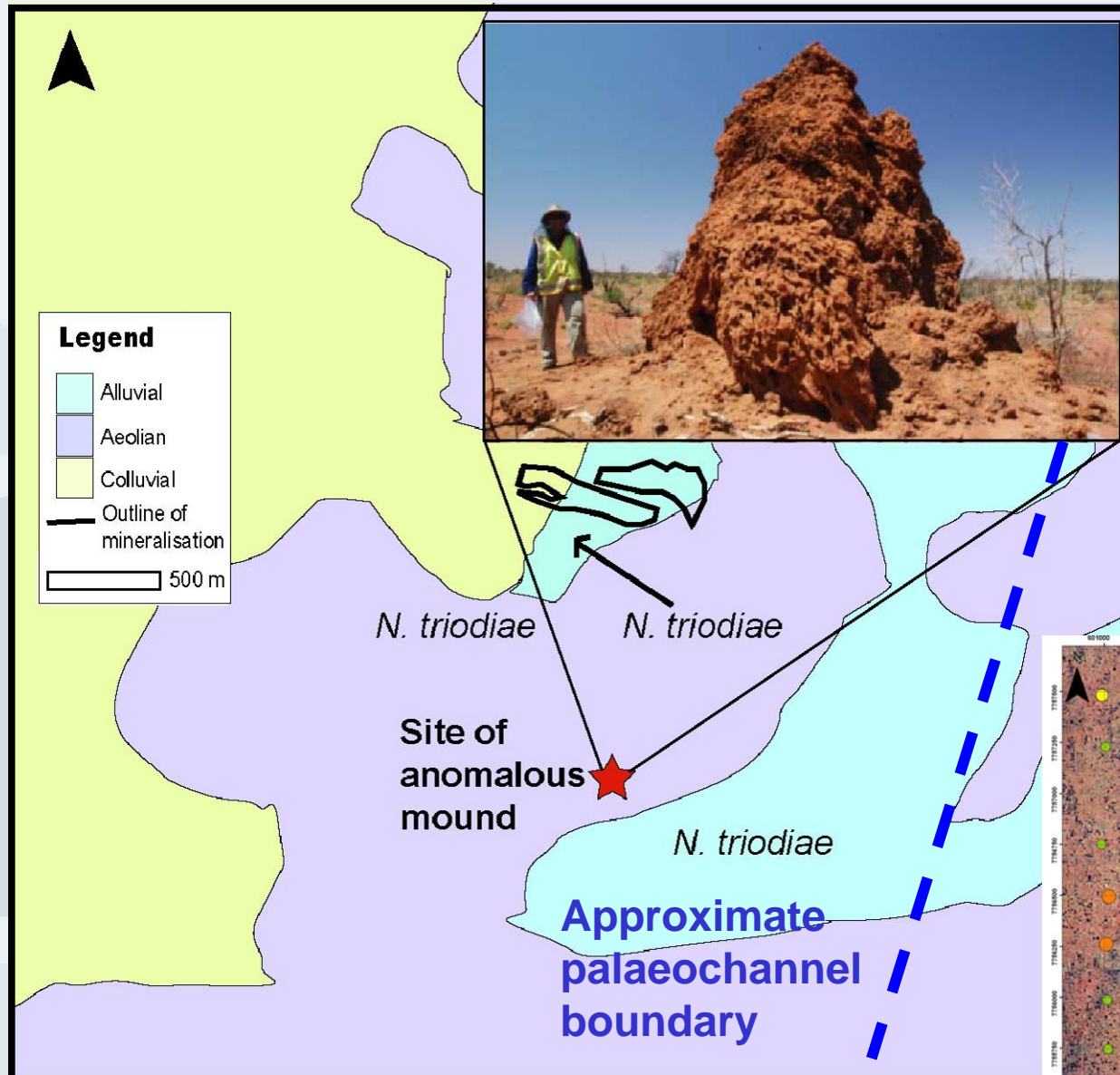


N. triodiae dominate the often flooded alluvial depressions proximal to the palaeochannel

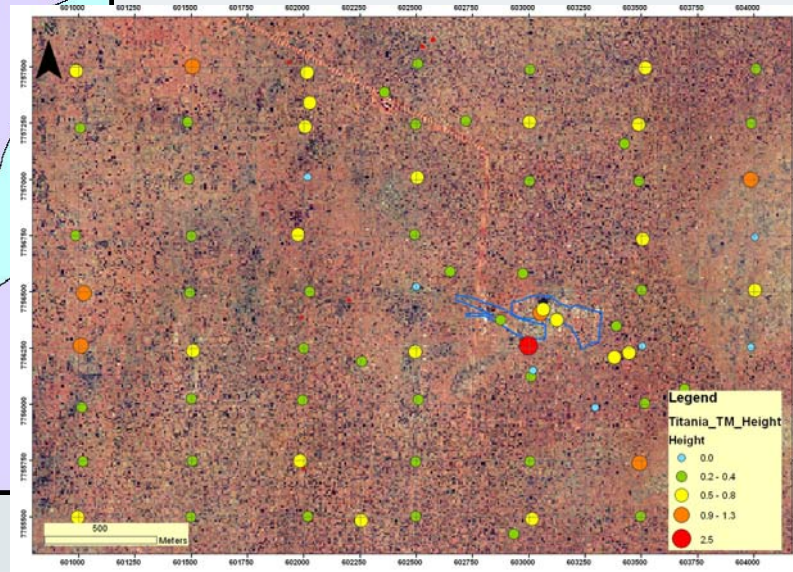
(well vegetated, and mound morphology offers them protection from MOST flooding events!)



Regolith-landform associations



Is this really an anomalously located Cathedral Termite mound?

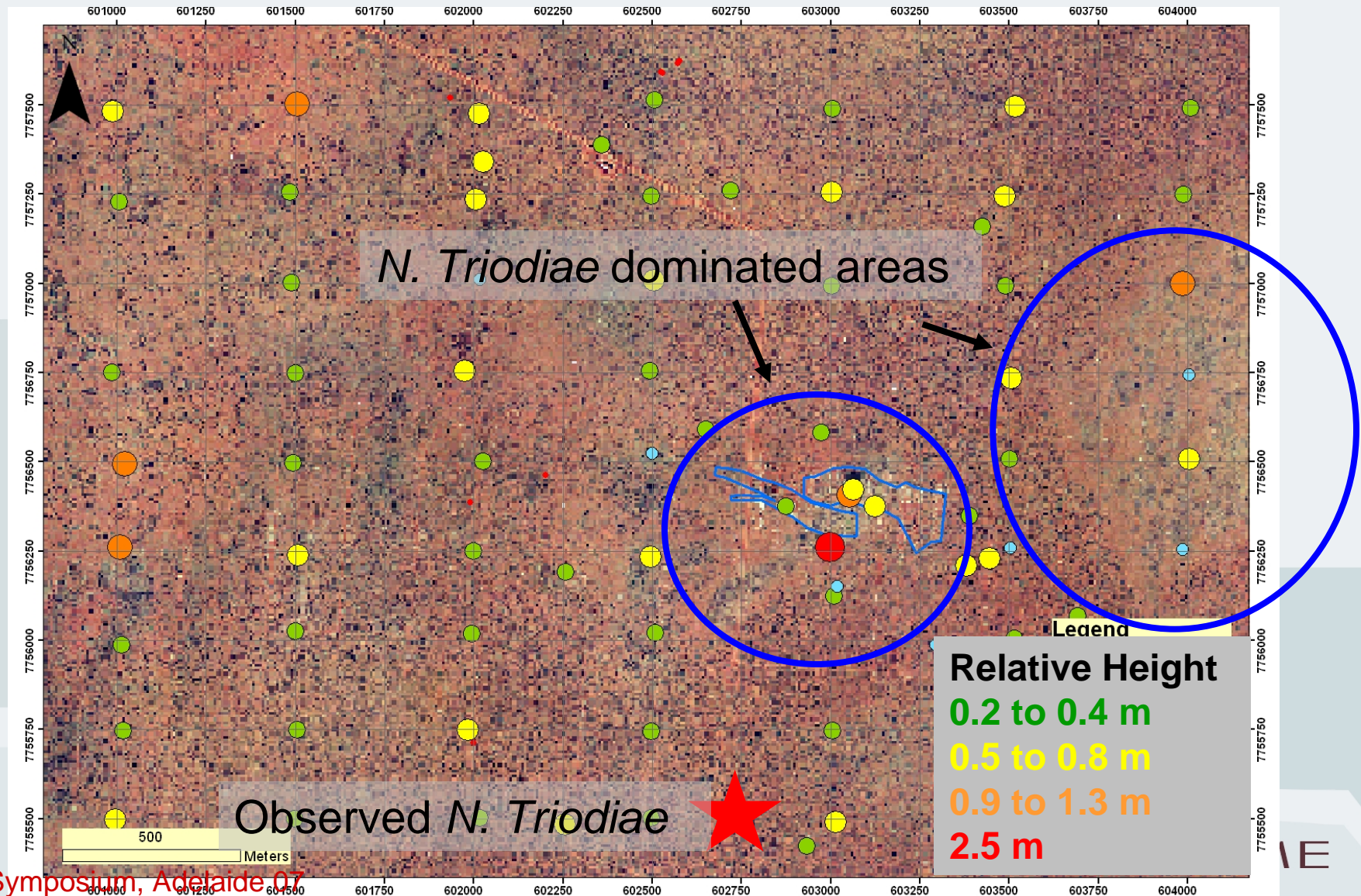


Spot the Difference...



Location Vs Species

Is this really an anomalously located Cathedral Termite mound?





Termitaria – Palaeolandscape Indicators!

To Aeolian Sandplain!





Expectations & Assumptions

We can EXPECT *D. rubriceps* to be present in sandplains, and *N. triodiae* in alluvial floodplains...

Also, we may ASSUME that their presence can assist in approximating the depth of transported cover.

THEREFORE....

The anomalously-located mound REFLECTS the nature of the subsurface geology & INDICATES that the surficial cover comprised of aeolian-sediments is not thick.

IMPLICATIONS?

Regolith-landscape attributes such as termitaria are proven indicators of past, as well as present, landscapes.

Acknowledgements & References

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