

A pathogen reduces yellow crazy ant (*Anoplolepis gracilipes*) reproductive ability in Australia

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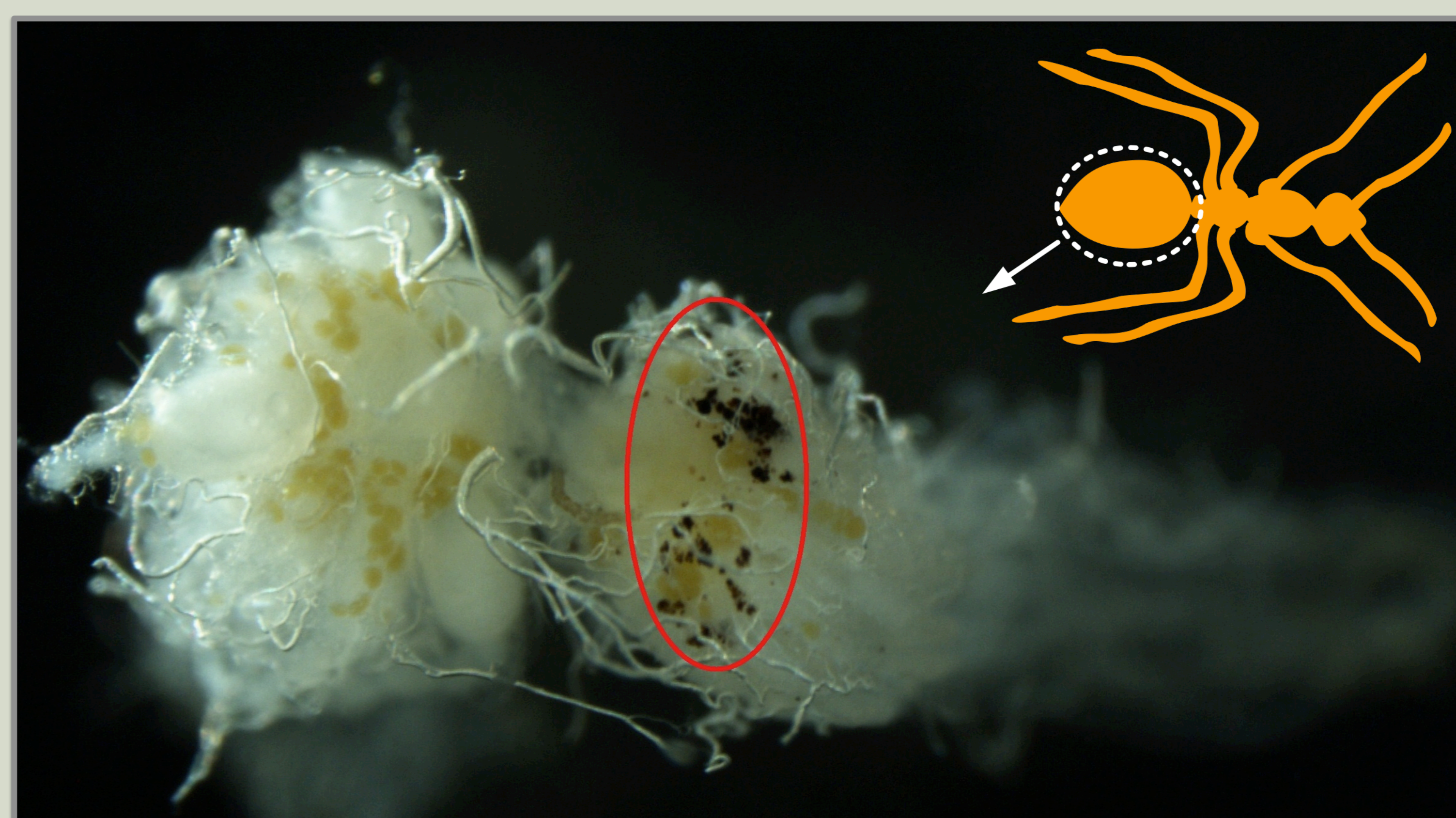
- Yellow crazy ants are a widespread invasive species which can have severe ecological impacts on native ant and invertebrate communities
- In the Seychelles formerly huge populations of this ant disappeared completely¹
- In Arnhem Land, AU, populations fluctuate spatially and temporally and sometimes vanish altogether
- Mechanisms responsible for these declines have yet to be determined
- Yellow crazy ants are known to carry several microbial endosymbionts²



Yellow crazy ant worker (left) and queen (right)

RESULTS

- Unidentified infection found
- Fewer oocytes in infected queens (Mann-Whitney U test, $U = 171$, $p = 0.006$)

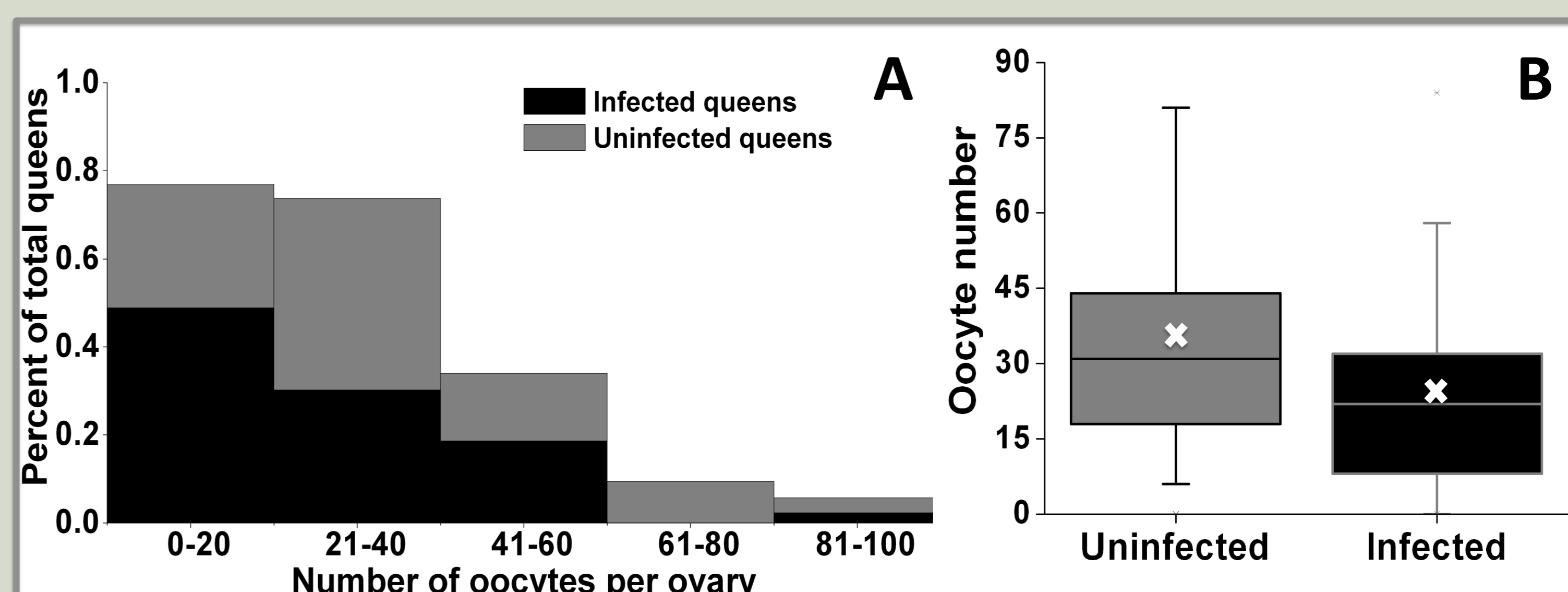


Ovaries from an infected queen. The ovary on the right is affected by an unidentified fungus (circled in red)

0.25 mm

(A) Relative frequency distribution for the number of oocytes in one ovary of each dissected queen ($n=150$).

(B) Box plot showing the median number of oocytes found in uninfected and infected queens. The white x in each box represents the mean



CONCLUSIONS & FUTURE WORK

- Queens can be significantly affected by pathogens
- Initial findings suggest this pathogen may affect egg production and thus population abundance
- Next steps in this study will be to identify the pathogen using next-generation sequencing techniques

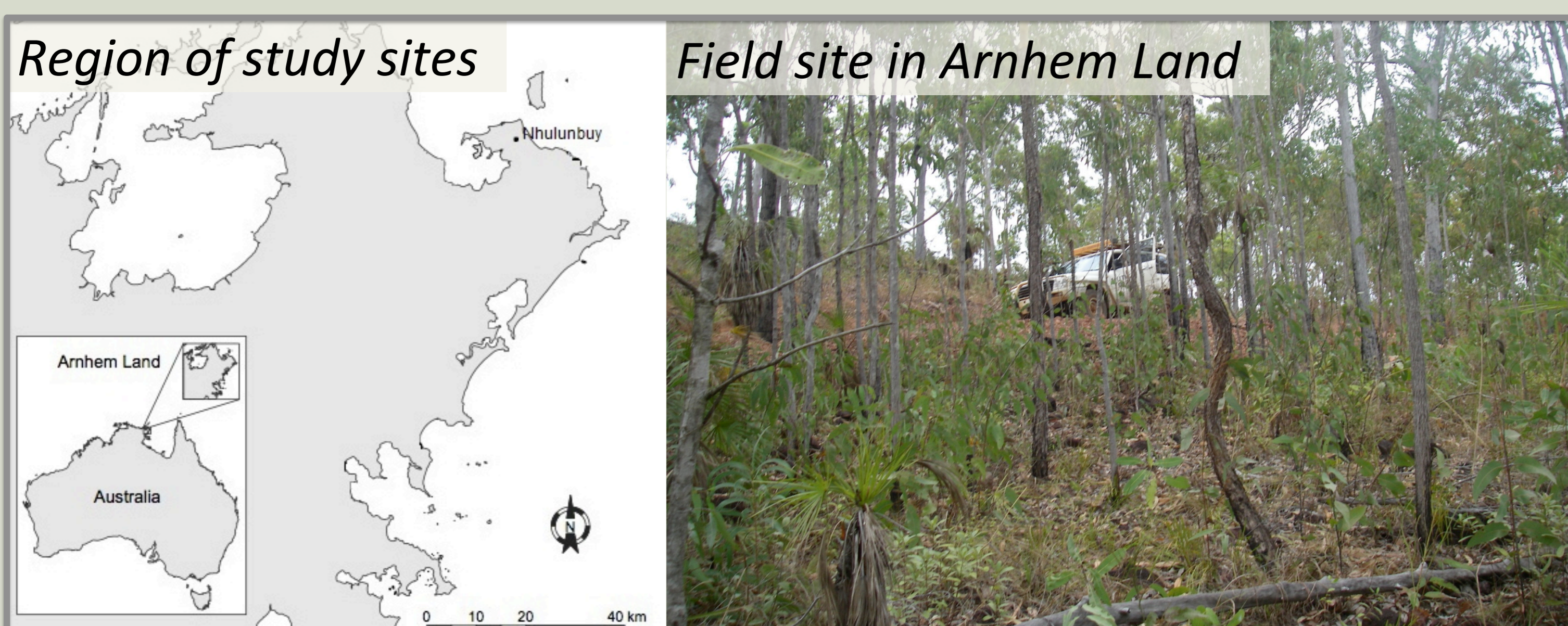
REFERENCES

¹ Haines, I. & Haines, J. 1978. Pest status of the crazy ant, *Anoplolepis longipes* (Jerdon) (Hymenoptera: Formicidae), in the Seychelles. *Bulletin of Entomological Restoration* **68**, 627-638.

² Sébastien, A., Gruber, M. and Lester, P. 2011. Prevalence and genetic diversity of three bacterial endosymbionts (*Wolbachia*, *Arsenophonus*, and *Rhizobiales*) associated with the invasive yellow crazy ant (*Anoplolepis gracilipes*). *Insectes Sociaux* **59**, 33-40.

ACKNOWLEDGMENTS

Thanks to the Ant Club for valuable input. We are grateful to the VUW Research Trust, CSIRO Australia, Rio Tinto Alcan, IUSSI, and Dhimurru Aboriginal Corporation for providing funding and support.



OBJECTIVES

- Investigate mechanisms by which a globally significant invader declines
- Identify potential pathogens



Collecting queens

Dissecting queens and counting oocytes

METHODS

- Collected 226 queens from 7 sites in northeastern Arnhem Land
- Dissected 150 queens and counted the number of oocytes in each ovary