



TERN

May 2014 ANT MONITORING PROTOCOL

This is a draft ant monitoring protocol implemented as part of the TERN NCRIS-2013 grant.

Samples were collected twice during the NCRIS-2013 grant period.

*Please send any comments, corrections, and suggestions to TERN:
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Ecosystem Research Infrastructure



NCRIS

National Research
Infrastructure for Australia
An Australian Government Initiative

Rationale

Ants are Australia's dominant faunal group in terms of biomass and energy flow. They occupy all trophic levels, act as ecosystem engineers, feature in many mutualistic interactions with plants, and are a key food resource for many vertebrates.

Ants are also Australia's best studied insect group in terms of biogeography and community dynamics. They are the most widely used invertebrate bioindicators in environmental assessment and monitoring. Ants are a focal faunal taxon for the plot transects surveyed by TERN.

Ant Sampling Procedure

Ants are readily sampled for monitoring purposes using pitfall traps. Pitfall traps are especially effective in open habitats, where the great majority of ant species are trappable. Pitfall traps capture less of the fauna in tropical rainforests (which support a high diversity of specialist arboreal taxa) but have still proven effective for environmental assessment and monitoring in these habitats. Pitfall traps have been used to sample ants at thousands of sites from throughout Australia over the past 30 years.

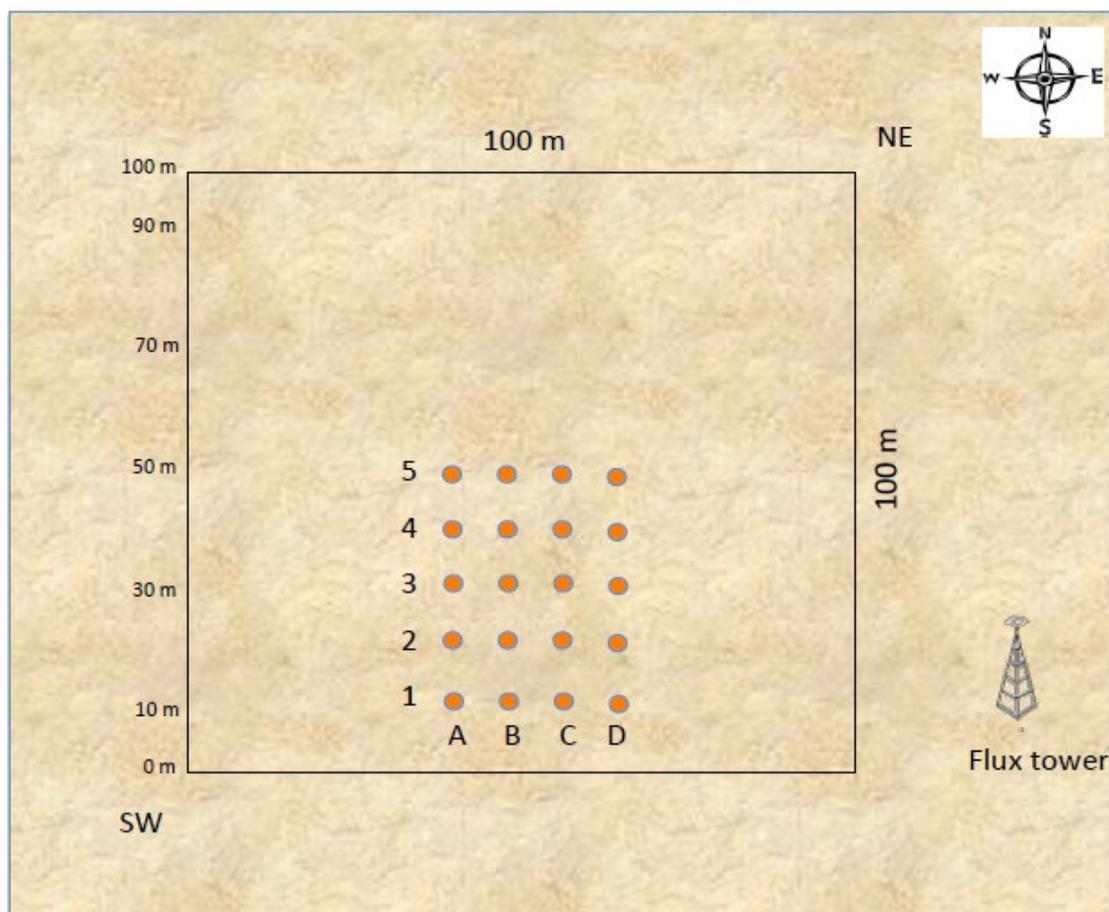
Pitfall traps are standard 4 cm plastic medical specimen containers with ethylene glycol or propylene glycol (to a depth of 1 cm) placed in the bottom to preserve the samples.

Twenty pitfall traps are placed in a standard grid (4 x 5) with 10 m spacings within the core 1 ha in permanent positions marked with PVC tubes (or inverted traps). If the position on the grid is occupied by a tree or rock, then the trap is placed adjacent to it.

Trapping is conducted over 3 days with traps sealed with screw cap at the end of the period. Remove any dirt, plant material or other debris. Contaminating material can stain the ants if left with them for extended periods. It is especially important that the tubes be stored in the dark as light will cause colours to fade and the cuticle or integument will deteriorate over time, greatly reducing the usefulness of the material for taxonomic studies and making identifications difficult or impossible.

Ensure traps are buried with lips completely flush with the soil surface. Light rain does not interfere with trapping, however heavy rain may wash out traps through surface flow. If this happens it is best to repeat the sampling.

Sampling is conducted twice each year, in March/April and October/November.



Example of ant trap layout. The 4 x 5 grid (10 m spacing) can be located anywhere within the core 1ha.

Labelling of Trap Jars

SuperSite name or code: eg. "Calperum Mallee SuperSite" or "CLPM"

Plot location: e.g., core_1ha

Trap Jar Location: a number or coordinate that relates to the position of the jar. eg A1, A2, A3 etc. Make sure the location and description of the layout is in the metadata record.

Dates of Trapping: Date range that traps were deployed YYYYMMDD-YYYYMMDD eg 20141119-20141121

Name of Collector: for QA/QC

Management of Samples

The sealed traps will be sent for processing, identification and curation of samples at CSIRO's Tropical Ecosystems Research Centre in Darwin (Emeritus Professor Alan Andersen FAA), This laboratory holds the most comprehensive collection of Australian ants (currently 5,900 species), and has Australia's leading capability in ant biogeography, community ecology and the use of ants as bio-indicators in land management. This laboratory is managing the TERN ant sampling program. Non-ant bycatch will be stored for future reference.

When taxonomic identification is complete a reference collection will be sent back to each SuperSite.

Send samples to:

**Emeritus Professor
Alan Andersen FAA
CSIRO Darwin,
564 Vanderlin Drive,
Berrimah, NT 0828**

Estimate of Human Resource Requirements for Taxonomy

Two samples from each of ten sites would take approximately ten weeks of processing time in the laboratory, including the curation of a voucher collection of species.

We at TERN acknowledge the Traditional Owners and Custodians throughout Australia, New Zealand and all nations. We honour their profound connections to land, water, biodiversity and culture and pay our respects to their Elders past, present and emerging.

TERN is enabled by NCRIS. Our work is a result of collaborative partnerships with many universities and institutions.

To find out more please go to tern.org.au.



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