

# Ant Surveillance Methods

Prepared for the PII Island Biosecurity Training Course by: Disna Gunawardana, Plant Health and Environment Laboratory, Ministry of Agriculture and Forestry, Auckland, New Zealand

Ant surveillance needs to be conducted both visually and using attractant baits

1. **Visual Surveillance:** Visual Surveillance is conducted over the entire surveillance area, regardless of presence of ant habitat, by walking systematically over the area looking for ants. Where debris is present and easily moved, the item/s should be shifted to facilitate the inspection. Any suspect ants found should be collected and identified. Always label the ant sample as a visual sample, and the locations need to be marked on the ground and recorded on a map or survey form that indicates the area where they were found so that the site could be re-visited for further investigation.
2. **Attractant Bait Surveillance** Attractant Bait Surveillance need occur only in favoured ant habitats (see below for list). Both protein-based baits and sugar baits should be used. Baits can be prepared and laid in small plastic pots (jars). When the baits are collected the lid is replaced and any ants recruiting to the bait are trapped inside. Density of bait placement is based on a minimum of two baits per equivalent of a 15 m × 15 m grid (225 m<sup>2</sup>). Separate protein and sugar based baits must be composed and laid as follows:
  - (a) **Protein-based bait composition.** Prepare protein bait by smearing a line of blended peanut butter and soybean oil (the size of half a pea), and a line of raw, fatty sausage meat to the inner side of each bait container, maintaining a 1 cm gap between the two smears. (If predicted temperatures are greater than 25°C, ensure a larger quantity of sausage meat is applied to prevent bait drying out).  
OR  
Canned tuna could be used if the above ingredients are not available. (Simple method)
  - (b) **Sugar-based bait composition.** Prepare a sugar based bait pot by placing a small plug of cotton wool (approx. one third of cotton ball) soaked in 30% sugar solution inside of each container  
OR  
Smear light coloured jam inside the pot.
  - (c) Only fresh baits are to be used to ensure consistent attractiveness to foraging ants.

## Bait pot placement is to be implemented as follows:

- Bait pots need only be laid in areas of favoured ant habitat. Where there is no favourable ant habitat in a 15 m × 15 m grid, no baits need be placed;
- Where favourable ant habitat is found, at least one protein-based and one sugar-based bait pot must be placed in the 15 m x 15 m grid;
- The bait pots are to be placed 10 m apart where possible. A minimum of 1m between bait pots must be met at all times. Spacing between protein and sugar bait pots should be at least 1m apart.
- All bait pots laid must be able to be traced back to place of location, in case of an exotic ant detection where the area needs to be investigated;

## Environmental conditions

- Both visual and attractant bait surveillance can only be conducted when the air temperature is consistently at mid 20°C and below 36°C (measured in a sheltered and shady position) with little or no wind.
- Bait pots shall be placed in the shade where practicable. Surveillance should not occur during or after rain while the sealed surface is still wet. Also no rain should occur between placement of bait traps and their retrieval.
- Bait pots must be collected at or close to 1/2 hour following placement to prevent baits drying out. However if large numbers are recruiting to baits, reduce the time the bait is exposed to the ants to 20min, 15min or 10min., or alternatively consider doubling quantity of bait in each pot.

## Label Format for collected ant specimens

Site name, where collected, collector: initials and surname

Date collected: month spelt out and year in full

Solomon Islands Henderson, Honiara Mango tree trunk RU Lokal 30 September 2011
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## Favoured Ant habitats

The list of favoured habitats is long and should serve as a check list to reinforce habitat preference principles.

1	Tree trunks (visual inspection and bait at base if appropriate).
2	Flowers.
3	Shrubs and poles.
4	Building edges and foundations.
5	Hard seal (concrete/asphalt) slab edges.
6	Cracked concrete/asphalt and junctions between pavers
7	Disturbed sites.
8	Drains and culverts.
9	Electrical generators and fittings.
10	Exposed rocks.
11	Fence palings.
12	Grass areas.
13	Verges.
14	Hot water pipes and heaters.
15	Isolated weeds.
16	Logs.
17	Loose gravel.
18	Low vegetation (including grass).
19	Plant pot bases.
20	Road margins.
21	Rubbish piles.
22	Shiny/corrugated surfaces.
23	Soil.
24	Tree crotches and hollows.
25	Vertical surfaces.
26	Weed and plant re-growth.
27	Wooden structures.
28	Underneath stones, concrete rubble, timber and debris



# Ant Specimen Preparation Techniques for Identification

**Pacific  
INVASIVES  
INITIATIVE**

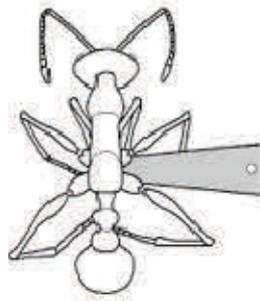
Prepared by: Disna Gunawardana, Plant Health and Environment Laboratory, MAF Biosecurity, Auckland, New Zealand and Eli Sarnat, University of California, Davis, USA.

For short term storage, ants can be placed in 70-75% ethyl alcohol. If ants are to be used in molecular tests, those specimens should be stored in 95% ethyl alcohol.

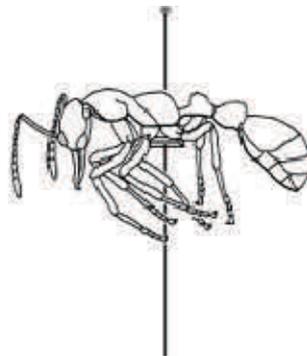
For detailed study and long-term storage, ants should be point-mounted on insect pins. Pointing allows specimens to be easily manipulated while being examined with a microscope and is essential for viewing fine details such as sculpturing and pilosity. In all cases, ants, even large species, should be placed on points and not directly pinned.

## Pinning of specimens:

- Individual points can be either hand-cut from strips of stiff, white, acid-free paper, or punched with a specially designed hand-punch or purchased from Entomological suppliers.
- The glue used to attach ants to the points should be water-soluble to allow for later removal if needed.
- Stainless steel insect pins of size 3 can be used to hold the points.
- Individual ants should be glued to the tip of the point with just enough glue to
- hold them securely but not so much that the lateral or upper surfaces are obscured.
- Specimens should be mounted upright, horizontal and with the point extending from the ant's right side.
- Place the ant at the very tip of the point with the point covering the first segment of the middle and hind legs nearest the body.
- Try to (very) gently pull the legs downward so that the outer surface of the body can be seen in side view.



**Fig.1:** Top view of an ant mounted on a triangular point



**Fig.2:** Side view of an ant mounted on a triangular point

(Figures taken from: Shattuck, S.O. 1999. Australian ants: Their biology and identification. Monographs on Invertebrate Taxonomy. p17)

## Labelling

Once the specimens are properly mounted, the final step is to add labels. Labels should be the standard type used in entomology 12mm X 8mm.

Label should include as a minimum;

- Location (Country and nearest named place)
- Date
- Collector's name

Additional information which should be included if available includes: the latitude, longitude and elevation of the collection site, a brief description of the habitat.

New Zealand, AK, Mt Eden,  
100m SW One Tree Hill  
37030'S 144013'E , On apple leaves  
21 Mar 2007  
S.H. Anthony

**Fig.3. Locality label** - placed below the ant on the same pin.

FORMICIDAE

*Solenopsis invicta*

Det. J. Brown 2007

**Fig. 4. Determination label** – placed below the locality label.

## References:

- Shattuck, S.O. 1999. Australian Ants: Their biology and identification. Monographs on Invertebrate Taxonomy. Pp 226.  
Walker, A.K. & Crosby, T. K., 1988. The preparation and curation of insects. DSIR Information Series 163. Wellington. Pp.91.