National Invasive Ant Surveillance Programme Annual Report 2015

The National Invasive Ant Surveillance programme (NIAS) detects newly established exotic ant species in New Zealand and provides information on range extensions of species already known to be established. Ants are widely dispersed through human activity and commonly intercepted in air and sea cargo including fresh produce, timber, sea containers and personal baggage. They are major urban pests, invading homes, shops, cafes, etc., where food is readily available. They also threaten natural biodiversity by displacing native invertebrate species and encourage horticultural pests. Invasive ants such as Singapore ant (*Monomorium destructor*) gnaw holes in fabric and rubber goods, remove rubber insulation from electric and phone lines, and damage polyethylene cable. Cars parked overnight in infested areas can fail to start the next day after the ants have shorted ignition systems (Global Invasive Species database, 2014).

High-risk sites for ant entry are determined by pathway and site risk analyses undertaken annually. High-risk sites include seaports, airports, devanning sites, sea container storage sites and Transitional Facilities that receive international freight. Sites are then scheduled to be surveyed from mid-summer to early autumn each year.

The identified risk sites are surveyed by ground teams co-ordinated by AsureQuality Ltd. Small plastic pottles, alternately baited with carbohydrate (sugar solution) or protein (peanut butter, oil and sausage meat) are placed in 10 x 10 m grids (**Figure 1**), with some 46 311 pottles being laid at sites throughout New Zealand. Additional pottles are used to collect live ants where these are found by visual inspection. Pottles are left out at each site for about two hours under favourable environmental conditions to maximise the number of foraging ants collected while also reducing the risk of the bait drying out and becoming less attractive. GPS locations and associated data are recorded on hand-held data loggers. Samples are tracked electronically from the field to identification in the laboratory. Pottles are sent to

Figure 1: A protein-baited pottle deployed during NIAS, 2015

the Flybusters Antiants Consulting Ltd diagnostic laboratory for initial identification. Suspect exotic ant specimens are sent to MPI's Investigation and Diagnostic Centres and Response (IDC&R) for validation of ID. Once an exotic ant find has been validated, an investigation is initiated to track down and eradicate nests near the location of the original find.

Results

In the 2015 season of NIAS there was a 4.8 percent decrease in the number of pottles deployed (46 311) compared to the 2014 figure of 48 526. Pottle deployment varies from year to year owing to variations in site selection and weather. Climate is a significant factor that affects ant distribution, behaviour and the number and size of nests. The environmental influences to which ants are sensitive include air and soil temperature, rainfall and soil moisture deficit. Accordingly, favourable conditions during the lead-up to the surveillance period have been implicated as a cause of increased interceptions: the presence of more nests means more interceptions are likely (Gunawardana *et al*., 2013; Browne *et al*., 2012; Porter, 1988). A case in point was the warmer-than-average winter prior to the 2014 NIAS season. The nationwide average temperature in winter 2014 was 9.1°C, which was 0.8°C above the 1971–2000 winter average (NIWA, 2014a). However, temperatures in spring and early summer were highly variable, with soil moisture deficits in some areas (NIWA, 2014b). Varying conditions (especially temperature) can interrupt or slow nest development, and soil moisture deficits also adversely affect some ant species (Paul Craddock, pers. comm.). Fine weather, with fewer weather interruptions in January, enabled field operations to run smoothly during the season.

The 2015 NIAS season has seen a decrease in the number of detections of exotic ants (15, compared to 19 the previous year) but 13 of these detections were from just six separate nests. On one occasion the same nest was detected after ants were found in three different sample pottles that had been placed close together.

Table 1: Location and numbers of ant detections during NIAS, 2015

Species	Location	Date of detection	No. of nests found
Tapinoma melanocephalum	Port of Napier	11 Jan	nil
Tapinoma melanocephalum	Auckland International Airport	12 Jan	1
Tapinoma melanocephalum	Port of Tauranga	13 Jan	nil
Monomorium sp.	Port of Tauranga	19 Jan	1
Brachymyrmex obscurior	Ports of Auckland	19 Jan	nil
Tapinoma melanocephalum	Ports of Auckland	21 Jan	1
Paratrechina longicornis	Ports of Auckland	21 Jan	1
Monomorium destructor	Ports of Auckland	21 Jan	1
Paratrechina longicornis	Port Nelson	27 Jan	nil
Paratrechina longicornis	Ports of Auckland	16 Feb	nil
Paratrechina longicornis	Ports of Auckland	17 Feb	1
Monomorium sp.	Ports of Auckland	17 Feb	nil
Paratrechina longicornis	Port Otago	5 Mar	nil

Five exotic species were recorded (**Table 1**), including *Tapinoma melanocephalum* (ghost ant), *Paratrechina longicornis* (crazy ant), *Brachymyrmex obscurior, Monomorium destructor* (Singapore ant) and *Monomorium* sp. The Ports of Auckland recorded seven exotic detections, while the Port of Tauranga recorded two. The Ports of Napier, Nelson, Otago and Auckland International Airport recorded one exotic find each. All these ants and their associated nests were destroyed.

The 2014–2015 NIAS season again demonstrates the value of early intervention in preventing the establishment and spread of exotic ant species in New Zealand.

References

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