Iridomyrmex purpureus sp. Group

Taxonomic Category

Family:	Formicidae
Subfamily:	Dolichoderinae
Tribe:	Dolichoderini
Genus:	*Iridomyrmex*
Species group:	*purpureus*
Members:	*bigi, galbanus, greensladei, lividus, purpureus, reburrus, sanguineus, spadius, spodipilus, variscapus, viridiaeneus*

Common name(s): meat ants

General Description

Workers of *Iridomyrmex* can be identified from the front margin of the clypeus above the mandibles which is highly modified with convex areas towards the sides and a central projection (this central projection varies from strongly to weakly developed), the anterolateral clypeal margin posterior to the mediolateral region and separated from it by a shoulder, and the compound eyes placed relatively high on the head and away from the mandibles.

Workers of the *I. purpureus* group can be diagnosed by the presence of erect setae on all surfaces of the tibiae and generally all surfaces of the scapes (sometimes limited to the outer scape surface only), relatively large size (head length greater than 1.45 mm, most often greater than 1.65 mm), a scape index less than 1.10 [scape length (excluding the basal radicle)/maximal head width (excluding eyes)], and a fairly broad head (cephalic index greater than 0.85, most often greater than 0.90 [head width/head length (excluding mandibles)]). Additionally, *I. purpureus* group species are generally reddish with purple, green or blue iridescence.

Within the group the species are morphologically very similar (including the genitalia). Microhabitat preferences, behavioral interactions, and nest structures provide the evidence for species separation. The most reliable characters for recognition of forms are a combination of worker integument color and iridescence

Sources: Shattuck 1993, www4

Shattuck (1993 & www4) has revised the species group, and provides a key to species.

Behavioural and Biological Characteristics

Feeding and foraging

An aggressive ecologically dominant ant species group in Australia (Andersen & Patel 1994). They forage in large numbers over a wide area around the nest (Shattuck 1993). They are numerically dominant members of the ground foraging community, having a strong influence on the invertebrate community with which they interact (Shattuck 1993; Gibb & Hochuli 2003), although their impact on non-ant invertebrate groups may not always be large (Gibb 2003). *Iridomyrmex*

purpureus feeds predominantly on homopteran exudates, and forages, to a much lesser extent, on the ground for dead and live insects (Ettershank & Ettershank 1982). Well worn foraging trials can form to food trees (Greaves 1971). Seeds are also foraged (Gibb & Hochuli 2003). They also form mutualistic relationships with phytophagous Lycaenid larvae (Lepidoptera), which they protect from predation in exchange for food rewards (Atkins 1992; Eastwood & Frazer 1999). Foraging is restricted to daylight hours, and for *I. viridiaeneus*, when air temperature around the ant is above 14 °C and below 43.5 °C (Greenway 1981). Foragers are most active in summer, with foraging in a New South Wales citrus orchard almost ceasing over winter (Stevens et al. 1998).

Colony characteristics

Most species of the group form large nests, with one to several tens of entrances each entering a separate gallery system (Ettershank 1968), often with the area surrounding the entrances cleared of vegetation and covered with small pebbles (Shattuck 1993). Colonies possess one to almost 100 nests, connected by well worn trails, and territories can cover about 140 000m^2 (Greaves 1971; Greenslade 1975a, b; Greenslade & Halliday 1983). Incipient colonies take over 6 years to reach maturity and shading caused by plant growth is a likely cause of mortality (Greaves & Hughes 1974). Colonies are territorial, and foragers display ritual combat behavior to solve territorial disputes (Ettershank & Ettershank 1982). A high proportion of mature colonies are polygynous, but very few incipient ones are, and a high proportion of mature nests may contain unrelated queens (Carew et al. 1997).

Dispersal

Colony expansion occurs most effectively through budding (Greaves & Hughes 1974). Queens are also capable of claustral colony foundation following a mating flight and sometimes associate in groups (Carew et al. 1997). Observations following mating flights indicate some young queens are assisted by workers of established colonies to found additional nests in the colony territory while others are attacked, suggesting workers may discriminate between queens originating from their nest and outsiders. However unrelated queens are occasionally found within multi-queen colonies.

Habitats occupied

Species of this group have been found to be ecologically important components of all but the coldest and wettest terrestrial habitats in mainland Australia (Shattuck 1993).

In south-east Australia this group is restricted to well-drained sunny habitats such as outcrops and ridges in heath and low woodland and is associated with clearing for roads, railways and agriculture (Greaves 1971). They show a preference for hot, open, disturbed areas with nests considerably more common along fire trails than in surrounding vegetation (Gibb & Hochuli 2003). They are absent from quartz sand soils (Greaves 1971) and rarely found in open areas without trees nearby (Greaves 1971).

Global Distribution (See map)

Native to

Australia (but not Tasmania).

History of spread

Not established outside its native range.

Interception history at NZ border

There have been at least 11 interceptions of unidentified *Iridomyrmex* in a range of freight from Australia, some of which could belong to the *I. purpureus* group. At least one queen (in personnel effects) has been intercepted entering Wellington.

Justification for Inclusion as a Threat

An aggressive ecologically dominant ant species group in Australian (Andersen & Patel 1994) that has the potential to impact on horticulture (James et al. 1999), other ants (Andersen & Patel 1994), and possibly on other invertebrates and vertebrates. Although no confirmed interceptions, unidentified Australia *Iridomyrmex* (including at least 1 queen) have been intercepted.

Mitigating factors

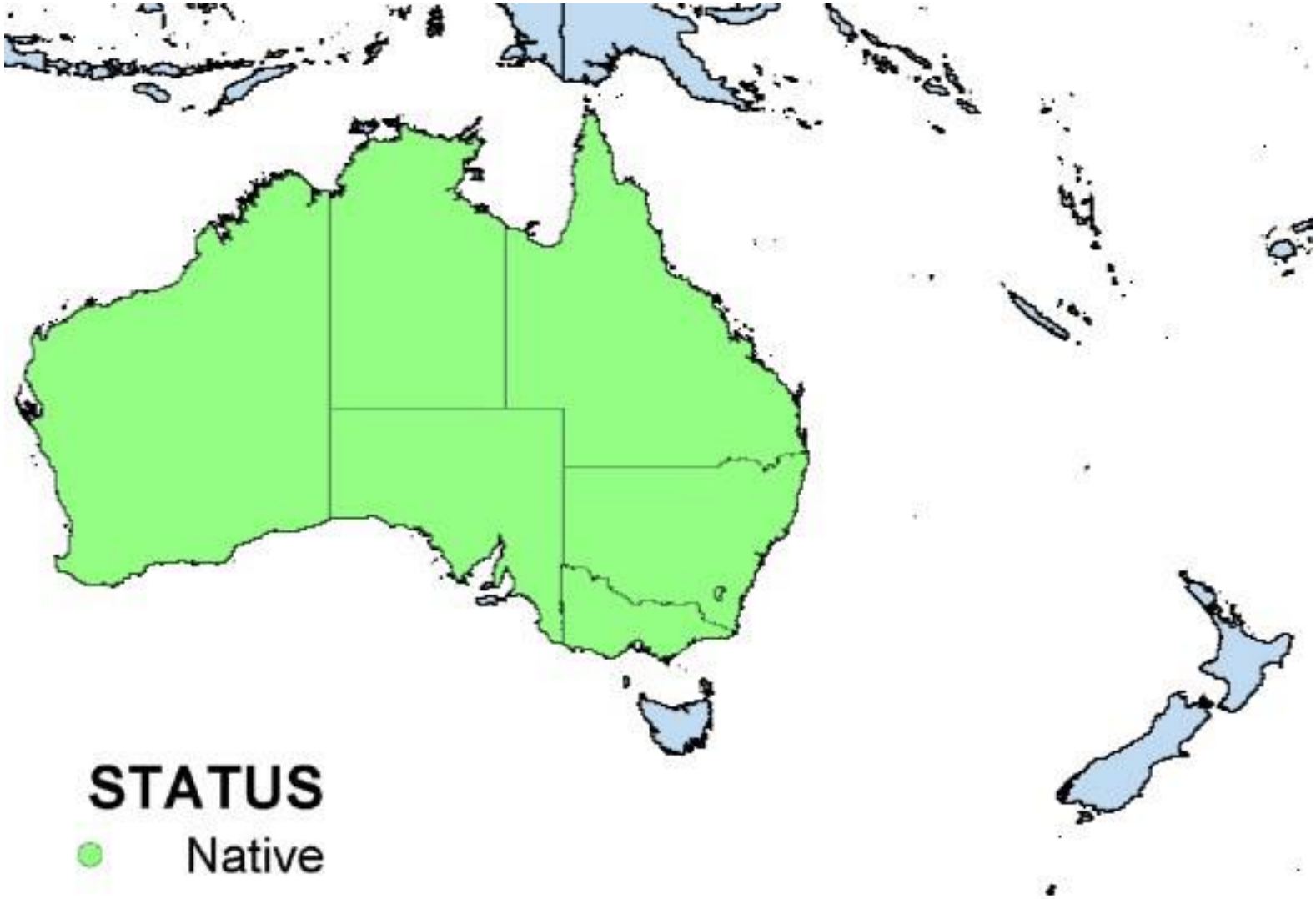
A widespread species group, predominantly in arid habitats (Greenslade & Halliday 1982). It does not occur in Tasmania so the climate over much of New Zealand may not be suitable. It has not established outside its native range. There is a relatively low risk of transportation of queens or nests of this species group due to the habitats occupied. Although nests do occur in urban areas, they are in the ground rather than anthropogenic structures that could be translocated.

Control Technologies

Considerably more foragers were collected on peanut butter-baited pitfall traps than on honey-baited traps (which were similar to unbaited traps) in citrus orchards (Stevens et al. 1998), despite having a preference for carbohydrates (James et al. 1999). In field trials in citrus orchards in NSW (Australia), Stevens et al. (2002) found that protein baits (dog food and insect-based baits) were attractive, while bran and citrus pulp baits were completely unattractive. James et al. (1999) were able to control *I. purpureus* in citrus orchards using Arinosu-Korori® (0.88% hydramethylnon in ground silkworm pupae matrix), but efficacy declined with increasing nest size. Control was maintained for up to 75 days for 1-m^2 nests, up to 35 days for 2-m^2 nests, but there was no significant reduction at all for 4-m^2 nests.

In Australia there are spiders (Aranae: Zodariidae) that mimic and prey on *I. purpureus* (Cushing 1997; Gibb 2003), but these are unlikely to significantly influence population numbers.

Compiled by Richard Harris & Jo Berry



Global distribution of Iridomyrmex purpureus *sp. Group*