Invasive Ant Threat

INFORMATION SHEET Number 39 • *Wasmannia auropunctata* Risk: High

Wasmannia auropunctata (Roger)

Taxonomic Category

Family:	Formicidae
Subfamily:	Myrmicinae
Tribe:	Blepharidattini
Genus:	*Wasmannia*
Species:	*auropunctata*

Common name(s): little fire ant, little red fire ant, little introduced fire ant, small fire ant, West Indian stinging ant, cocoa-tree ant (English); fourmi rouge, petit fourmi de feu, formi électrique (French, French-New Caledonia); formiga pixixica, hormiga colorada, hormiga roja, hormiguilla, pequena hormiga de fuego, albayalde (Spanish, Spanish-Puerto-Rico); formi sangundagenta, tsanagonawenda (Gabon) (Wetterer & Porter 2003; www6).

Original name: *Tetramorium auropunctatum* Roger

Synonyms or changes in combination or taxonomy: *Xiphomyrmex atomum* Santschi, *Wasmannia glabra* Santschi, *Hercynia panamana* Enzmann, *Ochetomyrmex auropunctatus* (Roger), *Wasmannia auropunctata* var. *atoma* (Santschi)

Current subspecies: nominal plus *Wasmannia auropunctata* var. *australis* Emery, *Wasmannia auropunctata* var. *laevifrons* Emery, *Wasmannia auropunctata* var. *nigricans* Emery, *Wasmannia auropunctata* var. *obscura* Forel, *Wasmannia auropunctata* st. *pulla* Santschi, *Wasmannia auropunctatus r. rugosa* Forel

General Description

Identification

Size: monomorphic. Total length approximately 1.5 mm.

Colour: light brown to golden brown in colour, the gaster often somewhat darker.

Surface sculpture: Head, alitrunk and nodes are heavily sculptured, appearing dull; gaster unsculptured, appearing shiny.

General description: antennae 11-segmented; last 2 segments greatly enlarged. Antennal scape (first segment) inserted into a distinct groove (scrobe) that extends almost to the posterior border of the head. Eyes relatively small, with about 6 ommatidia in the longest row. Mandibles each with 5 teeth, the topmost (nearest clypeus) small. Clypeus without longitudinal carinae. Anterodorsal angles of the pronotum acute. Metanotal groove weak. Propodeum with a pair of long, sharp spines which are set closely together at the base, strongly diverging and slightly incurved when seen from above. Two nodes present, the first (petiole) is "hatchet-like," almost rectangular in profile and higher than the second (postpetiole). Body sparsely covered with long, erect hairs.

Sources: Wetterer & Porter 2003; www2; www38

On-line key: www57

Behavioural and Biological Characteristics

Feeding and foraging

Foragers are slow moving (about a tenth the speed of *P. longicornis*) and can form trails extending many metres going to and from food sources (Meier 1994; Deyrup et al. 2000). *W. auropunctata* is a generalist feeder on invertebrates, seeds, other plant material, and a large portion of its diet appears to consist of honeydew collected from Homoptera (Clark et al. 1982; Torres 1984). Some food is scavenged but active predation also occurs (Clark et al. 1982), and they pirate food from other ants (Brandao & Paiva 1994). They recruit in large numbers to abundant food sources and cooperate to carry large items (Clark et al. 1982; Tennant 1994). Foragers utilise plants with extra floral nectaries heavily when present (de la Fuente & Marquis 1999; Deyrup et al. 2000). Workers forage 24 hours a day in the arid zone in the Galopogos (Clark et al. 1982) and are more active at night in Puerto Rico (Torres 1984). Foraging is less affected by day/night, wind, rain, and direct sunlight than that of *S. geminata* and *P. longicornis* (Meier 1994). Workers are highly aggressive to other ant species and in some locations they have invaded are able to exclude other ant species completely (e.g., Jourdon 1997; Clark et al. 1982). In their native range they do not defend territories, but recruit to and defend food resources close to their nests (Torres 1984); the degree of monopolization can vary with the size of the food source (McGlynn & Eben Kirksey 2000).

Colony characteristics

Both polygyny and monogyne colonies occur (Wetterer & Porter 2003). Colonies show low intraspecific aggression (unicolonial) and high interspecific aggression. Queens typically live about a year (Passera 1994). Sexuals are produced throughout most of the year (Passera 1994). Clark et al. (1982) estimated densities of 1000–5000 workers/m^2 in an area of abundance on Santa Cruze Island in the Galaopgos. They do not have a defined nest but utilise any available space: under leaf debris, rotten limbs, stones, in the crotches of trees or clumps of grass, behind the sheaths of palms or palmettos, as well as spaces between plants and soil (Spencer 1941 cited in Ayre 1977). Nests can be found on the ground or in trees (Clark et al. 1982). Colonies are highly mobile and will relocate if disturbed (Ulloa-Chacon 1990 cited in Passera 1994). Colony densities are higher in areas in its introduced range where it has become a pest (0.75–2.7 aggregations/m^2 in Galapogos – Lubin 1984, Ulloa – Chacon & Cherix 1990) than they are in its native range (0.05–0.13 nests/m^2 in Panama – Levings & Franks 1982).

Dispersal

Two methods of dispersal have combined and helped the spread of *W. auropunctata* at local, regional, national and international scales: human-mediated dispersal, and budding. Most significant is human-mediated dispersal, without which the ant may never have reached its current locations. *W. auropunctata* is a 'tramp' ant (Passera 1994) renowned for transportation via human commerce and trade. In the absence of human-mediated dispersal, introduced populations of *W. auropunctata* are also believed to spread predominantly through budding (Clark et al. 1982). In favourable years the population may spread up to 500 m (Meier 1994). Some spread on floating vegetation/debris (particularly logs) during floods is also likely.

Habitats occupied

W. auropunctata has been described as a true generalist in its choice of nest sites (Le Breton et al. 2003). It occurs in a range of habitats from urban settlements (Delebie et al. 1995; Fowler et al.1990) and fields (Jeanne 1979) through to undisturbed forest (Jeanne 1979; Tennant 1994). Generally, *W. auropunctata* nests in unstable microhabitats favouring species that can cope with frequent migrations (Passera 1994; Armbrecht & Perfecto 2003) and may occur in habitats that are wet or dry (Deyrup et al. 2000). It is not an early colonist of disturbed habitats as is *S. geminata*.

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Global Distribution (See map)

Native to

Neotropics. Unclear how extensive the native Neotropical range of *W. auropunctata* was human spread (Wetterer & Porter 2003). No records from Chile and mainland Ecuador.

Introduced to

Tropical and subtropical areas in West Africa; several Pacific island groups; New Caledonia, Wallis and Futuna, the Solomon Islands, Hawaii, and Vanuatu; Florida, California, Bermuda, and the Bahamas (Wetterer & Porter 2003). At 32° 20' North, the Bermuda population of *W. auropunctata* is the northernmost well-established population of this species. *W. auropunctata* has been reported in Los Angeles (34° North) and San Francisco (37° 45' North), where it cannot survive the winters outside of urban areas. Also a greenhouse pest in temperate regions such as England and Canada.

History of spread

W. auropunctata became established in the Galapàgos Islands in the early 20th century (Clark et al. 1982). It was first found outdoors in Florida in 1924 (Wheeler 1929 cited in Ayre 1977) and by 1935 had become a pest in citrus groves (Spencer 1941 cited in Ayre 1977). It is a much more recent arrival in the Pacific, arriving in New Caledonia in the 1970s, (Jourdan et al. 2001), in the Solomons before 1978 (Fabres & Brown 1978 cited in www24), in Vanuatu in 1998 (www60), and was first collected in Hawaii in 1999 (Conant & Hirayama 2000). It has also been reported relatively recently from Fiji (Wetterer pers. comm. cited in Nishida & Evenhuis 2000), although it may be very restricted in distribution as it was not recorded during recent collecting around Viti Levu that included the port areas (D.Ward pers comm.). Further spread in the Pacific through trade is highly likely.

Interception history at NZ border

A single interception record of a worker associated with air passenger luggage from the Solomon Islands in 1997.

Justification for Inclusion as a Threat

One of 5 ants listed among the "100 of the World's Worst Invaders" (www6). This species has a very painful sting, although workers are relatively non-aggressive and generally sting only when provoked (Wetterer & Porter 2003). In disturbed areas, such as agricultural and forestry land, and in exotic habitats, it commonly builds up to very high numbers. In many areas (including within its native range), it can be a significant agricultural pest, both stinging agricultural workers and enhancing populations of Homoptera. Direct negative impacts have been recorded on many animals, both invertebrates and vertebrates (e.g., Smith 1965; Clark et al. 1982; Jourdan et al. 2001). There is also a possible connection between *W. auropunctata* and eye maladies in vertebrates (Wetterer & Porter 2003), and disease spread in hospitals (Bueno & Fowler 1994). It currently has a limited (known) distribution in the Pacific, but is expanding its range (recently reported from Tahiti). This species has established, at least temporarily, in heated buildings in temperate locations (e.g., glasshouses in England – www24).

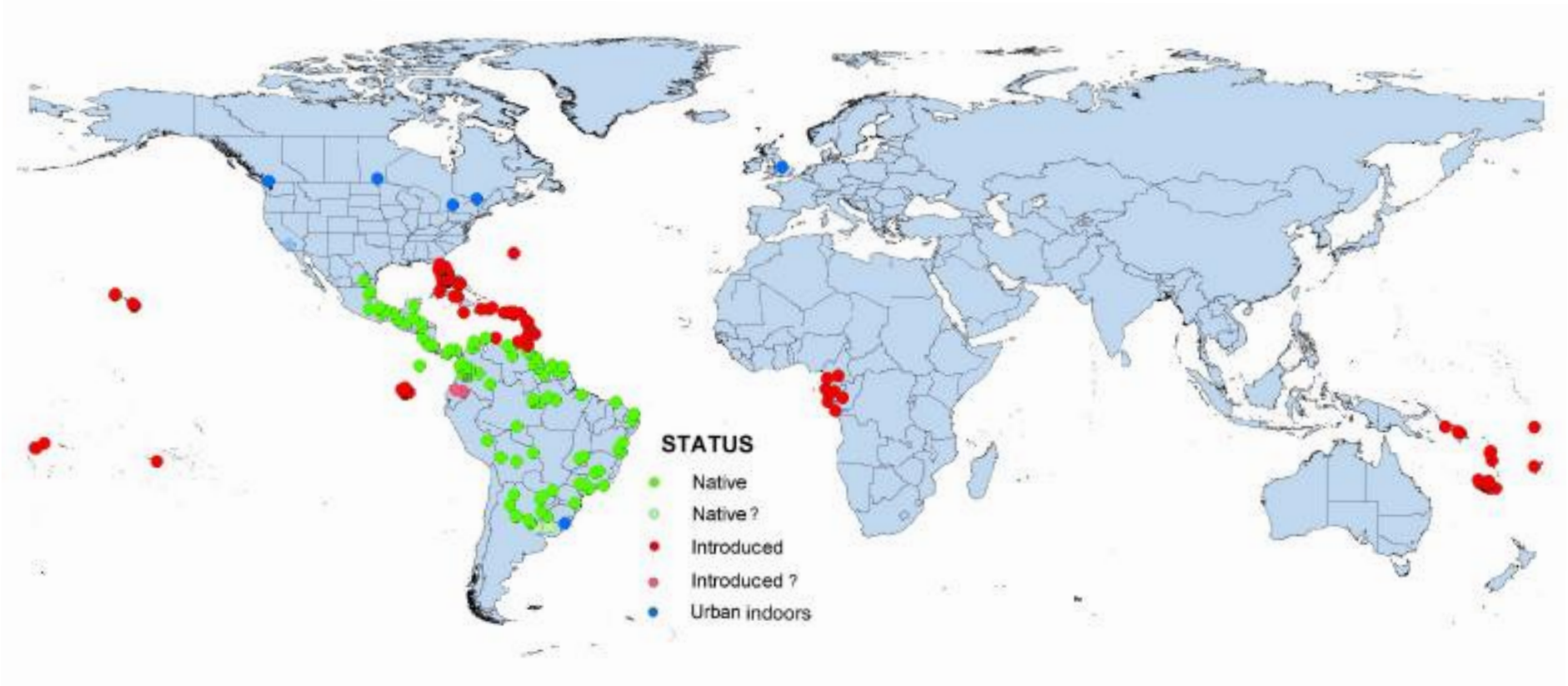
Mitigating factors

Climate shows low similarity outside heated buildings, which will reduce chances of establishment and the magnitude of detrimental impacts should it establish in New Zealand. Only a single New Zealand interception record of a worker in 1997. An effective eradication strategy has been demonstrated for this species (Causton et al. in press).

Control Technologies

Results from trials and control programmes on the Galapagos Islands indicate *W. auropunctata* can be effectively controlled and even eradicated using Amdro®, provided adequate eradication and monitoring techniques are used and funding is available to complete the task (Abedrabbo 1994; Causton et al. in press).

Compiled by Richard Harris & Jo Berry



Global distribution of Wasmannia auropunctata *(Roger)*