

Wasmannia auropunctata  [简体中文](#)

System: Terrestrial

[正體中文](#)

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae

Common name Rote Feuerameise (German), little fire ant (English), little introduced fire ant (English), little red fire ant (English), small fire ant (English), West Indian stinging ant (English), cocoa tree-ant (English, New Caledonia), pequena hormiga de fuego (Spanish), hormiga colorada (Spanish), hormiga roja (Spanish), formiga pixixica (Portuguese, Brazil), petit fourmi de feu (French), fourmi rouge (French), tsangonawenda (English, Gabon), sangunagenta (English, Gabon), satanica (Spanish, Cuba), hormiguilla (Spanish, Puerto Rico), albayalde (Spanish, Puerto Rico), formi électrique (French, New Caledonia), fourmi électrique (French, New Caledonia)

Synonym *Tetramorium auropunctatum* , (Roger 1863)
Ochetomyrmex auropunctatum , (Forel 1886)
Ochetomyrmex auropunctata
Ochetomyrmex auropunctatus
Xiphomyrmex atomum , (Santschi 1914)
Wasmannia glabra , (Santschi 1931)
Hercynia panamana , (Enzmann 1947)

Similar species

Summary *Wasmannia auropunctata* (the little fire ant) is blamed for reducing species diversity, reducing overall abundance of flying and tree-dwelling insects, and eliminating arachnid populations. It is also known for its painful stings. On the Galapagos, it eats the hatchlings of tortoises and attacks the eyes and cloacae of the adult tortoises. It is considered to be perhaps the greatest ant species threat in the Pacific region.



[view this species on IUCN Red List](#)

Species Description

Little fire ant (*Wasmannia auropunctata*) workers are monomorphic, which means they display no physical differentiation (Holway *et al.* 2002). The ants are typically small to medium-sized, with the workers ranging from 1-2mm (Holway *et al.* 2002). The little fire ant is light to golden brown in colour. The gaster is often darker. The pedicel, between the thorax and gaster, has two segments; the petiole and postpetiole. The petiole is "hatchet-like," with a node that is almost rectangular in profile and higher than the postpetiole. The antenna have 11 segments, with the last two segments greatly enlarged into a distinct club. The antennal scape (the first segment) is received into a distinct groove (scrobe) that extends almost to the posterior border of the head. The thorax has long and sharp epinotal spines. The body is sparsely covered with long, erect hairs. This species is well-known for a painful sting, seemingly out of proportion to its size.

Please click on [AntWeb: *Wasmannia auropunctata*](#) for more images and assistance with identification. The AntWeb image comparison tool lets you compare images of ants at the subfamily, genus, species or specimen level. You may also specify which types of images you would like to compare: head, profile, dorsal, or label. Please see the PaDIL (Pests and Diseases Image Library) species content page for [Electric ant](#) for high quality diagnostic and overview images.

Please follow this link for a fully illustrated [Lucid key to common invasive ants \[Hymenoptera: Formicidae\] of the Pacific Island region](#) [requires the most recent version of Java installed]. The factsheet on [Wasmannia auropunctata](#) contains an overview, diagnostic features, comparison charts, images, nomenclature and links. (Sarnat, 2008)

Notes

Bruneau de Miré (1969) reported *W. auropunctata* from the coastal region of Cameroon near Kribi, where cacao (*Theobroma cacao*) growers purposely transported *W. auropunctata* colonies from plantation to plantation as a biological control agent of certain insect pests, particularly Miridae (Hemiptera). (Bruneau de Miré 1969). In areas with *W. auropunctata*, populations of most insects, including beetles, flies, and other ants, were reduced. In contrast, populations of plant-feeding bugs (Homoptera) that the ants tend, such as coccids and psyllids, increased (Bruneau de Miré, 1969 in Wetterer & Porter, 2003). Similarly MacFalane (1985 in Way & Bolton 1997) considered *W. auropunctata* useful as a natural enemy of crop pests in Solomon Islands (Wetterer & Porter, 2003).

Habitat Description

Invasive ants will usually readily invade disturbed habitats, such as forest edges or agricultural fields (Ness and Bronstein 2004). In natural environments the little fire ant (*Wasmannia auropunctata*) efficiently exploits twigs, leaf litter and for its nesting substrate, while in houses it may infest beds, furniture and food (Smith 1965, in Brooks and Nickerson 2000; Armbrrecht and Ulloa-Chacón 2003). In some regions, nests are frequently found behind the sheaths of palms or palmettos. During heavy rains, nests may be moved into buildings or trees to escape flooding (Hedges 1998, in Brooks and Nickerson 2000).

Cold climates appear to be unsuitable for the successful invasion and establishment of *W. auropunctata* in native ecosystems. However, it may survive in human habitations or infrastructures including climate-controlled buildings and greenhouses. For example, *W. auropunctata* is a greenhouse pest in temperate regions, such as England and Canada. Although local spread is restricted in such cases, the population may act as a "stepping stone" for the colonisation of more suitable locations (*via* long distance spread) (McGlynn 1999; Holway *et al.* 2002; J. K. Wetterer pers. comm., 2003).

Nutrition

Invasive ants typically have a generalised feeding regime and are able to gain nutrition from a variety of sources including grains, seeds, arthropods, decaying matter and vegetation (Holway *et al.* 2002; Ness and Bronstein 2004). Specialised feeders, such as army ants, which prey on other social insects, are less likely than the little fire ant (*Wasmannia auropunctata*) to be successful in introduced regions as the range of potential prey is smaller (McGlynn 1999).

Little fire ants are omnivores and are very flexible in their diet, preying on invertebrates and consuming plant parts (Romanski 2001). When honeydew-producing Homoptera are present, a large part of its diet is likely to consist of the carbohydrate-rich residues produced by these insects (J. K. Wetterer pers. comm., 2003). In human habitations, nutrition may be gained from fats (such as peanut butter) and other oily materials found in homes (Fernald 1947, in Brooks and Nickerson 2000). The little fire ant has a venomous sting that gives it a greater ability to subdue vertebrate and large invertebrate prey (Holway *et al.* 2002).

General Impacts

Environmental stresses (such as those caused by human practices, such as monoculture) may cause explosions of some ant populations, an effect that is particularly evident within ants' native ranges. For example, in its native range in South America, the little fire ant *Wasmannia auropunctata* is a pest in disturbed forests and agricultural areas where it can reach high densities. High densities of *W. auropunctata* have been linked with sugar cane monocultures and cocoa farms in Colombia and Brazil, respectively. In Colombia, a high abundance of the little fire ant in forest fragments has been linked with low ant diversity. The little fire ant efficiently exploits resources including nectar, refuges within vegetation and honeydew residues (of Homopteran insects), and it may out-compete and displace native myrmecofauna (Armbrecht and Ulloa-Chacón 2003). Improved land management and a reduction of primary production will alleviate the problems associated with invasive ants and the environmental stresses that cause ant population explosions.

In agricultural areas, due to the close association of the land and workers, the little fire ant may be a great nuisance to humans. This is because it is more likely to reach high densities and sting people working in the field. The increased numbers of Homoptera insects, which sap plant nutrients and make plants susceptible to disease, may cause substantial yield losses. In Cameroon, on the other hand, the spread of the little fire ant is encouraged, due to the fact that it preys on, and thereby has a role in the control of, certain herbivorous cocoa pests (Bruneau de Mire 1969, in Brooks and Nickerson 2000).

W. auropunctata may have negative impacts on invertebrates and vertebrates. They may prey on native insects and cause declines in the numbers of small vertebrates. In human habitations it may sting, and even blind, domestic pets (cats and dogs) (Romanski 2001). It is believed to have caused a decrease in reptile populations in New Caledonia and in the Galapagos Archipelago, where it eats tortoise hatchlings and attacks the eyes and cloacae of the adult tortoises (Holway *et al.* 2002; J. K. Wetterer pers. comm., 2003). The little fire ant is probably the most aggressive species that has been introduced into the Galapagos archipelago, where a marked reduction of scorpions, spiders and native ant species in infested areas has been observed (Lubin 1984, Clark *et al.* 1982, in Roque-Albelo and Causton 1999). Similarly it has been noted to decrease local arthropod biodiversity in the Solomon Islands (Romanski 2001).

W. auropunctata rarely buries myrmecochorous seeds and sometimes ingests elaisomes without dispersing seed. In its native range, the little fire ant decreases herbivorous arthropod biodiversity, increasing the fruit and seed production and growth of the plant and decreasing pathogen attacks. *W. auropunctata* may also, however, exclude arthropod plant mutualists, such as plant tenders or seed dispersers (Ness and Bronstein 2004).

Please read [Invasive ants impacts](#) for a summary of the general impacts of invasive ants, such as their affect on mutualistic relations, the competitive pressure they impose on native ants and the effect they may have on vulnerable ecosystems.



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Wasmannia auropunctata*

Management Info

Preventative measures: [The Pacific Ant Prevention Programme](#) is a proposal prepared for the Pacific Plant Protection Organisation and Regional Technical Meeting For Plant Protection. This plan aims to prevent the red imported fire ant and other invasive ant species with economic, environmental and/or social impacts, entering and establishing in or spreading between (or within) countries of the Pacific Region.

A detailed pest risk assessment for the eight species ranked as having the highest potential risk to New Zealand was prepared as part of 'The invasive ant risk assessment project', [Harris et al. 2005.](#), for Biosecurity New Zealand by Landcare Research. The Invasive ant risk assessment for *Wasmannia auropunctata* can be viewed at [Wasmannia auropunctata risk assessment](#). Please see *Wasmannia auropunctata* information sheet for more information on biology, distribution, pest status and control technologies.

Integrated management: The potential of invasive ants to reach high densities is greater in ecosystems which have been utilised or modified by humans. For example the little fire ant is a greater problem in forests and habitats in its native range in South America that have been over-exploited by humans (Armbrecht and Ulloa-Chacón 2003). In south Colombia and Brazil, respectively, sugarcane monocultures and cocoa farms have been linked with high abundances of the little fire ant. Similarly, the Argentine ant (*Linepithema humile*) reaches locally high densities in agricultural systems, particularly citrus orchards, which host honey-dew producing Homoptera (Armbrecht and Ulloa-Chacón 2003; Holway et al. 2002). This implies that improved land management (including improving land use efficiency and reducing the practice of monoculture) and a reduction in primary production would reduce numbers of invasive ants, alleviate the problems associated with high densities of invasive ants and reduce the potential sources from new infestations.

Chemical: Eradication programmes are expected to be more successful on small islands or in isolated areas where distributions are less than a few dozen hectares. In the Galapagos Archipelago, it may be impossible to eradicate *W. auropunctata* from the large islands where it is established. However it has been successfully eradicated from Santa Fe and has the potential to be eradicated from other small islands such as Marchena. The control of the little fire ant on these islands has been by non-selective ant poisons, fire, or by clearing vegetation (Roque-Albelo and Causton 1999, Roque-Albelo and Causton 1999).

Please follow this link for more detailed information on the [management of Wasmannia auropunctata](#) compiled by the ISSG.

Pathway

Used as a biological control agent on plantations in Gabon and Cameroon (Bruneau de Mire 1969, in Brooks and Nickerson 2000). *W. auropunctata* was likely to have been transported between the large islands in the Galapagos archipelago on plants and in soil, and between the small islands on camping provisions and equipment (Roque-Albelo and Causton 1999). Growing military and commercial activity may have facilitated the increased spread of ants into the Pacific region over the last century. Commerce to and from islands must be watched more closely than exchanges between two continental areas because ants are more abundant on islands and are more likely to establish on new islands (due to higher ecological vulnerability of island ecosystems) (McGlynn 1999). Invasive ant species that are known to associate closely with humans and nest in nursery stock or other products traded locally or globally have the potential to be spread long distances by humans (Holway et al. 2002). Little fire ants are commonly associated with and distributed by humans. Nurseries, fruit tree orchards, and ornamental plants are all potential habitat for the LFA. Since these ants have an affinity for nesting at tree bases and in potted plants, they are especially easily spread between plant nurseries. When contaminated plants are purchased and planted, the ants may become locally established (Romanski 2001). May be spread by the movement of logs and lumber products infested with the ant. It may be spread within the Solomon Islands by the movement of coconuts. May be spread by the movement of logs and lumber products infested with the ant. It may be spread within the Solomon Islands by the movement of coconuts. *W. auropunctata* was likely to have been transported between the large islands in the Galapagos archipelago on plants and in soil, and between the small islands on camping provisions and equipment (Roque-Albelo and Causton 1999). May be spread by the movement of logs and lumber products infested with the ant. It may be spread within the Solomon Islands by the movement of coconuts. In Cameroon the spread of the little fire ant in cocoa plantations is encouraged due to the fact that it preys on, and thereby has a role in the control of, certain herbivorous cocoa pests (Bruneau de Mire 1969, in Brooks and Nickerson 2000).

Principal source:

Compiler: Dr. James K. Wetterer, Honors College, Florida Atlantic University, Jupiter, USA & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review:

Publication date: 2009-10-31

ALIEN RANGE

[1] AUSTRALIA
[1] BERMUDA
[4] CANADA
[1] COSTA RICA
[1] FIJI
[1] GABON
[1] ISRAEL
[1] NEW ZEALAND
[7] SOLOMON ISLANDS
[1] UNITED KINGDOM
[4] VANUATU

[1] BAHAMAS
[1] CAMEROON
[1] COOK ISLANDS
[4] ECUADOR
[3] FRENCH POLYNESIA
[1] GUAM
[4] NEW CALEDONIA
[1] PAPUA NEW GUINEA
[1] TUVALU
[14] UNITED STATES
[2] WALLIS AND FUTUNA

Red List assessed species 98: CR = 32; EN = 20; VU = 15; NT = 10; DD = 7; LC = 14;

[Bavayia crassicollis](#) **DD**

[Bavayia exsuccida](#) **EN**

[Bavayia goroensis](#) **EN**

[Bavayia ornata](#) **EN**

[Bavayia robusta](#) **NT**

[Bavayia septuiclavis](#) **NT**

[Bulimulus adelphus](#) **CR**

[Bulimulus albermalensis](#) **DD**

[Bulimulus chemitzioides](#) **CR**

[Bulimulus darwini](#) **VU**

[Bulimulus eschariferus](#) **CR**

[Bulimulus habeli](#) **CR**

[Bulimulus jacobi](#) **CR**

[Bulimulus nesioticus](#) **VU**

[Bulimulus nux](#) **EN**

[Bulimulus olla](#) **EN**

[Bulimulus sculpturatus](#) **CR**

[Bulimulus sp. nov. 'krameri'](#) **CR**

[Bulimulus sp. nov. 'tuideroyi'](#) **CR**

[Bulimulus unifasciatus](#) **VU**

[Caledoniscincus aquilonius](#) **NT**

[Caledoniscincus auratus](#) **EN**

[Caledoniscincus bodoi](#) **LC**

[Caledoniscincus cryptos](#) **DD**

[Caledoniscincus haplorhinus](#) **LC**

[Caledoniscincus renevieri](#) **EN**

[Celatiscincus euryotis](#) **EN**

[Cryptoblepharus novocaledonicus](#) **LC**

[Dierogecko insularis](#) **NT**

[Bavayia cyclura](#) **DD**

[Bavayia geitaina](#) **NT**

[Bavayia montana](#) **DD**

[Bavayia pulchella](#) **NT**

[Bavayia sauvagii](#) **DD**

[Bulimulus achatellinus](#) **CR**

[Bulimulus adsersenii](#) **CR**

[Bulimulus calvus](#) **VU**

[Bulimulus cinerarius](#) **EN**

[Bulimulus eos](#) **CR**

[Bulimulus galapaganus](#) **CR**

[Bulimulus indefatigabilis](#) **CR**

[Bulimulus lycodus](#) **CR**

[Bulimulus nucula](#) **DD**

[Bulimulus ochsneri](#) **CR**

[Bulimulus saeronius](#) **CR**

[Bulimulus sp. nov. 'josevillani'](#) **CR**

[Bulimulus sp. nov. 'nilsodhneri'](#) **CR**

[Bulimulus sp. nov. 'vanmoli'](#) **CR**

[Bulimulus wolffi](#) **CR**

[Caledoniscincus atropunctatus](#) **LC**

[Caledoniscincus austrocaledonicus](#) **LC**

[Caledoniscincus chazeaui](#) **EN**

[Caledoniscincus festivus](#) **LC**

[Caledoniscincus orestes](#) **EN**

[Caledoniscincus terma](#) **VU**

[Celatiscincus similis](#) **EN**

[Dierogecko inexpectatus](#) **CR**

[Dierogecko kaalaensis](#) **CR**



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Wasmannia auropunctata*

Dierogekko koniambo CR	Dierogekko nehoueensis CR
Dierogekko poumensis CR	Dierogekko thomaswhitei CR
Dierogekko validiclavis EN	Emoia loyaltiensis VU
Eurydactylodes agricolae NT	Eurydactylodes occidentalis CR
Eurydactylodes symmetricus EN	Eurydactylodes vieillardi NT
Geoscincus haraldmeieri CR	Graciliscincus shonae VU
Kanakysaurus viviparus EN	Kanakysaurus zebratus EN
Lioscincus nigrofasciolatum LC	Lioscincus novaecaledoniae LC
Lioscincus tillieri NT	Marmorosphax tricolor LC
Nannoscincus exos CR	Nannoscincus gracilis VU
Nannoscincus greeri EN	Nannoscincus hanchisteus CR
Nannoscincus humectus EN	Nannoscincus manautei CR
Nannoscincus mariei VU	Nannoscincus slevini EN
Oedodera marmorata CR	Partula hyalina VU
Phoboscincus garnieri LC	Rhacodactylus auriculatus LC
Rhacodactylus chahoua VU	Rhacodactylus ciliatus VU
Rhacodactylus leachianus LC	Rhacodactylus sarasinorum VU
Rhacodactylus trachyrhynchus EN	Sigaloseps deplanchei NT
Simiscincus aurantiacus VU	Tropidoscincus aubrianus VU
Tropidoscincus boreus LC	Tropidoscincus variabilis LC

BIBLIOGRAPHY

68 references found for *Wasmannia auropunctata*

Management information

Abedrabbo, S. 1994. Control of the little fire ant, *Wasmannia auropunctata*, on Santa Fe Island in the Galapagos Islands. pp. 219-227 in Williams, D. F. (ed.) Exotic ants: biology, impact, and control of introduced species. Westview Press, Boulder. 332 pp.

[AntWeb, 2006. *Wasmannia auropunctata*](#)

Summary: AntWeb illustrates ant diversity by providing information and high quality color images of many of the approximately 10,000 known species of ants. AntWeb currently focusses on the species of the Nearctic and Malagasy biogeographic regions, and the ant genera of the world. Over time, the site is expected to grow to describe every species of ant known. AntWeb provides the following tools: Search tools, Regional Lists, In-depth information, Ant Image comparison tool PDF field guides maps on AntWeb and Google Earth and Ant genera of the world slide show.

AntWeb is available from: <http://antweb.org/about.jsp> [Accessed 20 April 2006]

The species page is available from:

<http://antweb.org/getComparison.do?rank=species&genus=wasmannia&name=auropunctata&project=&project=> [Accessed 2 May 2006]

[Causton, C.E., Sevilla, C and S.D. Porter. 2005. Eradication of the little fire ant, *Wasmannia auropunctata* from Marchena Island, Galapagos: On the edge of success? Florida Entomologist 88: 159-168.](#)

Summary: Available from: <http://www.fcla.edu/FlaEnt/fe88p159.pdf> [Accessed 21 October 2008]

[Commonwealth of Australia. 2006a. Threat abatement plan to reduce the impacts of tramp ants on biodiversity in Australia and its territories, Department of the Environment and Heritage, Canberra.](#)

Summary: This plan establishes a national framework to guide and coordinate Australia's response to tramp ants, identifying the research, management, and other actions necessary to ensure the long term survival of native species and ecological communities affected by tramp ants. It identifies six national priority species as an initial, but flexible, list on which to focus attention. They are the red imported fire ant (*Solenopsis invicta*), tropical fire ant (*S. geminata*), little fire ant (*Wasmannia auropunctata*), African big-headed ant (*Pheidole megacephala*), yellow crazy ant (*Anoplolepis gracilipes*), and Argentine ant (*Linepithema humile*).

Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tramp-ants.pdf> [Accessed 17 November 2009]

[Commonwealth of Australia. 2006b. Background document for the threat abatement plan to reduce the impacts of tramp ants on biodiversity in Australia and its territories, Department of the Environment and Heritage, Canberra.](#)

Summary: This background document to the Threat abatement plan to reduce the impacts of tramp ants on biodiversity in Australia and its territories provides supporting information on a range of issues such as tramp ant biology, population dynamics, spread, biodiversity impacts and management measures.

Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tramp-ants-background.pdf> [Accessed 17 November 2009]

[Delabie, J. H. C. 1989. Preliminary evaluation of an alternative technique for the control of the little fire ant *Wasmannia auropunctata* in cacao plantations. Agrotropica 75: 75-78.](#)

[Department of Primary Industries and Fisheries \(DPI&F\) 2006. The Electric Ant \(*Wasmannia auropunctata*\) in Queensland](#)

Summary: Available from: http://www.dpi.qld.gov.au/cps/rde/xchg/dpi/hs.xsl/4790_5772_ENA_HTML.htm [Accessed 25 February 2008]

[Department of the Environment and Heritage \(DEH\), 2005. Draft Threat Abatement Plan for Reduction in Impacts of Tramp Ants on Biodiversity in Australia and its Territories](#)

Formis: A Master Bibliography of Ant Literature. USDA, Agricultural Research Service.

[Fourmi de feu a Tahiti \(in French\)](#)

Summary: Webpage created to centralise information on the *Wasmannia auropunctata* invasion in Tahiti. Contains an assessment of the situation, images, maps, scientific documents, links and contacts.

[Harris, R.; Abbott, K.; Barton, K.; Berry, J.; Don, W.; Gunawardana, D.; Lester, P.; Rees, J.; Stanley, M.; Sutherland, A.; Toft, R. 2005: Invasive ant pest risk assessment project for Biosecurity New Zealand. Series of unpublished Landcare Research contract reports to Biosecurity New Zealand. BAH/35/2004-1.](#)

Summary: The invasive ant risk assessment project, prepared for Biosecurity New Zealand by Landcare Research, synthesises information on the ant species that occur in New Zealand (native and introduced species), and on invasive ants that pose a potential threat to New Zealand.

There is a great deal of information in this risk assessment on invasive ant species that is of global interest, including; biology, distribution, pest status, control technologies.

The assessment project has five sections. 1) The Ants of New Zealand: information sheets on all native and introduced ants established in New Zealand 2) Preliminary invasive ant risk assessment: risk scorecard to quantify the threat to New Zealand of 75 ant species. 3) Information sheets on invasive ant threats: information sheets on all ant species scored as medium to high risk (n = 39). 4) Pest risk assessment: A detailed pest risk assessment for the eight species ranked as having the highest potential risk to New Zealand (*Anoplolepis gracilipes*, *Lasius neglectus*, *Monomorium destructor*, *Paratrechina longicornis*, *Solenopsis geminata*, *Solenopsis richteri*, *Tapinoma melanocephalum*, *Wasmannia auropunctata*) 5) Ranking of high risk species: ranking of the eight highest risk ant species in terms of the risks of entry, establishment, spread, and detrimental consequences.

NB. The red imported fire ant (*Solenopsis invicta*) is considered to be the worst ant pest in the world. However, *Solenopsis invicta* was specifically excluded from consideration in this risk assessment as this species has already been subject to detailed consideration by Biosecurity New Zealand

(This invasive ant pest risk assessment was funded by Biosecurity New Zealand and Foundation for Research, Science and Technology. Undertaken by Landcare Research in collaboration with Victoria University of Wellington and Otago Museum)

Available from: http://www.landcareresearch.co.nz/research/biocons/invertebrates/Ants/ant_pest_risk.asp [Accessed 20 May 2007]

Harris, R.J. & Barker, G. (2007). Relative risk of invasive ants (Hymenoptera: Formicidae) establishing in New Zealand. *New Zealand Journal of Zoology* 34: 161-178.

Holway, D.A., Lach, L., Suarez, A.V., Tsutsui, N.D. and Case, T.J. 2002. The Causes and Consequences of Ant Invasions, *Annu. Rev. Ecol. Syst.* 33: 181-233.

ISSG, compilation of email correspondence with Simon O Connor, Jean-Yves Meyer and Eric Loeve in November 2005

Lubin, Y. 1984. Changes in the native fauna of the Galapagos Islands following invasion by the little fire ant *Wasmannia auropunctata*. *Biol. J. Linn. Soc.* 21: 229- 242.

McGlynn, T.P. 1999. The Worldwide Transfer of Ants: Geographical Distribution and Ecological Invasions, *Journal of Biogeography* 26(3): 535-548.

Meyer, J.-Y and Jourdan, H. Undated. *Little Fire Ant in Tahiti and Miconia in New Caledonia: French connection to tackle new invasions in South Pacific Islands*

Ness, J.H and Bronstein, J.L. 2004. The Effects of Invasive Ants on Prospective ant Mutualists, *Biological Invasions* 6: 445-461.

[Nishida, G. M. and Evenhuis, N. L. 2000. Arthropod pests of conservation significance in the Pacific: A preliminary assessment of selected groups. In Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy. South Pacific Regional Environment Programme, Samoa: 115-142.](#)

Summary: Discusses over a dozen of the worst arthropod pests in the South Pacific, with particular emphasis on ants and their control and management.

[Pacific Ant Prevention Programme, March 2004. Pacific Invasive Ant Group \(PIAG\) on behalf of the IUCN/SSC Invasive Species Specialist Group \(ISSG\).](#)

Summary: A proposal prepared for the Pacific Plant Protection Organisation and Regional Technical Meeting For Plant Protection. This plan aims to prevent the red imported fire ant and other invasive ant species with economic, environmental and/or social impacts, entering and establishing in or spreading between (or within) countries of the Pacific Region.

Roque, Albelo L., Causton, C. E. and Mieleles, A. 2000. The ants of Marchena Island, twelve years after the introduction of the little fire ant, *Wasmannia auropunctata*. *Noticias de Galapagos*.

[Sarnat, E. M. \(December 4, 2008\) PIAKey: Identification guide to ants of the Pacific Islands, Edition 2.0, Lucid v. 3.4. USDA/APHIS/PPQ Center for Plant Health Science and Technology and University of California Davis.](#)

Summary: PIAKey (Pacific Invasive Ant key) is an electronic guide designed to assist users identify invasive ant species commonly encountered in the Pacific Island region. The guide covers four subfamilies, 20 genera and 44 species.

The primary tool offered by PIAKey is an interactive key designed using Lucid3 software. In addition to being fully illustrated, the Lucid key allows users to enter at multiple character points, skip unknown characters, and find the most efficient path for identifying the available taxa. Each species is linked to its own web page. These species pages, or factsheets, are linked to an illustrated glossary of morphological terms, and include the following seven sections: 1) Overview of the species; 2) Diagnostic chart illustrating a unique combination of identification characters; 3) Comparison chart illustrating differences among species of similar appearance; 4) Video clip of the species behavior at food baits (where available); 5) Image gallery that includes original specimen images and live images (where available); 6) Nomenclature section detailing the taxonomic history of the species, and 7) Links and references section for additional literature and online resources.

Available from: <http://www.lucidcentral.org/keys/v3/PIAkey/index.html> [Accessed 17 December 2008]

Silberglied, R. 1972. The little fire ant, *Wasmannia auropunctata*, a serious pest in the Galapagos Islands. *Noticias Galapagos* 19/20: 13-15.

Souza, E., Follett, P.A., Price, D.K., Stacy, E.A. (2006). Field Suppression of the Invasive Ant *Wasmannia auropunctata* (Hymenoptera: Formicidae) in a Tropical Fruit Orchard in Hawaii. *Journal of Economic Entomology* 101(4): 1068-1074.

SPREP. 2003. *Report on the 2nd Pilot of SPREP Invasive Species Training Course in Vanuatu*.

[Stanley, M. C. 2004. Review of the efficacy of baits used for ant control and eradication. Landcare Research Contract Report: LC0405/044. Prepared for: Ministry of Agriculture and Forestry.](#)

Summary: Available from: <http://www.landcareresearch.co.nz/research/biocons/invertebrates/ants/BaitEfficacyReport.pdf> [Accessed 10 December 2005]

Ulloa Chacón, P. and Cherix, D. 1994. Perspectives on control of the little fire ant, (*Wasmannia auropunctata*), on the Galapagos Islands. In Williams, D. F. (ed.) Exotic ants: Biology, impact, and control of introduced species. Westview Press, Boulder, CO: 63-72.

[Walker, K. 2006. Electric ant \(*Wasmannia auropunctata*\) Pest and Diseases Image Library. Updated on 9/09/2006 11:06:31 AM.](#)

Summary: PaDIL (Pests and Diseases Image Library) is a Commonwealth Government initiative, developed and built by Museum Victoria's Online Publishing Team, with support provided by DAFF (Department of Agriculture, Fisheries and Forestry) and PHA (Plant Health Australia), a non-profit public company. Project partners also include Museum Victoria, the Western Australian Department of Agriculture and the Queensland University of Technology. The aim of the project is: 1) Production of high quality images showing primarily exotic targeted organisms of plant health concern to Australia. 2) Assist with plant health diagnostics in all areas, from initial to high level. 3) Capacity building for diagnostics in plant health, including linkage developments between training and research organisations. 4) Create and use educational tools for training undergraduates/postgraduates. 5) Engender public awareness about plant health concerns in Australia. PaDIL is available from: <http://www.padil.gov.au/aboutOverview.aspx>, this page is available from:

<http://www.padil.gov.au/viewPestDiagnosticImages.aspx?id=623> [Accessed 6 October 2006]

Waterhouse, D. F. 1997. The Major Invertebrate Pests and Weeds of Agriculture and Plantation Forestry in the Southern and Western Pacific. The Australian Centre for International Agriculture Research, Canberra.

Summary: Compiled tables of the distribution and importance of invertebrate pests.

General information

Alonso, L. E. 1969. Spatial and temporal variation in the ant occupants of a facultative ant-plant. *Biotropica* 30: 201-213.

[Armbrecht, I. and Ulloa-Chacón, P. 2003. The Little Fire ant *Wasmannia auropunctata* \(Roger\) \(Hymenoptera: Formicidae\) as a Diversity Indicator of Ants in Tropical Dry Forest Fragments of Colombia, *Environ. Entomol.* 32\(3\): 542-547.](#)

Summary: A report on the significant correlation between the abundance of *W. auropunctata* and low native ant biodiversity in fragmented Colombian forests.

Available from: http://mafalda.univalle.edu.co/~hormigas/files/Wasmannia_as_indicador.pdf [Accessed 24 February 2005]

Brooks, S. and Nickerson, J.C. 2000. Featured Creatures.

Bruneau, de Miré, P. 1969. Une forme utilisable au Cameroun dans la lutte contre les mirides du cacaoyer: *Wasmannia auropunctata* Roger. *Café Cacao Thé* 13: 209-212.

Summary: Abstract: The author drew attention to the fact that in order to keep their plantations healthy the Boulous of Kribi area in Cameroun made use of an ant that had most probably been imported: *Wasmannia auropunctata* Roger. These ants were carried from one plantation to another in basket traps made of bundles of raphia leaflets and containing sugar cane or palm nut parings as bait which had been left in contact with the ants for at least three days. A trial showed that in less than ten days after being deposited these traps contained both larvae and immature adults of *Wasmannia auropunctata*. Knock-down counts from cacao trees in the Kribi region showed that this ant has driven away the mirids and Crematogaster ants and has reduced the number of insects generally, especially the Hemiptera, Orthoptera and Coleoptera. On the other hand, it contributed to the presence of psyllids and coccids of the genus *Saisseria*.

Clark, D. B., Guayasamin, C., Pazmino, O., Donoso, C. and Paez de Villacis, Y. 1982. The tramp ant *Wasmannia auropunctata*: Autoecology and effects on ant diversity and distribution on Santa Cruz Island, Galapagos. *Biotropica* 14(3): 196-207.

Conant, P. and Hirayama, C. 2000. *Wasmannia auropunctata* (Hymenoptera: Formicidae): established on the Island of Hawaii. *Bishop Museum Occasional Papers* 64: 21-22.

Delabie, J. H. C., da Encarnacao, M. A. V. and Cazorla, I. M. 1994. Relations between the little fire ant, *Wasmannia auropunctata*, and its associated mealybug, *Planococcus citri*, in Brazilian cocoa farms. In: D. F. Williams (Ed.) Exotic Ants: Biology, Impact, and Control of Introduced Species. Westview Press, Boulder, CO: 91-103.

Delabie, J.H.C., Jahyny, B., Cardoso do Nascimento, I., Mariano, C.S.F., Lacau, S., Campiolo, S., Philpott, S.M. & Leponce, M. (2007). Contribution of cocoa plantations to the conservation of native ants (Insecta: Hymenoptera: Formicidae) with a special emphasis on the Atlantic Forest fauna of southern Bahia, Brazil. *Biodiversity Conservation* 16: 2359-2384.

de la Vega, I. 1994. Food searching behavior and competition between *Wasmannia auropunctata* and native ants on Santa Cruz and Isabela, Galapagos Islands. In Williams, D. F. (ed.) Exotic Ants: Biology, Impact, and Control of Introduced Species. Westview Press, Boulder, CO: 73-79.

de Souza, A. L. B., Delabie, J. H. C. and Fowler, H. G. 1998. *Wasmannia* spp. (Hym., Formicidae) and insect damages to cocoa in Brazilian farms. *Journal of Applied Entomology* 122: 339-341.

Summary: Diagnostic insect damage to cocoa tree leaves and fruits were compared in situations with and without the presence of the little fire ants, *Wasmannia auropunctata* and the closely related and sympatric *W. cf rochai*. No significant differences in thrips, lepidopteran, or chrysomelid beetle damage to fruits, or to young and old leaves, were associated with these ants. However, significant increases of pseudococcids *Planococcus citrii*, associated with areas dominated by *W. auropunctata*, and to a lesser degree with *W. cf rochai*, were present. *W. auropunctata* has been reported to be a canopy mosaic dominant in cocoa farms, but the lack of reduced herbivore incidences and its lack of spatial permanence do not support favoring its populations for the management of phytophagous insect control.

Deyrup, M., Davis, L. and Cover, S. 2000. Exotic ants in Florida. *Transactions of the American Entomological Society* 126: 293-326.

Summary: More than 50 species of exotic ants have established breeding populations in Florida. This is the largest exotic ant fauna of any U.S. state. An annotated list of species (including distribution, origin, and pest status) includes 4 new records for the U.S.

Fabres, G. and Brown, W. L. Jr. 1978. The recent introduction of the pest ant *Wasmannia auropunctata* into New Caledonia. *Journal of the Australian Entomological Society* 17: 139-142.

Fernald, H. T. 1947. The little fire ant as a house pest. *J. Econ. Entomol.* 40: 428.

[Florida Atlantic University. \(n.d.\). Discover life map of *Wasmannia auropunctata*. Accessed 18 June, 2009 from <http://pick4.pick.uga.edu/mp/20m?kind=Wasmannia+auropunctata>](#)

Guilbert, E., Chazeau, J. and De Larbogne, L. B. 1994. Canopy arthropod diversity of New Caledonian forests sampled by fogging: Preliminary results. *Memoirs of the Queensland Museum*. Brisbane 36, No. 1: 77-85.

Summary: Faunal composition and community structure of canopy arthropods was analyzed from insecticidal fogging samples in 3 types of New Caledonian forests: dense evergreen forest on ultramafic alluvium (Riviere Bleue), sclerophyllous forest on limestone and cong.

[Harris, R.J. & Berry, J. \(n.d.\). *Wasmannia auropunctata* \(Roger\). Accessed 18 June, 2009 from \[http://www.landcareresearch.co.nz/research/biocons/invertebrates/Ants/invasive_ants/Wasaur_info.asp\]\(http://www.landcareresearch.co.nz/research/biocons/invertebrates/Ants/invasive_ants/Wasaur_info.asp\)](#)

Heraty, J. M. 1994. Biology and importance of two eucharitid parasites of *Wasmannia* and *Solenopsis*. In Williams, D. F. (ed.) *Exotic ants: Biology, impact, and control of introduced species*, Westview Press, Boulder, CO.: 104-120.

[ITIS \(Integrated Taxonomic Information System\), 2005. Online Database *Wasmannia auropunctata*](#)

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from:

http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Wasmannia+auropunctata&p_format=&p_ifx=plgt&p_lan_g= [Accessed March 2005]

Jackson, P. F. R. 1976. Fire-ants pose threat to Galapagos conservation. *Environmental Conservation* 3: 268.

Jourdan, H. 1997. Threats on Pacific Island: the spread of the Tramp Ant *Wasmannia auropunctata*. *Pacific Conservation Biology* 3(1): 61-64.

Jourdan, H., Sadlier, R. and Bauer, A. 2000. Premieres observations sur les consequences de l invasion de *Wasmannia auropunctata* 1863 (Roger) sur les predateurs superieurs dans les ecosystemes neo-caledoniens. *Actes Coll. Insectes Sociaux* 13: 121-126.

Kamura, C.M., Morini, M.S.C., Figueiredo, C.J., Bueno, O.C. & Campos-Farinha, A.E.C. (2007). Ant communities (Hymenoptera: Formicidae) in an urban ecosystem near the Atlantic Rainforest. *Brazilian Journal of Biology* 67(4): 635-641.

Keller, L., Cherix, D. and Ulloa-Chacon, P. 1989. Description of a new artificial diet for rearing ant colonies as *Iridomyrmex humilis*, *Monomorium pharaonis* and *Wasmannia auropunctata* (Hymenoptera: Formicidae). *Insectes Sociaux* 36: 348-352.

McGlynn, T. P. 1999. Non-native ants are smaller than related native ants. *American Naturalist* 154: 690-699.

Summary: I compare the sizes of non-native and native ants to evaluate how worker size may be related to the ability of a species to invade new habitats. I compare the size of 78 non-native ant species belonging to 26 genera with the size of native congeneric species.

Meier, R. E. 1985. Interference behavior of two tramp ants (Hymenoptera: Formicidae) at protein baits on the Galapagos Islands, Ecuador. *Experientia* 41: 1228.

Meier, R. E. 1994. Coexisting patterns and foraging behavior of introduced and native ants (Hymenoptera Formicidae) in the Galapagos Islands. In Williams, D. F. (ed.) *Exotic Ants: Biology, Impact, and Control of Introduced Species*. Westview Press, Boulder, CO: 44-62.

Moore P.A. Feline Corneal Disease. *Clin. Tech. Small An. Pract.* 2005, 20, 2: 83-93

Rapp, G. 1999. Introduction of the fire ant *Wasmannia auropunctata* into Vanuatu. *Ag. Alert* 18: 1.

[Romanski, A. 2001. *Introduced Species Summary Project: Little Fire Ant \(Wasmannia auropunctata\)*.](#)

Summary: Available from:

http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Wasmannia_auropunctata.htm#Establishment [Accessed 24 February 2005]

Roque-Albelo, L. and Causton, C. 1999. El Niño and Introduced Insects in the Galapagos Islands: Different Dispersal Strategies, Similar Effects, *Noticias de Galapagos* (60).

Roze M., Plisnier M., Sottovia J.-L., Cloet P.R. Etude de la keratopathie tropicale à la Martinique. *Revue Méd. Vét.*, 2004, 155, 12 : 598-601

Solomon, S.E. & Mikheyev, A.S. (2005). The ant (Hymenoptera: Formicidae) fauna of Cocos Island, Costa Rica. *Florida Entomologist* 88(4): 415-423.

Spencer, H. 1941. The small fire ant *Wasmannia* in citrus groves - a preliminary report. *Florida Entomologist* 24: 6-14.

Tennant, L. E. 1994. The Ecology of *Wasmannia auropunctata* in primary tropical rainforest in Costa Rica and Panama. In Williams, D. F. (ed.) *Exotic ants: Biology, impact, and control of introduced species* Westview Press Boulder, CO: 80-90.

Vanderwoude, C. and Numbuk, S. 2006. Preliminary Report on Infestation of Little Fire Ant (*Wasmannia auropunctata*) at Kreer Heights, Wewak. *AntiAnts*.

[Vonshak, M., Dayan, T., Hefetz, A. \(2006\). The little fire ant \(*Wasmannia auropunctata*\) in Israel. Accessed 18 June, 2009 from \[http://www.tau.ac.il/lifesci/zoology/members/dayan_files/articles/merav_ziv_2006.pdf\]\(http://www.tau.ac.il/lifesci/zoology/members/dayan_files/articles/merav_ziv_2006.pdf\)](#)

Walker, K.L. (2006). Impact of the Little Fire Ant, *Wasmannia auropunctata*, on Native Forest Ants in Gabon. *Biotropica* 38(5): 666-673.

Wetterer, J. K., Walsh, P. D. and White, L. J. T. 1999. *Wasmannia auropunctata* (Roger) (Hymenoptera: Formicidae), a highly destructive tramp ant, in wildlife refuges of Gabon, West Africa. *African Entomology* 7: 292-294.

Williams, D. F. and Whelan, P. M. 1992. Bait attraction of the introduced pest ant, *Wasmannia auropunctata* (Hymenoptera: Formicidae) in Galapagos Islands. *J. Entomol. Sci.* 27(1): 29-34.