Linepithema humile 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae

Common name Argentinische Ameise (German), Argentine ant (English), formiga-Argentina (Portuguese, Brazil)

Synonym *Iridomyrmex humilis* , (Mayr, 1868)

Similar species

Summary Linepithema humile (the Argentine ant) invades sub-tropical and temperate regions and is established on six continents. Introduced populations exhibit a different genetic and social makeup that confers a higher level of invasiveness (due to an increase in co-operation between workers in the colony). This allows the formation of fast growing, high density colonies, which place huge pressures on native ecosystems. For example, Linepithema humile is the greatest threat to the survival of various endemic Hawaiian arthropods and displaces native ant species around the world (some of which may be important seed-dispersers or plant-pollinators) resulting in a decrease in ant biodiversity and the disruption of native ecosystems.

view this species on IUCN Red List

Species Description

Argentine ant (*Linepithema humile*) workers are monomorphic, displaying no physical differentiation (Holway *et al*. 2002a). The workers of this species are small, medium to dark brown ants, reaching 2 to 3mm in length. Body surface is smooth and shiny and lacks hairs on the dorsum of the head and thorax. The petiole is composed of a single, scale-like segment, and sting is absent. Workers are extremely fast moving and industrious, often recruiting in high numbers.

Please click on AntWeb: *Linepithema humile* 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 comare: head, profile, dorsal, or label.

Please see PaDIL (Pests and Diseases Image Library) Species Content Page Ants: Argentine 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 *Linepithema humile* contains an overview, diagnostic features, comparision charts, images, nomenclature and links. (Sarnat, 2008)

Notes

The change in the structure of Argentine ant (*Linepithema humile*) colonies in introduced populations (i.e. in non-native regions) is due to the genetic makeup of such colonies (Tsutsui *et al*. 2000; Tsutsui and Suarez 2003). These “uniclonal” colonies consist of workers that lack internest aggression, allowing workers to co-operate together as one supercolony, optimising foraging range and efficiency. This trait is greatly advantageous and allows ant colonies to attain high local densities and dominate ecosystems rapidly (McGlynn 1999; Holway *et al*. 2002a; Ness and Bronstein 2004). The mechanisms required for workers to recognise workers from a different colony are believed to be dependant on genetic mechanisms (i.e. differences). Researchers believe that because introduced populations have a lower level of genetic diversity compared with parent populations (due to having experienced a “population bottle-neck”) there is insufficient genetic diversity between workers for ants to be able to recognise workers as belonging to a different colony (Tsutsui *et al*. 2000). It has been suggested that the introduction of new alleles into introduced populations could increase genetic differentiation sufficient to trigger intraspecific aggression (which would alter colony structure, leading to a decrease in ant densities). On the other hand, populations with low levels of genetic diversity have underlying inherent traits that reduce adaptive ability in the long run and this control method may prevent the natural break-down of uniclonal colonies over time (Tsutsui *et al*. 2000).

Lifecycle Stages

Virgin queens are believed to mate in the nest and disperse through budding rather than participating in a nuptial flight, resulting in the formation of large, many-queened, cooperating unicolonies (Markin, 1968). Queens may be killed by workers after one year and replaced by newly mated queens (Markin, 1970; Keller *et al*., 1989).

Habitat Description

The physical environment may highly influence the suitability of a given habitat for a competitively dominant invader such as the Argentine ant (*Linepithema humile*) (Holway 2002b). The optimal environment for Argentine ants is characterised by moderate temperatures and moisture levels. In arid regions, including the *fynbos* of South Africa and the scrublands of California, invasiveness is limited by temperature, as Argentine ants are less temperature tolerant than native ants (Witt and Giliomee 1999, Temper 1976, in Holway 2002b). In field trials foraging activity ceases at around 40°C - 44°C, with maximum foraging occurring 34°C (Holway 2002b). Moisture gradients also regulate invasiveness; Argentine ants generally penetrate further into mesic (moist and green) habitats than into xeric habitats (dry and sparse). For example, evidence from California has shown that Argentine ants disperse faster near perennial streams than near intermittent streams. (Holway 1998, in Holway 2002b).\r\n
Some abiotic factors are known to potentially regulate Argentine ant invasiveness; in Australia the large biodiversity of the ant genus *Iridomyrmex* confers a certain level of natural resistance to some habitats (Majer 1994, Andersen 1997, and Hoffmann *et al*. 1999, in Holway *et al*. 2002a). Humans predispose habitats to Argentine ant invasion as they create mesic habitats within arid zones through the modification of land. For example, in San Diego, runoff resulting from irrigation and human dwellings increases natural runoff by more than four-fold (Holway 2002b). This forms habitats more suitable to Argentine ant colonisation, indirectly opening up environments to ant invasions. A study by Suarez, Bolger, and Case (1998), conducted in California, showed the Argentine ant to be more abundant near developed areas.

Reproduction

Sexual, haplodiploid system. Although the workers of all invasive ants are sterile, the Argentine ant (*Linepithema humile*) can rear eggs and early instar larvae into sexuals in the absence of queens. It is not known whether orphaned colonies of other invasive ants are able to develop into reproductive viable colonies despite the absence of a queen (Holway *et al*. 2002a).

Nutrition
In Argentina, the Argentine ant (*Linepithema humile*) is commonly referred to as the sugar ant: a fitting name given its preference for sweet substances (Newell and Barber 1913, in Holway *et al*. 2002a). In line with this observation, baiting trials suggest that *L. humile* considers carbohydrate-rich resources such as honey or water equally, if not more attractive than protein-rich resources (Ness and Bronstein 2004). However, the ant has an overall generalised diet (similar to other invasive ants), including nectar, insects, carrion and honeydew secreted by Homopteran insects (Woodworth 1908, Horton 1918, Mallis 1942, Flanders 1943, Creighton 1950, Markin 1970a, in Suarez Bolger and Case 1998).

General Impacts
While the Argentine ant (*Linepithema humile*) is associated with disturbed habitats throughout its introduced range, it can penetrate native habitats that have experienced little human disturbance. Examples include: *matorral* in Chile, *fynbos* in South Africa, coastal sage scrub in southern California, riparian woodlands in California, subalpine shrubland in Hawaii, and oak and pine woodland in Portugal (Fuentes 1991, Bond and Slingsby 1984, Suarez Bolger and Case 1998, Ward 1987, Holway 1998, Cole *et al*. 1992, in Suarez Holway and Case 2001).\r\n
L. humile is a dominant ant and an aggressive competitor. It has displaced native ant species in an ecologically sensitive area in Spain (Carpintero *et al*. 2005) and has been associated with local extinctions of native ants in California (Suarez Bolger and Case 1998). Californian ants that are especially sensitive to displacement are army ants (*Neivamyrmex* spp.) and harvester ants (genera *Messor* and *Pogonomyrmex*), both of which are important ecosystem regulators (Suarez Bolger and Case 1998). *Monomorium* species, such as *M. ergatogyna*, may persist because of their chemical defences or their tolerance of higher temperatures (Holway 1999, Adams and Traniello 1981, Andersen *et al*. 1991, in Holway *et al*. 2002a). In introduced regions *L. humile* may be displaced by the red imported fire ant (*Solenopis invicta*), another invasive ant (Holway *et al*. 2002a).\r\n
Invasive ants have a great potential to alter ecosystem processes, including ant-mediated seed dispersal or plant pollination. In California the removal of seeds produced by the myrmecochorous (ant-dispersed) tree poppy *Dendromecon rigida* is less in areas inhabited by the Argentine ant (*L. humile*) than in areas inhabited by the common harvester ant (*Pogonomyrmex subnitidus*) (Carney *et al*. 2003). A similar outcome has occured in the South African *fynbos*, where the displacement of large native ants by *L. humile* has lead to a reduction in the dispersal of large ant-dispersed seeds and a reduction in the reproduction of those plants (Christian 2001, Holway *et al*. 2002a). \r\n
Native arthropods are greatly threatened by Argentine ants. In South Africa, the Argentine ant can collect up to 42% of available nectar before bees can forage (Buys 1987, in Holway *et al*. 2002a). In Hawaii the Argentine ant reduces numbers of many native arthropods, including essential pollinators (Cole *et al*. 1992, in Krushelnycky *et al*. 2004), the loss of which could threaten insect-pollinated plants such as the endangered “silversword” (*Argyroxiphium* spp.)

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. The plan aims to prevent the red imported fire ant and other invasive ant species with economic, environmental or social impacts from establishing within, or spreading between, countries in the Pacific.
Please see *Linepithema humile* information sheet, prepared as part of 'The invasive ant risk assessment project', Harris *et al*. 2005., for Biosecurity New Zealand by Landcare Research.
Hartley *et al.* (2006) modelled the potential future range of the Argentine ant. They found that it is most likely to occur where the mean daily temperature in mid-winter is 7-14°C and maximum daily temperatures during the hottest month average 19-30°C. Uninvaded regions considered vulnerable to future establishment include: southern China, Taiwan, Zimbabwe, central Madagascar, Morocco, high-elevation Ethiopia, Yemen and a number of oceanic islands.
Integrated management: The potential of invasive ants to reach high densities is greater in human-modified ecosystems; particularly in land intensely utilised for primary production. For example, *L. humile* reaches high densities in agricultural systems, such as citrus orchards, that host Homopteran honey-dew producing insects (Armbrecht and Ulloa-Chacón 2003; Holway *et al*. 2002a). Improved land management, including a reduction in monoculture and an increase in the efficiency of primary production, may help prevent ant population explosions, alleviate the problems caused by high densities of ants and reduce sources of ant infestation.\r\n
Please follow this link for more detailed information on the management of the Argentine ant *Linepithema humile* compiled by the ISSG.

Pathway
Argentine ants were commonly found in cargo coming from California in the early part of the 20th century (Zimmerman 1941, in Earlham College 2002). For example, early this century it was noted that nearly every one of over 100 steamships landing between New Orleans and Baton Rouge, Louisiana, was heavily invested with Argentine ants (Newell and Barber 1913, Barber 1916, in Suarez Holway and Case 2001).Nest fragments may be moved by transport vehicles. Colony establishment may be achieved by relatively small propagules, with as little as a single queen and 10 workers required for the establishment of a new colony (Hee *et al*. 2000).Argentine ants were brought to Hawaii with troops in the Second World War (Passera 1990, in Earlham College 2002).

Principal source:

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ALIEN RANGE

[2] AUSTRALIA
[1] BERMUDA
[2] CHILE
[1] CUBA
[3] FRANCE
[1] ITALY
[1] JAPAN
[2] MEXICO
[2] NEW ZEALAND
[1] PERU
[4] PORTUGAL
[2] SOUTH AFRICA
[3] SPAIN
[1] SWITZERLAND
[1] UNITED ARAB EMIRATES
[1] UNITED KINGDOM
[17] UNITED STATES

Red List assessed species 4: CR = 1; EN = 1; VU = 1; LC = 1;

Argyroxiphium sandwicense **VU**
Loxioides bailleui **CR**
Phrynosoma coronatum **LC**
Tinostoma smaragditis **EN**

BIBLIOGRAPHY

67 references found for **Linepithema humile**

Managment information

AntWeb, 2006. *Linepithema humile*

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 comparision 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=linepithema&name=humile&project=&project= [Accessed 2 May 2006]

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 fi re 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]

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Forschler, B. T. and Evans, G. M. 1994. Argentine ant (Hymenoptera: Formicidae) foraging activity response to selected containerized baits. J. Entomol. Sci. 29(2): 209-214.

Summary: Found that baits formulated with hydramethylnon or sulfluramid were effective in eliminating foraging ants in an urban setting.

Green, C. 2005. Argentine ant update, *Dawn Chorus 60*: 8. Supporters of Tiritiri Matangi.

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Summary: Provides a brief review of historical chemical approaches to Argentine ant control in agriculture, and presents results for liquid Diazinon and Lorsban spray treatments of citrus trees.

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)
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Summary: Conducted laboratory tests of the effectiveness of four toxicants against the Argentine ant.
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Summary: Masters thesis dealing primarily with *Solenopsis xyloni*, but also makes some references to *Linepithema humile*.
Krushelnycky, P. D. and Joe, S. M. 1997. Harmful Non-Indigenous Species report on Argentine ant. Hawaiian Ecosystems at Risk website.
Summary: Provides a brief review of Argentine ant control efforts, particularly work at Haleakala National Park in Hawaii prior to 1997.
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Krushelnycky, P. D. and Reimer, N. J. 1998. Efficacy of Maxforce bait for control of the Argentine ant (Hymenoptera: Formicidae) in Haleakala National Park, Maui, Hawaii. Environmental Entomology 27: 1473-1481.
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Krushelnycky, P. D.; E. Van Gelder, L. L. Loope, and R. Gillespie., 2002. The status of invasive ant control in the conservation of island systems. In *Turning the tide: the eradication of invasive species*: 406 - 414. IUCN SSC Invasive Species Specialist Group. IUCN. Gland. Switzerland and Cambridge. UK.
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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.
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.
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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=615 [Accessed 6 October 2006]

General information

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Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - insects is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Insectos [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci�n sobre especies invasoras de m�xico cuenta actualmente con informaci�n aceca de nombre cient�fico, familia, grupo y nombre com�n, as� como h�bitat, estado de la invasi�n en M�xico, rutas de introducci�n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p�gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci�n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci�n novedades, para conocer los cambios.
Especies invasoras - Insectos is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Insectos [Accessed 30 July 2008]
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