GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Solenopsis richteri***

Solenopsis richteri **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae

Common name black imported fire ant (English)

Synonym *Solenopsis saevissima* , st. *oblongiceps* Santschi
Solenopsis pylades , var. *tricuspis* Forel
Solenopsis pylades , var. *richteri* Forel

Similar species *Solenopsis invicta*

Summary Solenopsis richteri, commonly known as the black imported fire ant, is native to South America. It builds large mounds that can reach 46cm in height. Solenopsis richteri damages crops, impedes recreational activities and can undermine roads and asphalt. It is also very dangerous to those who experience anaphylaxis from the venom of its bite. Eradication of Solenopsis richteri is not an option. It can be controlled but this is an ongoing process..

view this species on IUCN Red List

Species Description
University of Tennessee (2004) states that, \"*S. richteri* is darker at the end and has golden patch at the top of the gaster defined by distinct dark outlines. This species has a ten-segmented antenna with a two-segmented club, and a two-segmented waist. O'Keef and Vinson (2002) report that, \"*S. richteri* has a median clypeal tooth and a striated mesepimeron. Other characters that might help in the identification include: 1) the antennal scape nearly reaches the vertex, 2) the post-petiole is constricted at back half, and 3) the petiolar process is small or absent.\"
Lockley (1996) reports that, \"One of the identifying characteristics of a *S. richteri* colony is the earthen nest or mound. The mound is a conically-shaped dome of excavated soil that has a hard, rain-resistant crust. The mound averages 0.40m in diameter and 0.25m in height. In heavier soils, a mound can exceed 1m in height and 1.5m in diameter. There are usually no external openings in the mound; tunnels approximately 25-50mm below the surface radiate from the mound allowing foraging workers ready egress and ingress.\"
Please click on *AntWeb: Solenopsis richteri* 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.

Notes
The National Park Service (2003) states that, \"The black imported fire ant, *S. richteri*, is very similar to the red imported fire ant (*S. invicta*). It is currently limited to a small area of northern Mississippi and Alabama. It may be displaced from established habitats by *S. invicta*. Scientists have long thought that the black and red fire ants were two distinct species. Recently it has been discovered that hybrids of these ants produce viable offspring, and some scientists now wonder whether they are simply two races of the same species, varying in colour and perhaps behaviour.\"
TIFARMP, (UNDATED) states that, \"Colonies frequently migrate from one site to another. The queen needs only half a dozen workers to start a new colony. They can develop a new mound several hundred feed away from their previous location almost overnight. Flooding causes colonies to leave their mounds and float until they can reach land to establish a new mound. Colonies also can migrate to indoor locations.\"

Lifecycle Stages
TIFARMP (UNDATED) notes that, \"Worker *S. richteri* are wingless, sterile females. They protect the queen by defending the nest from intruders, by feeding the queen only food that the workers have eaten first, and by moving the queen from danger. They also forage and care for the developing brood. The brood is made up of cream-coloured eggs, larvae, and pupae of all the castes. The winged forms, or reproductives, live in the mound until their mating flight, which usually occurs in the afternoon soon after a rainy period. Mating flights are most common in spring and fall. Males die soon after mating, while the fertilized queen alights to find a suitable nesting site, sheds her wings, and begins digging a chamber in which to start a new colony. Sometimes, several queens can be found within a single nesting site.\"

Uses
The mound-building activities of non-native *Solenopsis* spp. alter physical and biogeochemical properties of soils, and can lead to increased soil aerationand infiltrability, elevated soil pH, increased phosphorous and potassium levels, lowered surface soil bulk density, change in organic matter, altered soil texture and enhanced fungal abundance. These influences are further enhanced by plant uptake and excretion in the rhizosphere, and cause other flow-on effects within ecosystems. This an area that has not been well studied, and more research is warranted (DeFauw *et al*. 2008 and references therein).

Habitat Description
TIFARMP (UNDATED) state: \"*S. richteri* builds mounds in almost any type of soil, but prefers open, sunny areas such as pastures, parks, lawns, meadows and cultivated fields. Mounds can reach 18 inches in height, depending on the type of soil. Often mounds are located in rotting logs and around stumps and trees. Colonies also can occur in or under buildings.\" The National Park Service (2003) states: \"Increasingly, *S. richteri* have been found nesting in wall voids, around plumbing, and under carpeting in structures. The ants have also been found invading outdoor electrical equipment, apparently attracted to the electrical fields. Infested sites include household electric metres, traffic signal control boxes, and even airport runway lights.\"

Reproduction
TIFARMP (UNDATED) state that, \"A newly mated queen lays about a dozen eggs. When they hatch 7 to 10 days later, the larvae are fed by the queen. Later on, a queen fed by worker ants can lay up to 800 eggs per day. Larvae develop 6 to 10 days and then pupate. Adults emerge in 9 to 15 days. The average colony contains 100,000 to 500,000 workers and up to several hundred winged forms and queens. Queen ants can live 7 years or more, while worker ants generally live about 5 weeks, although they can survive much longer.\"

General 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 please read this document: *Invasive ants impacts* .
The National Park Service (2003) states that, \"*S. richteri* damage crops such as soybeans, eggplant, corn, okra, strawberries, and potatoes by feeding directly on the plants or by protecting other insects that damage the crops. They chew the bark and growing tips of citrus trees and feed on the fruit. Fire ant mounds interfere with farming and mowing operations and turn recreational fields into disfigured moonscapes. Fire ants have caused sections of roads to collapse by removing soil from under the asphalt.\" Holloway and Smith (UNDATED), \"Fire ants can be a problem in citrus by tending insects that secrete honey dew which in turn provides a medium for sutty mold. These ants can damage tree bark and provide an entry way for disease causing organisms. Because of the ability to sting fire ants are often a nuisance to citrus production workers. Species include the tropical fire ant, *Solenopsis geminata*, along with the imported fire ants, *Solenopsis invicta* and *S. richteri*\"
DeShazo *et al.* (2004) state: \"The clinical signs of massive fire ant stings relate to the biologic activity of the ant venom, which possesses hemolytic, neurotoxic, and cytotoxic activity; inhibits sodium and potassium adenosine triphosphatases; reduces mitochondrial respiration; uncouple phosphorylation; adversely affects neutrophil and platelet function; inhibits nitric oxide synthetase; and perhaps activates coagulation. These properties predispose to a hypercoagulable state and exacerbate any allergic symptoms experienced by patients who are attacked.\" DeShazo *et al.* (2004) report various incidents of death or serious injury resulting from *S. richteri* attacks: \"Infants, the elderly, and others who experience anaphylaxis from the bite. Both infants and elderly have been killed because of complications resulting from the attack. A peculiar amount of cases that occur within health care facilities, primarily nursing homes, with subsequent massive sting attacks on patients with impaired consciousness.\"

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 or social impacts from establishing within or spreading between countries in the Pacific.
\r\nA 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*) was prepared as part of 'The invasive ant risk assessment project', for Biosecurity New Zealand by Landcare Research.\r\n
The Invasive ant risk assessment for *Solenopsis richteri* can be viewed at *Solenopsis richteri risk assessment*\r\n
Please see *Solenopsis richteri information sheet* for more information on biology, distribution, pest status and control technologies.
For details on management of this species including preventative, physical, chemical and biological control please read our pdf file on *management information*.
Solenopsis invicta virus-1 (SINV-1) was detected in S. richteri and S. invicta/richteri hybrid (Valles, 2007).

Principal source: Mississippi State University, 2004. Insects: Fire Ants
TIFARMP, UNDATED. Texas Imported Fire Ant Research and Management Project

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)
Updates completed with support from the Ministry of Agriculture and Forestry (MAF)- Biosecurity New Zealand

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Pubblication date: 2009-09-25

ALIEN RANGE

[1] PARAGUAY
[12] UNITED STATES

[1] SAUDI ARABIA

BIBLIOGRAPHY

25 references found for **Solenopsis richteri**

Managment information
AntWeb, 2006. *Solenopsis richteri*
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=solenopsis&name=richteri&project=&project= [Accessed 2 May 2006]
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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]
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Summary: Available from: http://www.nature.nps.gov/biology/ipm/manual/fireants.htm [Accessed 04 May 2005]
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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.
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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.
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