Making Ants Accessible

Christine Sosiak
New Jersey Institute of Technology
• Global ant database AntWeb

• AntCat, AntMaps, AntWiki

• How to use the databases in research

• Future directions
Dear Dr. Fisher,

I've collected 25,000 ant specimens and I have to finish my crummy thesis in 6 months! It all seemed like such a good idea at the time. What can I do? Please help! 

Sincerely,

Panic-Stricken
…the ornithologists of the entomology world…
Species: Solenopsis invicta

Buren, 1972

Overview | Specimens | Images | Map


Taxonomic History (provided by Barry Bolton, 2019)

Solenopsis Invicta
Buren, 1972 PDF: 9, fig. 2 (w. q.m.) BRAZIL. Neotropical. AntCat AntWild HOL

Taxonomic history
Wheeler & Wheeler, 1977a PDF: 88 (l.).


[Suter, 1991 PDF: 173 Incorrectly gave Solenopsis wagneri as an unavailable name; the name is available and has
Solenopsis invicta, see note under Solenopsis wagneri.]

Solenopsis invicta conserved over Solenopsis wagneri because of usage, in accord with ICZN (1999): Shattuck et al., See also: Rhoades, 1977: 1; Smith, 1979: 1386.

Specimen Habitat Summary

Found most commonly in these habitats: 1 times found in urban garden, 17 times found in Black Belt Prairie, 16 times found in nest in dolomite glade, 9 times found in sand bar beside creek, 8 times found in nest under a piece of wood in dolomite glade, 8 times found in plant nursery, 5 times found in desert scrub, 7 times found in dolomite glade, 6 times found in field at edge of parking lot, 5 times found in open area on ridge in mixed forest, ...

Found most commonly in these microhabitats: 9 times ground nest, 5 times pitfall trap, 5 times ground forager, 5 times leaf litter, 1 times on Passiflora incarnata, 2 times nest under stones, 1 times nest under rock, 2 times mound colony, 1 times colony floating on water, 1 times pine oak woods, solenopsis another colony as above (1720) times palm/oak hammock, 1734, ...

Collected most commonly using these methods: 0 times Lindgren funnel baited with Typosan and alpha pinene, 26 times direct collection, 8 times search, 13 times Darlee funnel, 7 times pitfall trap, 7 times blacklight, 11 times tuna bait, 3 times baiting, 3 times Malaise trap, 2 times Davis sitting, 2 times Winkler, ...

Elevations: collected from 1 - 1600 meters, 186 meters average

Type specimens: paratype of Solenopsis invicta: casent0902350; syntype of Solenopsis saevissima wagneri: casent0913949
<table>
<thead>
<tr>
<th>Collection</th>
<th>Location</th>
<th>Elevation</th>
<th>Type Status</th>
<th>Life Stage</th>
<th>Subtaxa</th>
<th>Bioregion</th>
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<tbody>
<tr>
<td>tc767017847</td>
<td>United States: Florida: Desoto County: Prairie Creek Rd. 31</td>
<td>27.053333°, -81.783333°</td>
<td>Elevation: m</td>
<td>Type Status: Life Stage: Casta: Subtaxa: Bioregion: Neartic</td>
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Species: Solenopsis invicta

Comparison within species Solenopsis invicta

CASENT0005804 Solenopsis invicta

CASENT0104503 Solenopsis invicta

CASENT0104504 Solenopsis invicta
# 24 Valid Extant Genera

<table>
<thead>
<tr>
<th>Taxon Name</th>
<th>Author Date</th>
<th>Species</th>
<th>Images</th>
<th>Map</th>
<th>Source</th>
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<tbody>
<tr>
<td>Aphaenogaster</td>
<td>May, 1853</td>
<td>6 Species</td>
<td>103 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Brauchylomyrmex</td>
<td>May, 1863</td>
<td>1 Species</td>
<td>58 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Camponotus</td>
<td>May, 1881</td>
<td>6 Species</td>
<td>199 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Colobopsis</td>
<td>May, 1881</td>
<td>2 Species</td>
<td>57 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Cretemotorugaster</td>
<td>Lund, 1931</td>
<td>4 Species</td>
<td>146 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Dolichoderus</td>
<td>Lund, 1921</td>
<td>1 Species</td>
<td>12 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Formica</td>
<td>Linnaeus, 1758</td>
<td>15 Species</td>
<td>375 Images</td>
<td>Map</td>
<td>Specimen</td>
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<td>Lasius</td>
<td>Fabr., 1904</td>
<td>7 Species</td>
<td>107 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Monomorium</td>
<td>May, 1855</td>
<td>2 Species</td>
<td>104 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Myrmecina</td>
<td>Curt. 1829</td>
<td>1 Species</td>
<td>48 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Myrmica</td>
<td>Latreille, 1804</td>
<td>2 Species</td>
<td>12 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Nylanderia</td>
<td>Emery, 1906</td>
<td>2 Species</td>
<td>38 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Oecophila</td>
<td>Westwood, 1830</td>
<td>1 Species</td>
<td>28 Images</td>
<td>Map</td>
<td>Specimen</td>
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<td>Polyergus</td>
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<td>47 Images</td>
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<td>Ponera</td>
<td>Latreille, 1804</td>
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<td>32 Images</td>
<td>Map</td>
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<tr>
<td>Prenolepis</td>
<td>May, 1881</td>
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<td>88 Images</td>
<td>Map</td>
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<td>Proceratium</td>
<td>Roger, 1963</td>
<td>3 Species</td>
<td>121 Images</td>
<td>Map</td>
<td>Specimen</td>
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<td>Soleiosoplos</td>
<td>Westwood, 1840</td>
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<td>70 Images</td>
<td>Map</td>
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<td>Stenamma</td>
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<td>51 Images</td>
<td>Map</td>
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<tr>
<td>Stigmatooma</td>
<td>Roger, 1859</td>
<td>1 Species</td>
<td>105 Images</td>
<td>Map</td>
<td>Specimen</td>
</tr>
<tr>
<td>Strumigenys</td>
<td>Smith, 1850</td>
<td>6 Species</td>
<td>93 Images</td>
<td>Map</td>
<td>Specimen</td>
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<td>Tapinoma</td>
<td>Foerster, 1859</td>
<td>1 Species</td>
<td>75 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Temnochilus</td>
<td>May, 1881</td>
<td>4 Species</td>
<td>132 Images</td>
<td>Map</td>
<td>Specimen</td>
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<tr>
<td>Tetramorium</td>
<td>May, 1855</td>
<td>3 Species</td>
<td>174 Images</td>
<td>Map</td>
<td>Specimen</td>
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</tbody>
</table>
Adm1: Virginia, United States

To see a map of the null in Adm1: Virginia, United States, click: here

• Launched in 2002

• Digitized collections from 20 major museums and many smaller ones

• Over 220,000 total specimen images, over 720,000 specimen records total
Series of *Odontomachus angulatus* (AntWeb) showing standardized image sets

This specimen is one of 78 specimens databased on AntWeb, all collected from Fiji where the species is endemic.
Series of images from AntWeb of various *Camponotus maculatus* castes
Solenopsis invicta

Buren, 1972 valid
Solenopsis invicta Buren, 1972: 9, fig. 2 (w, q, n) BRAZIL, Neotropic.

- Wheeler & Wheeler, 1977, 533 (l)
- Trager, 1991: 173 incorrectly gave Solenopsis wagneri as an unavailable name: the name is available and has priority over Solenopsis invicta. See note under Solenopsis wagneri.
- See also: Roeder, 1977 in Smith, 1979: 1388.

1 junior synonym
- Solenopsis wagneri Santschi, 1916
90 NATIVE SPECIES IN COMMON BETWEEN VIRGINIA AND NEW JERSEY

Aphaenogaster carolinensis
Aphaenogaster fulva
Aphaenogaster lamellicans
Aphaenogaster picea
Aphaenogaster rudis
Aphaenogaster treatae
Brachymyrmex depilis
Camponotus americanus
Camponotus caryae
Camponotus castaneus
Camponotus chromaiodes
Camponotus nearticus
Camponotus novaeboracensis
Camponotus pennsylvanicus
Camponotus subbarbatus
Crematogaster cerasi
Crematogaster laeviuscula
Crematogaster lineola
Crematogaster pilosa
Antwiki provides a wealth of information on the world's ants.

27,286 articles and 114,278 uploaded files by ant experts from around the world.
Pages in category "Identification key"

The following 200 pages are in this category, out of 804 total.

(previous 200) (next 200)

A
- Key to Acanthognathus Species
- Key to Acanthosclerus males
- Key to Acanthosclerus workers
- Key to Australian Acrocyrtus species
- Key to New World Acrocyrtus species
- Key to New World Acropoda queens
- Key to Old World Acrocyrtus workers
- Key to Old World Acrocyrtus queens
- Key to Old World Acrocyrtus males
- Key to Adelomyrmex of the New World Mainland
- Key to Adetomyrmex males
- Key to Adetomyrmex workers
- Key to Aenictus ceylonicus group species of China
- Key to Aenictus curica group species
- Key to Aenictus javanus group species
- Key to Aenictus laevis group species
- Key to Aenictus minutulus group species
- Key to Aenictus of India
- Key to Aenictus of Laos
- Key to Aenictus pachyurus group species
- Key to Aenictus philipppinesis group species
- Key to Aenictus silvestri group species
- Key to Aenictus species groups
- Key to Aenictus wrightsoni group species
- Key to Australian Aenictus Species
- Key to southeastern Asian Aenictus ceylonicus group species
- Key to Allomerus species
- Key to Amblyopone of the southwestern Australian Botanical Province
- Key to Australmyrmicinae Genera
- Key to Neotropical Amblyoponinae Genera
- Key to North American Genera of Amblyoponinae
- Key to Philippine Amblyoponinae

B
- Key to Bannapone species
- Key to Baracindris species
- Key to Basiceros species
- Key to Biephandatta males
- Key to Biephandatta workers and queens
- Key to Afrotrropical Bipothorax species
- Key to Afrotrropical Bothroporina species complexes
- Key to Bothroporina pumicosa species complex
- Key to Bothroporina sucata species complex
- Key to Ethiopian Bothroporina
- Key to Malagasy Bothroporina wasmannii group workers
- Key to Brachymyrmex with tumuliform metathoracic spines
- Key to Brachyponera nigrita species group workers
- Key to Brachyponera nigrita species group queens

C
- Key to Afrotropical Calyptomyrmex workers
- Key to Afrotropical Calyptomyrmex Species
- Key to Calyptomyrmex of Southeast Asia and Oceania
- Genera Insectorum: Emery's key to Camponotus subgenus of the New World
- Genera Insectorum: Emery's key to Camponotus subgenus of the Old World
- Key to Afrotropical Camponotus fulvipes species group
- Key to Australian Camponotus major of the southwestern Botanical Province
- Key to Australian Camponotus minor of the southwestern Botanical Province
- Key to Australian Camponotus species
- Key to Camponotus aureolapis species-group
- Key to Camponotus Karavaevia males
- Key to Camponotus Karavaevia queens
- Key to Camponotus Karavaevia workers
- Key to Camponotus maculatus species complex in the New World
- Key to Camponotus Mymopygna workers
- Key to Camponotus of Israel
- Key to Camponotus of Turkey
- Key to Foreolophus species

C cont.
- Key to Asian Camponotus ranarvalona group species
- Key to Camponotus bornense group species
- Key to Camponotus bornensis group workers
- Key to Camponotus breve group workers
- Key to Camponotus degeeri group species
- Key to Camponotus degeeri group workers
- Key to Camponotus helava-group workers of Madagascar
- Key to Camponotus kellen group males
- Key to Camponotus kellen group queens
- Key to Camponotus of the north-eastern Mediterranean Basin
- Key to Camponotus of the southwestern Australian Botanical Province
- Key to Camponotus Physocrematidae species
- Key to Camponotus species group of the Malagasy region
- Key to eastern US Camponotus
- Key to Malagasy Camponotus Orthocrematidae species
- Key to Malagasy Camponotus Orthocrematidae workers
- Key to North American Camponotus species
- Key to West European Camponotus species
- Key to western US Camponotus
- Key to Camponotus of Costa Rica
- Key to Cryptodyrmus species
- Key to Cryptopone of India
- Key to Cylindromyrmex males
- Key to Cylindromyrmex queens
- Key to Cylindromyrmex Species
- Key to Cylindromyrmex workers
- Key to Cypholoids
- Key to US Cyphomyrmex species

D
- Key to Dacetini
- Key to Dacetini 2007
- Key to Dacetont species
ImageJ: image processing and analysis application
Combination of global biogeographic data and phylogenies to test diversification rate hypotheses

Figure adapted from Economo et al. 2018 (fig. 2)

Combining fossil morphology with extant morphology collated from AntWeb

(data and plot from Amina Siraj, NJIT)
A new automatic identification system of insect images at the order level

Jiangni Wang, Congtian Lin, Liqiang Ji, Aiping Liang

Key Laboratory of Animal Ecology and Conservation Biology, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Beijing, 100101, China

Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Beijing, 100101, China

Automated Taxonomic Identification of Insects with Expert-Level Accuracy Using Effective Feature Transfer from Convolutional Networks

Miroslav Valan, Károly Magonyi, Atsuto Masi, Dominik Vondráček, and Fredrik Ronquist

1 Sveriges AB, Korslundgatan 58, 118 65 Stockholm, Sweden; 2 Department of Bioinformatics and Genetics, Swedish Museum of Natural History, Prenestvägen 19, 114 18 Stockholm, Sweden; 3 Department of Zoology, Stockholm University, Universitetsvägen 10, 114 18 Stockholm, Sweden; 4 Uppsala University, Disciplinary Domain of Science and Technology, Physics, Department of Physics and Astronomy, Nucleus, Uppsala, Sweden; 5 School of Electrical Engineering and Computer Science, KTH Royal Institute of Technology, Stockholm, SE-100 44 Sweden; 6 Department of Biology, Faculty of Science, Charles University in Prague, Vítezná 7, CZ-142 21 Praha 4, Czech Republic; 7 Department of Botany, National Museum, Celetná 24, CZ-110 00 Prague 1, Czech Republic.

*Correspondence to be sent to: Department of Bioinformatics and Genetics, Swedish Museum of Natural History, Prenestvägen 19, 114 18 Stockholm, Sweden E-mail: miroslav.valan@nhm.se

Time to automate identification

Taxonomists should work with specialists in pattern recognition, machine learning and artificial intelligence, say Norman MacLeod, Mark Benfield and Phil Culverhouse — more accuracy and less drudgery will result.
Ant genera identification using an ensemble of convolutional neural networks

Alan Caio R. Marques, Marcos M. Raimundo, Ellen Marianne B. Cavalheiro, Luis F. P. Salles, Christiano Lyra, Fernando J. Von Zuben

1 School of Electrical and Computer Engineering, University of Campinas (UNICAMP), Av. Albert Einstein 400, 13083-852 Campinas, São Paulo, Brazil, 2 Graduate Program in Ecology, Institute of Biology, University of Campinas (UNICAMP), R. Monteiro Lobato 255, 13083-862 Campinas, São Paulo, Brazil
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Amina Siraj

AntCat:
Dr. Brian Fisher
Dr. Barry Bolton

AntMaps
Dr. Evan Economo
Dr. Benoit Guenard
Matt Ziegler
Nitish Narula
Julia Janicki

...and countless myrmecologists who uploaded data to make AntWeb, AntCat, AntMaps, and AntWiki a success!