Taxonomy Workshop

Presented By Hawaii Ant Lab
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PCSU
1973
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Department of Agriculture
STATE OF HAWAII

Session 1: Intro to Taxonomy

And terminology

Order: Hymenoptera

BEES

WASPS

Sawflies

ANTS

Ants vs. Bees & Wasps

Ants (Family: Formicidae)

- Long antennal scape
- Antennae inserted below eyes
- Segmented waist (petiole)
  - Up to 2 segments
- Forward facing head

Bees & Wasps (various families)

- Short antennal scape
- Antennae inserted between eyes
- Segmented waist (petiole)
  - Up to 1 segment
- Head vertically aligned

Ants vs. Bees & Wasps

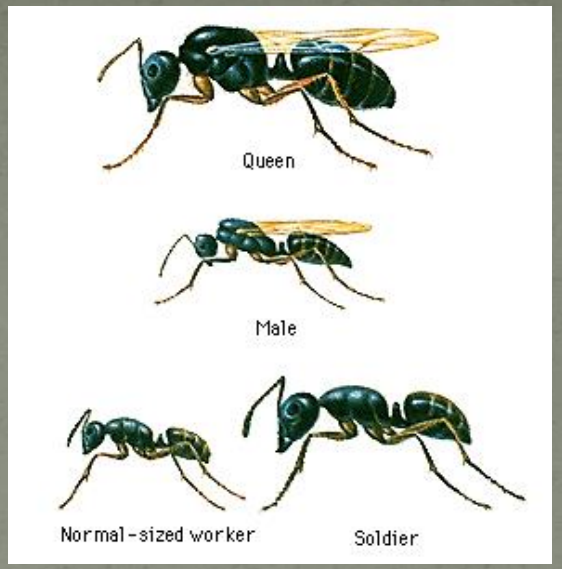
Ants

Wasps

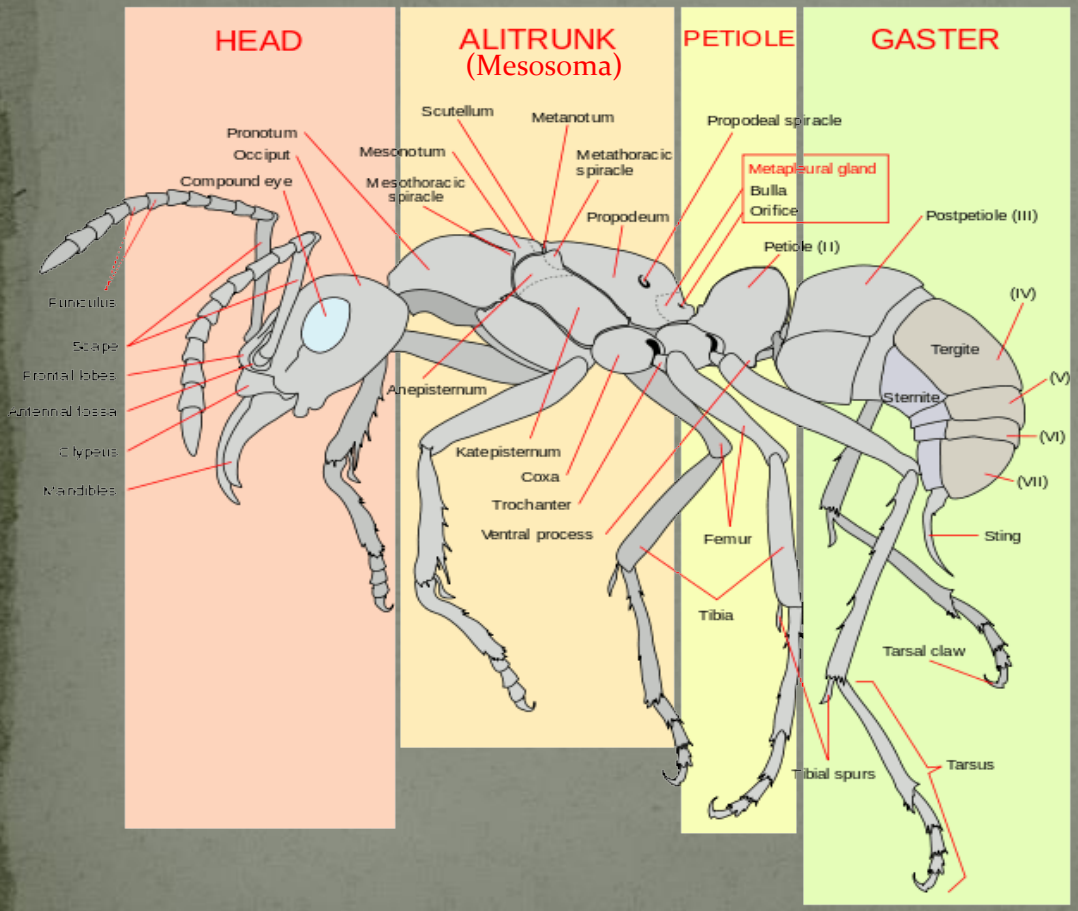
Caste System

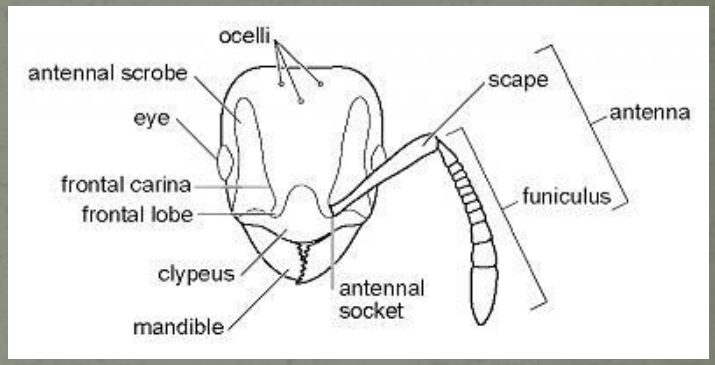
- Reproductives
  - Queens
  - Males
- Non-reproductives
  - Workers
    - Major (Soldiers)
    - Minor

Reproductives are difficult to identify without association with workers. Generally identification guides and keys focus on workers only

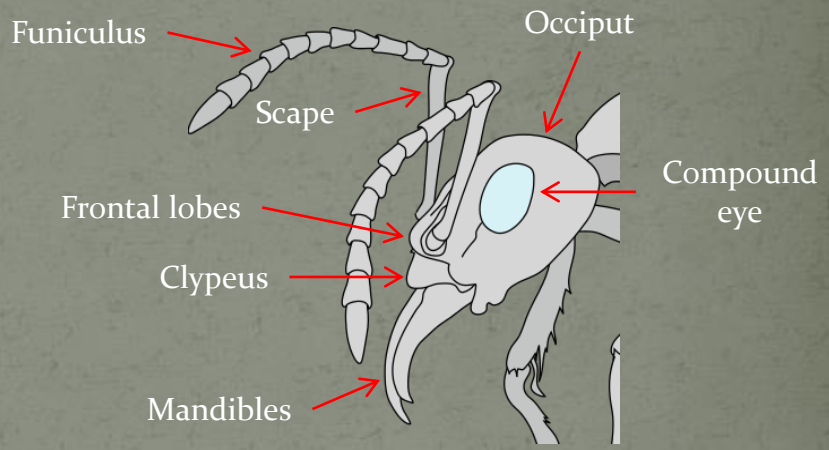


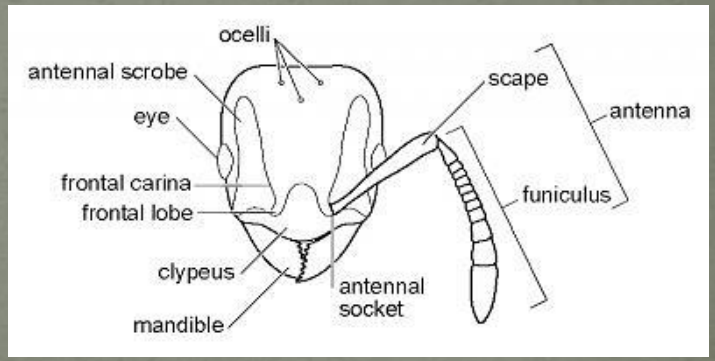
Ant Anatomy


HEAD
ALITRUNK
(Mesosoma)
PETIOLE
GASTER
Pronotum
Occiput
Compound eye
Mesonotum
Mesothoracic spiracle
Scutellum
Metanotum
Metathoracic spiracle
Propodeum
Propodeal spiracle
Metapleural gland
Bulla
Orifice
Petiole (II)
Postpetiole (III)
(IV)
Tergite
Sternite
(V)
(VI)
(VII)
Sting
Funiculus
Scape
Frontal lobes
Antennal fossa
Clypeus
Mandibles
Anepisternum
Katepisternum
Coxa
Trochanter
Ventral process
Femur
Tibia
Tarsal claw
Tibial spurs
Tarsus

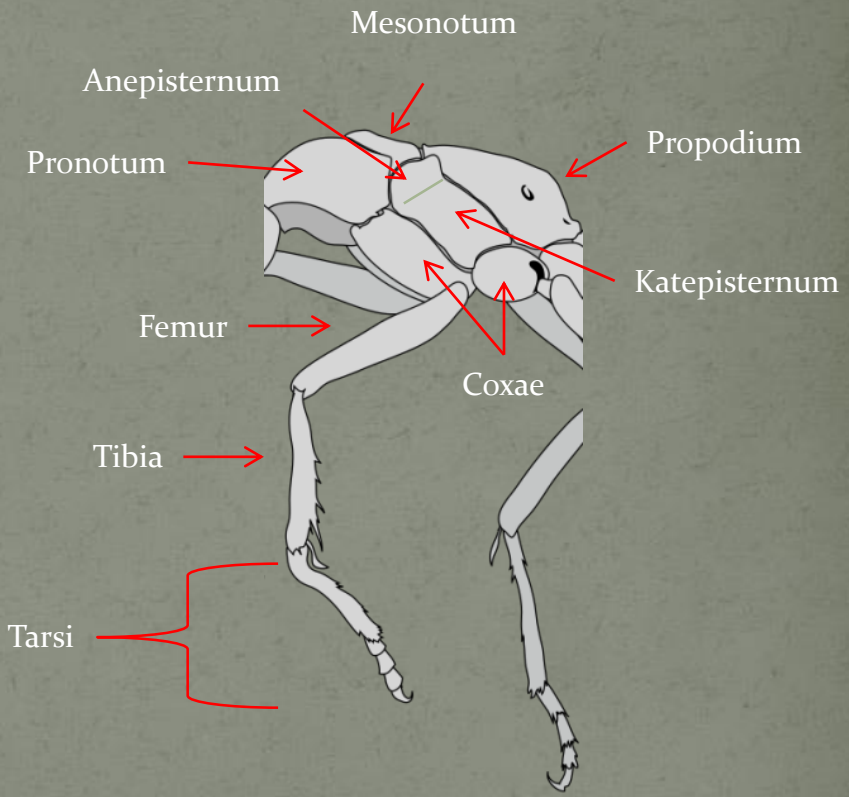

ocelli
antennal scrobe
eye
frontal carina
frontal lobe
clypeus
mandible
antennal socket
scape
antenna
funiculus

Ant Anatomy: Head

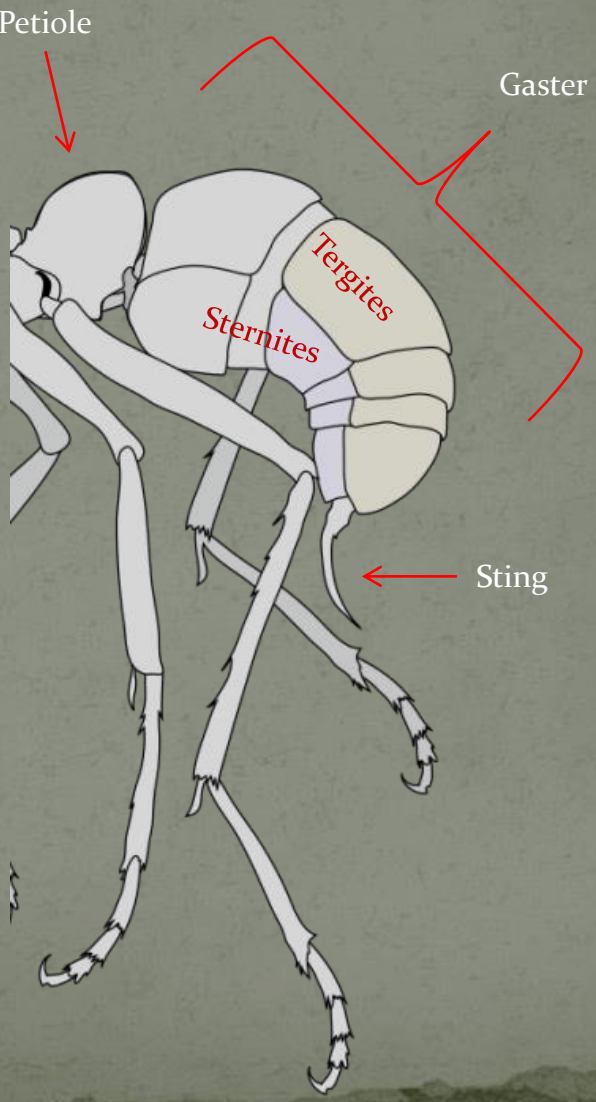




Ant Anatomy: Thorax



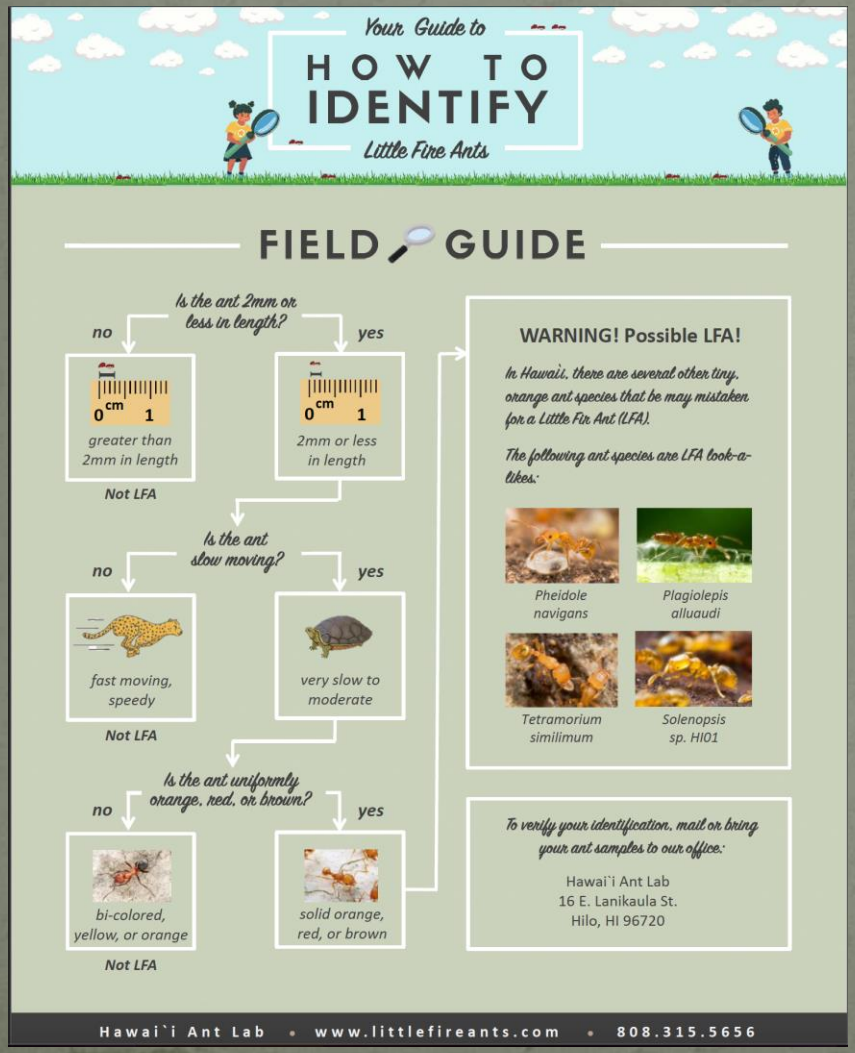
Ant Anatomy: Petiole and Gaster

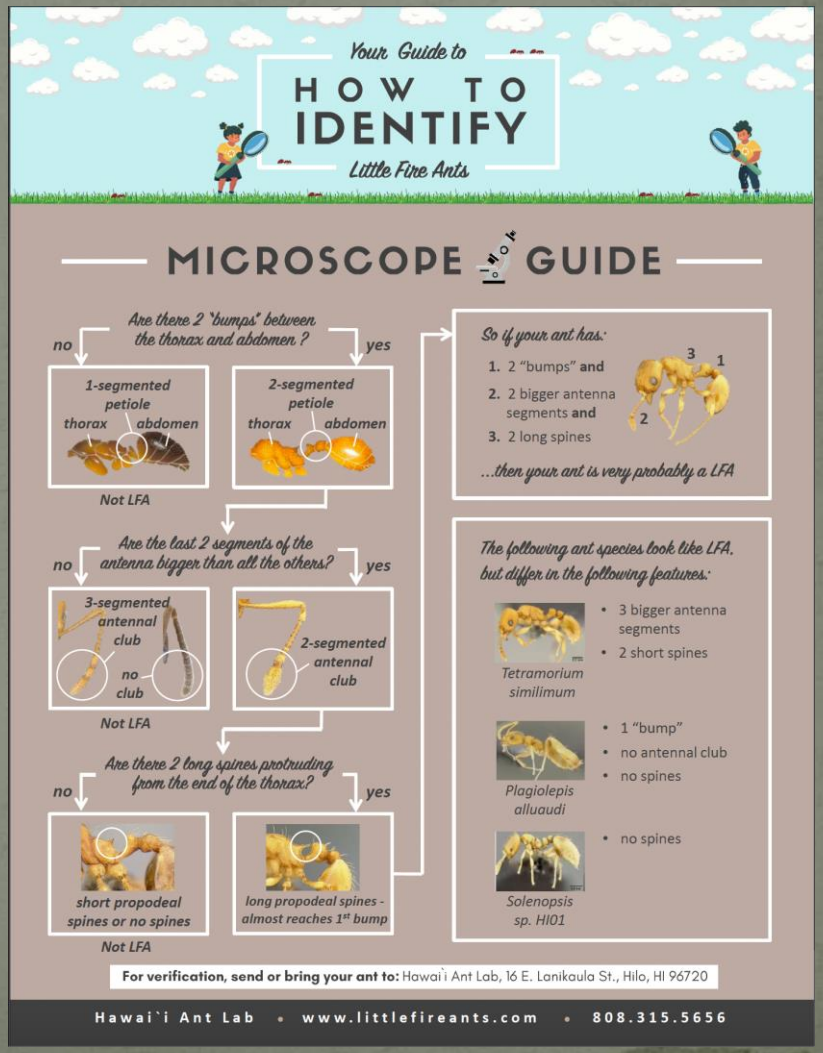


Types of "Keys"

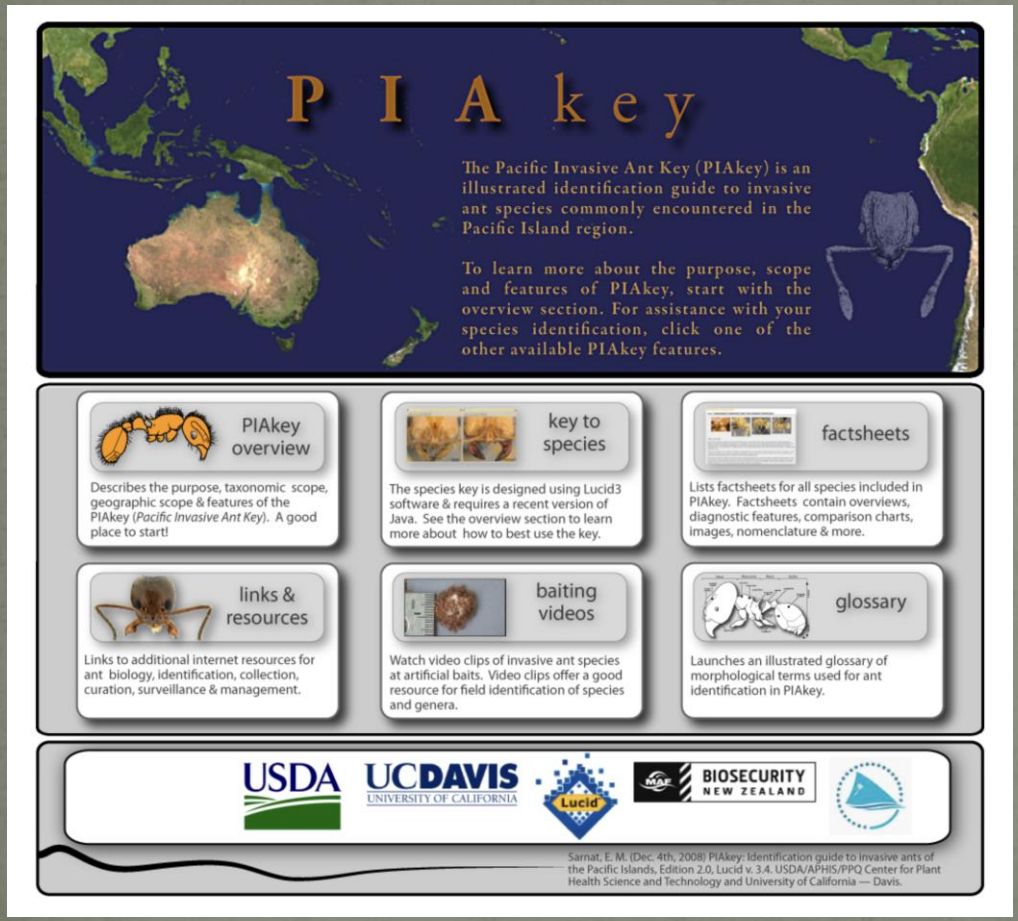
- Quick Sort
  - "Suspect vs. Not Suspect", not technical
- Dichotomous
  - "Choose Your Own Adventure", technical
- Lucid
  - Digital and Interactive, moderate technical

Quick Sort Guides





Lucid Keys (http://www.piakey.com/)



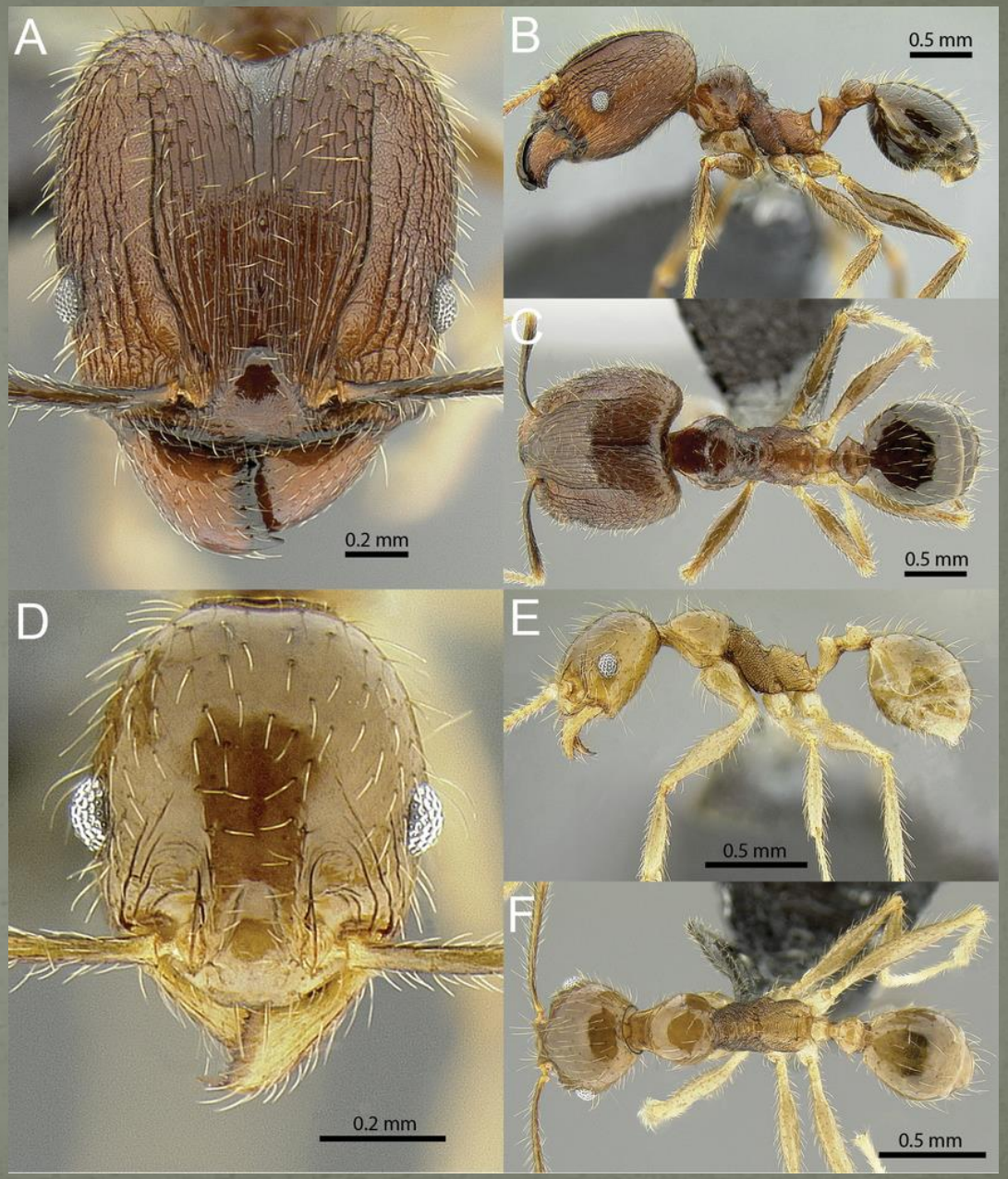
- Pros:
  - Semi-technical
  - Interactive
  - Can be use for full identification or to just narrow down possible species
- Cons:
  - Not maintained or updated

Working with Preserved Specimens:
Contrast, Angles, and Distortion

- Background color and lighting affects what you can/cannot see.
- Ants don't usually die in a "convenient" position
- Make sure to COMPLETELY submerge specimens in alcohol.
  - Wet specimens only

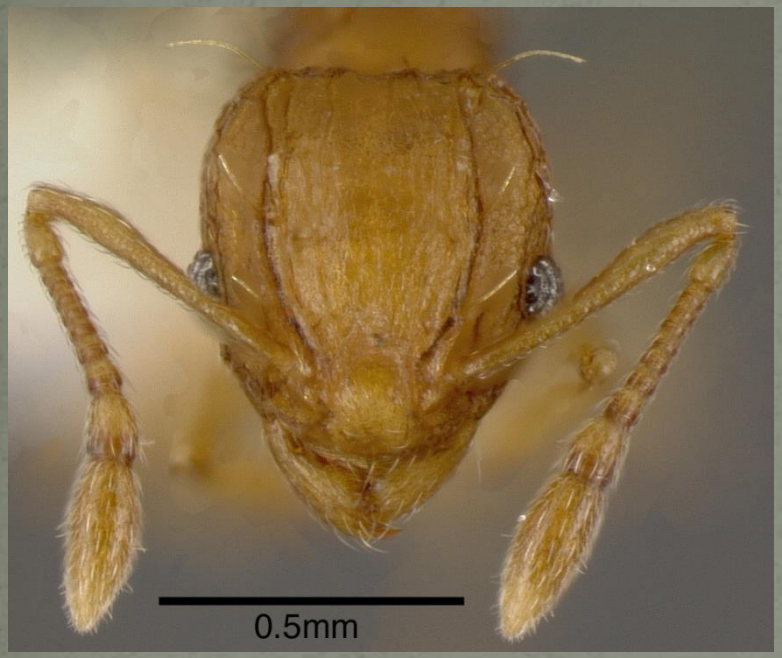
Let's Get Started!

Pheidole fervens

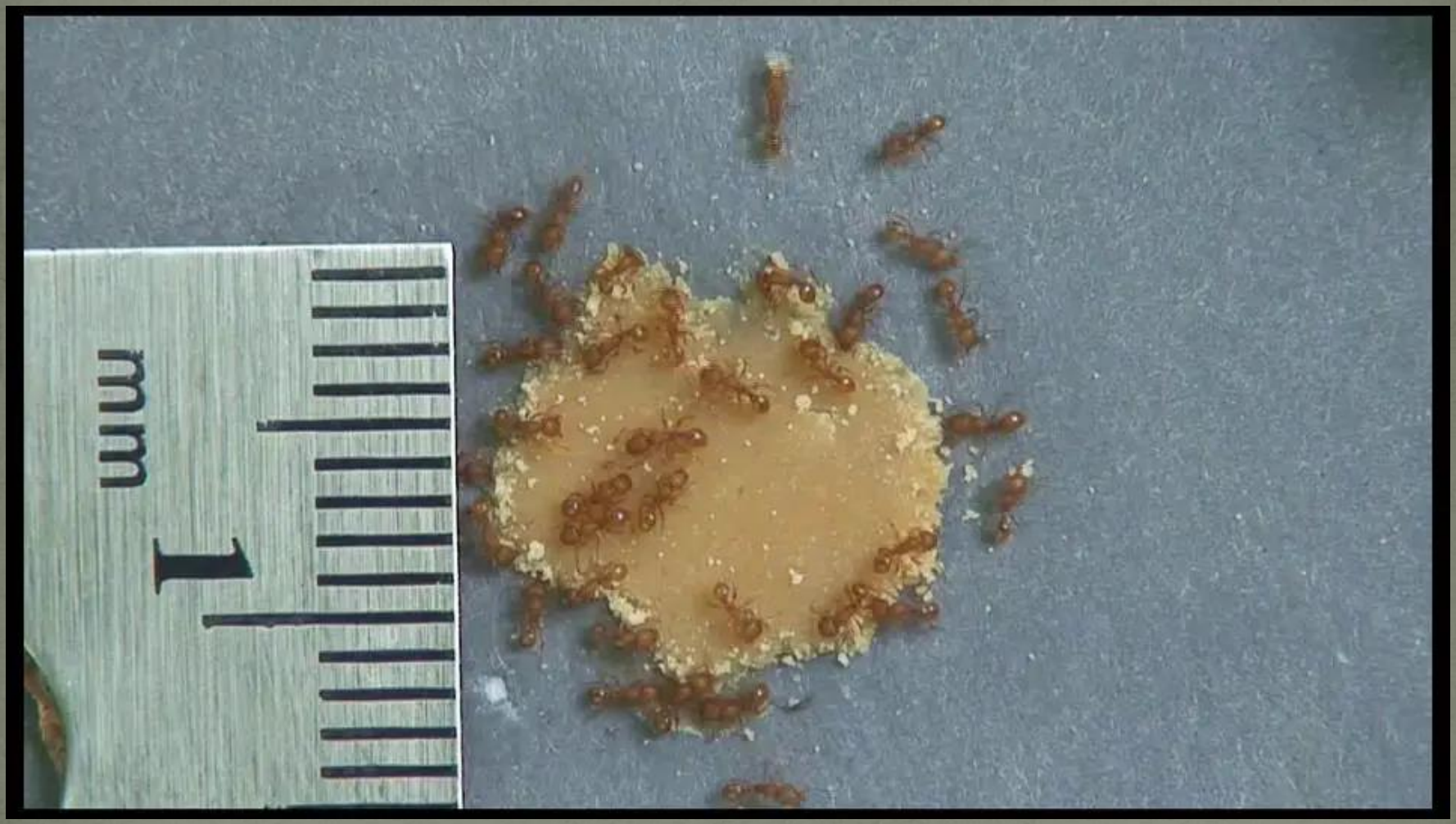


Paratrichina longicornis

Wasmannia auropunctata



Technomyrmex albipes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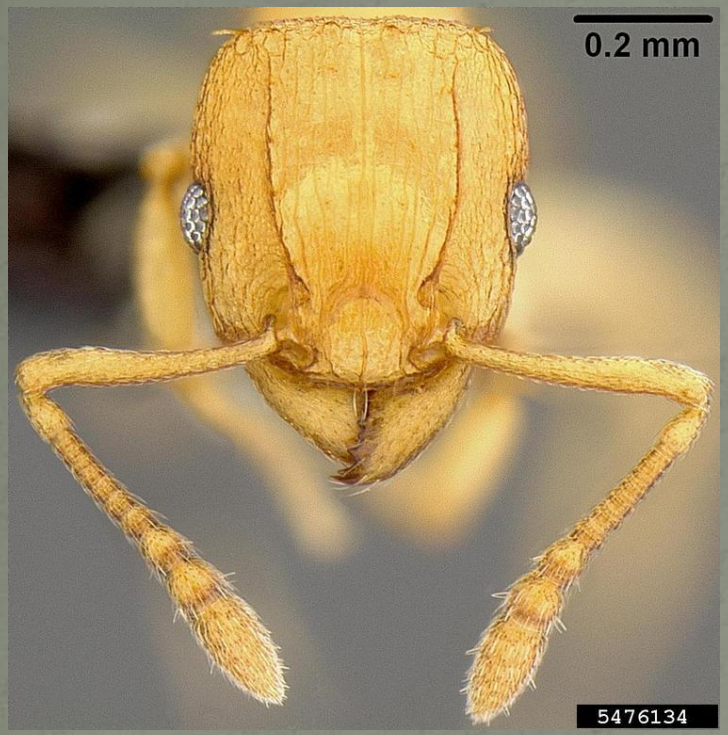
Tetramorium simmilimum

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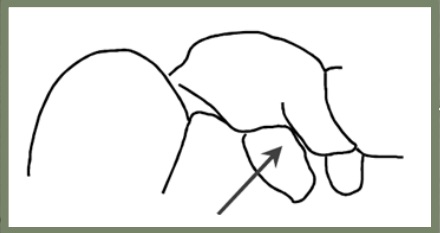
Solenopsis geminata

Solenopsis geminata

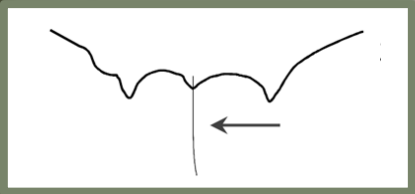
The Red Imported Fire Ant

Not present YET

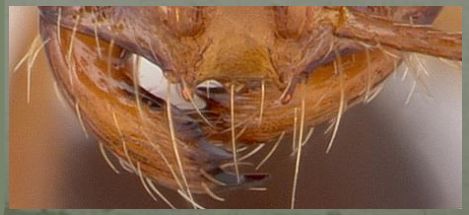
The entire margin of the RIFA front coxa can be seen in profile view. There are no teeth or flanges over-lapping.



RIFA have a central clypeal tooth as well as 2 outer clypeal teeth. These teeth point downwards between the mandibles. The central tooth also has a hair or setae that points down.



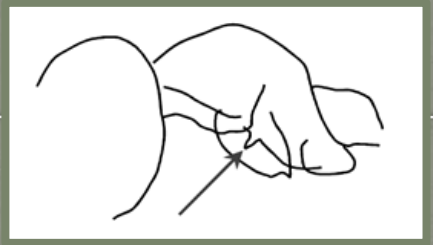
RIFA mandibles terminate in four teeth. Sometimes the first two teeth are very small but in all cases, there will be four teeth.



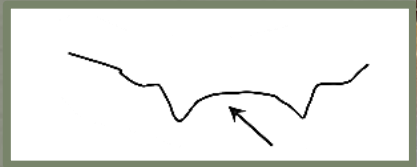
Tropical Fire Ant

Widespread

Many, but not all Red Ants will have a tooth or flange overlapping the front coxa.



Red Ants do not have a central clypeal tooth but do have the 2 outer clypeal teeth. These teeth point downwards between the mandibles. A central hair may be present, but without an obvious tooth.



Red Ant mandibles terminate in three teeth. Sometimes the mandibles of major workers have been worn down by constant work and these appear stubby, without distinct teeth.