



ACE Preparation Course:

INSPECTION AND IDENTIFICATION
ANT BIOLOGY AND IDENTIFICATION



Ants as social insects

All ants are social

- Two or more generations overlap
- Adults care for young
- Adults divided into castes

Perennial nests

Active all year



Image from B. Hölldobler and E.O. Wilson



Why identify?

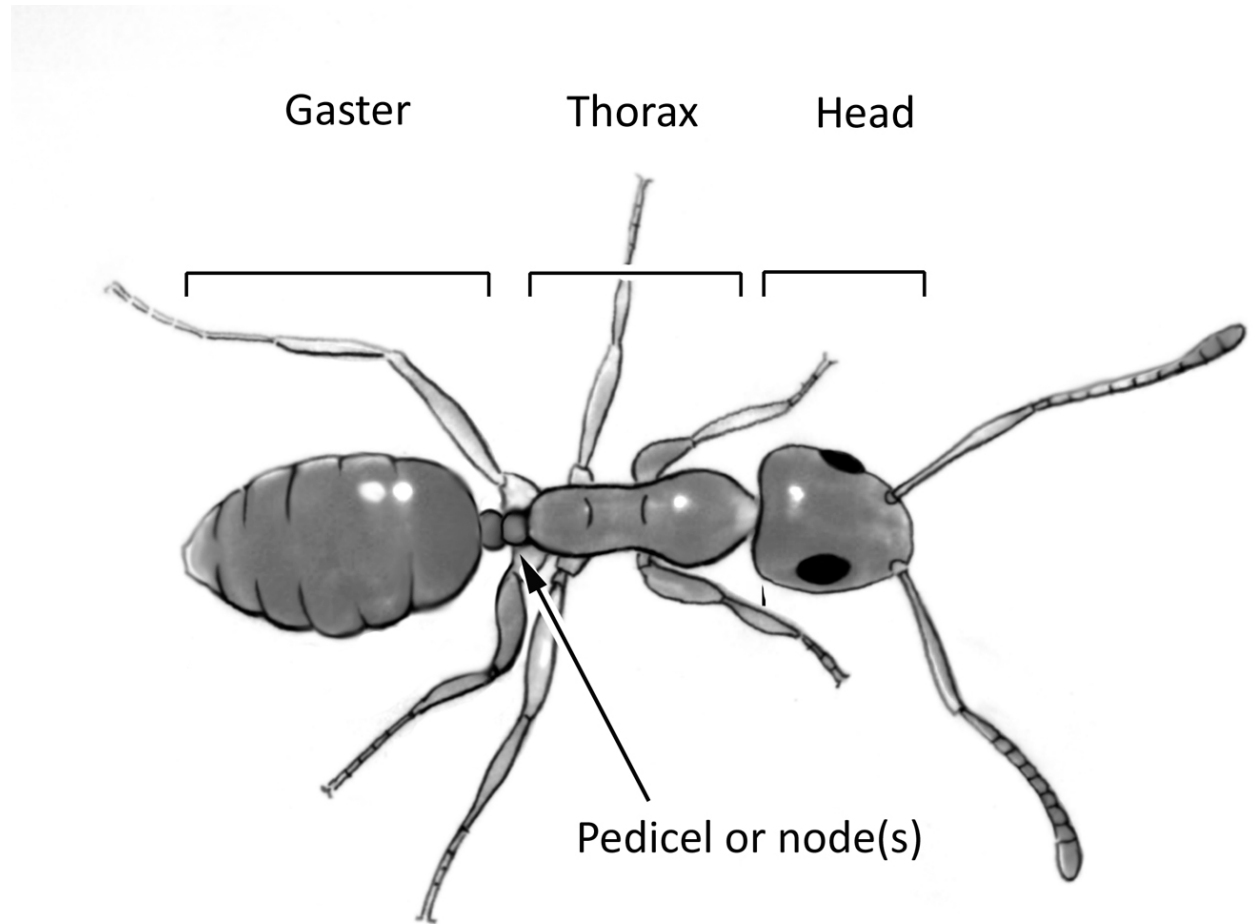
Not all ants are alike. Differ in:

- Nesting sites
- Food preferences
- Damage potential
- Behavior
- Stinging potential

Identification is a challenge

- 8X as many structural pest species as cockroaches

Basic ant anatomy



2 segmented club on a fire ant



Antennae

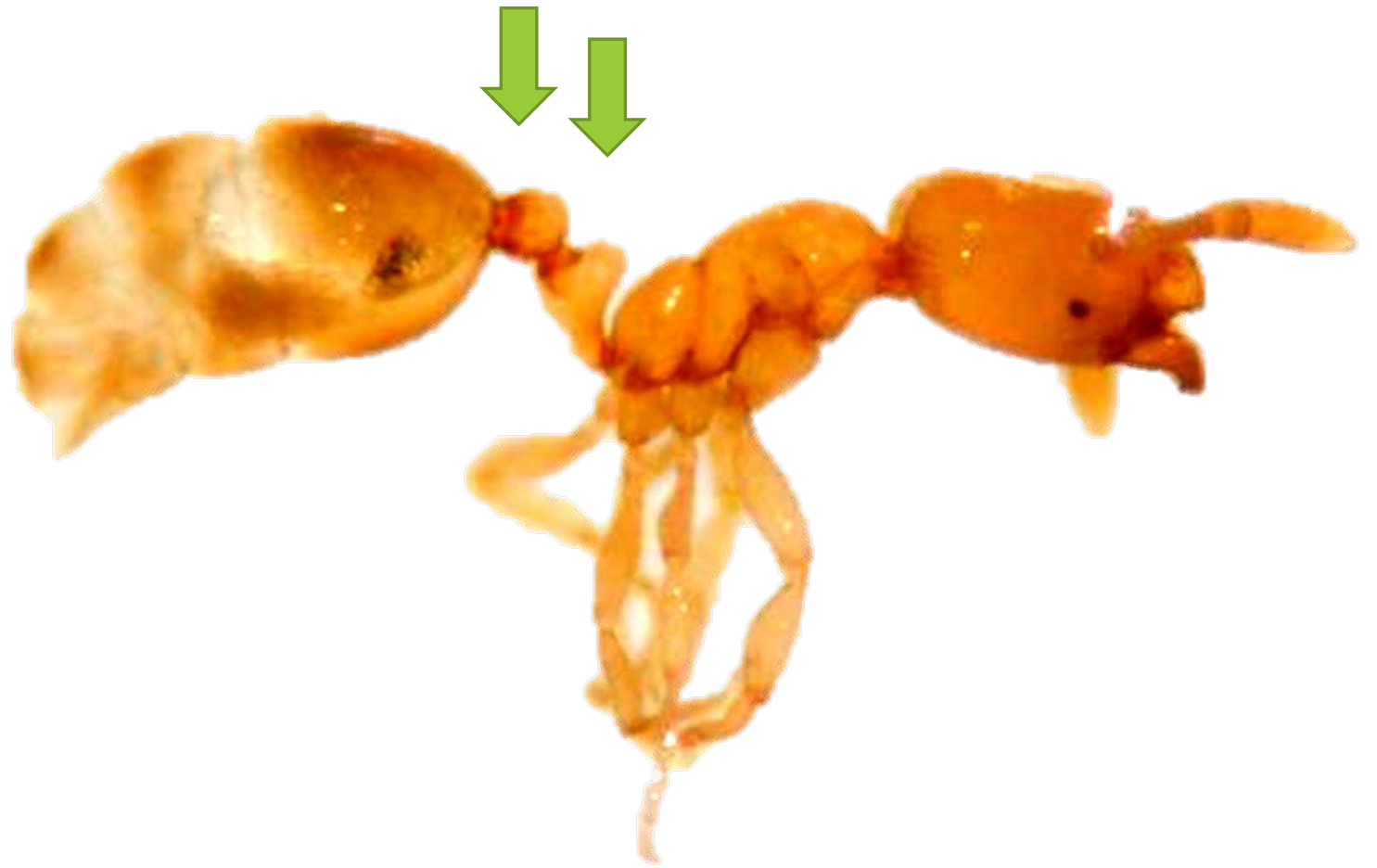
Most ants have elbowed (geniculate) antennae

Enlarged end (distal) segments on an antenna called the club

Usually two- or three-segmented if club is present

Petiole shape
and number is
important

Two-segmented
pedicel on a thief
ant, *Solenopsis
molesta*



Petiole shape

Single node, pointed on Formica ant (60X)

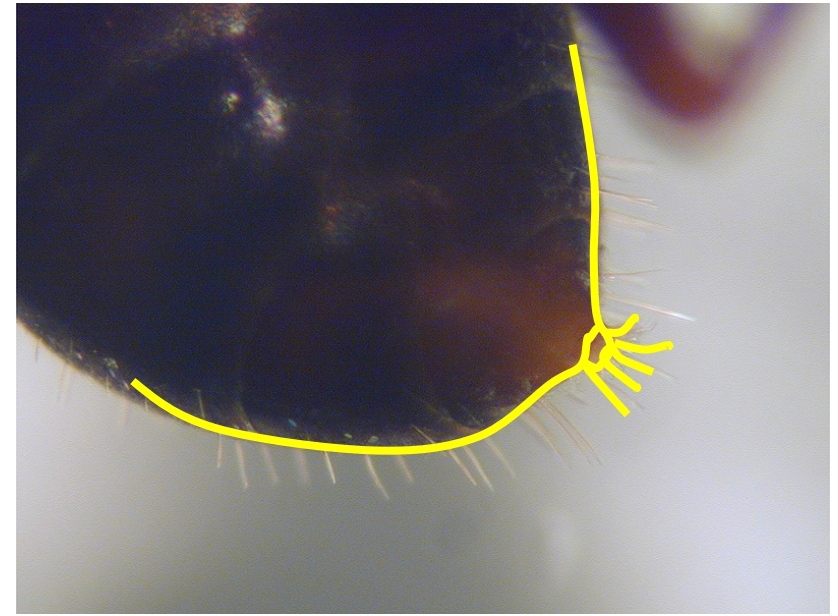


Anal forms

Round anal opening surrounded by a ring of hairs

Slit-like anus

Sting (not shown)





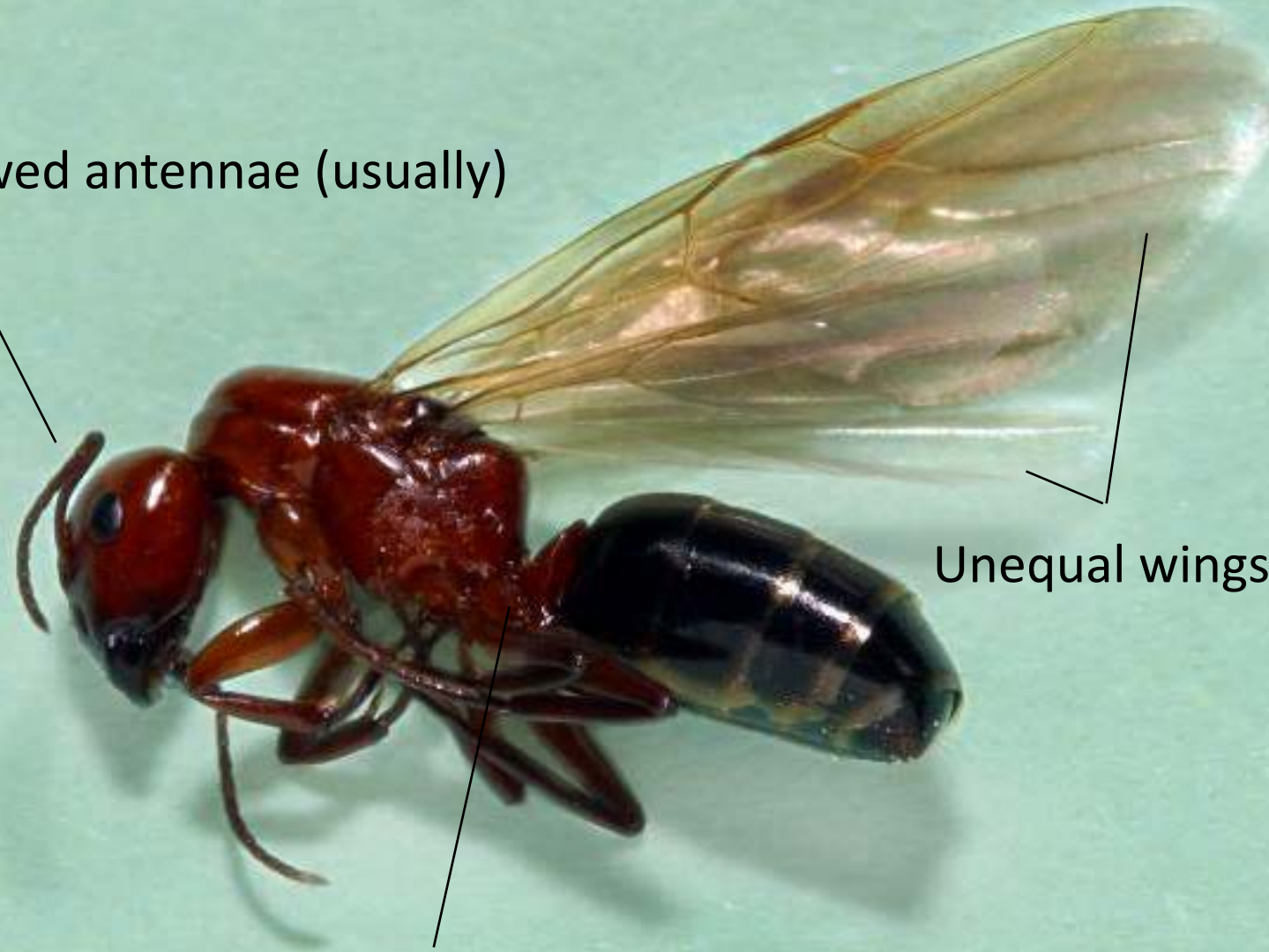
Polymorphism: An easy field character

Distinguishing
reproductive
ants

Elbowed antennae (usually)

Unequal wings

Pinched "waist"



Worker ants usually needed for accurate identification





Simplifying identification

Three subfamilies of ants make up the most important structural ant pests

- Formicinae (formic acid sprayers)
- Dolichoderinae (stinky ants)
- Myrmicinae (ants with stingers)

Ants in the
subfamily
Formicinae
(ants that spray formic
acid)

Characteristics

- Single node (pedicel)
- Tip of abdomen with fringe of hairs

Common urban species

- Carpenter ants, *Camponotus* spp
- Crazy ants: *Paratrechina* and *Nylanderia* spp
- Rover ants, *Brachymyrmex* spp

Carpenter ant, genus
Camponotus

Large (1/4 to 1/2 inch), polymorphic

Thorax rounded in profile

Common species red and black, brown,
or all black



Key points about *Camponotus*

Nest in hollow cavities above
ground

May produce “frass”
consisting of sawdust, dead
insects and pupal cases

Scavengers, predators,
sweet-loving

Difficult to bait



Crazy ants: Genera *Paratrechina* and *Nylanderia*

Small to medium sized, (1/8-1/4 inch) brown ants

Monomorphic

Erratic “crazy” running behavior, especially in *P. longicornis* (black crazy ant)

Includes invasive *N. fulva* (tawny crazy ant)





Crazy ant identification

Row of paired hairs on top of thorax identifies these two genera

Tawny crazy ant



Photo by Jason Myers





Rover ant: *Brachymyrmex patagonicus*

Small (1/16 inch) monomorphic ants

No club, nine antennal segments

Common in southern parts of U.S., occasional household pest

Feeds on honeydew, sweets

Ants in the
subfamily
Dolichoderinae
(stinky ants)

Characteristics

- Single node
- Tip of abdomen with slit-like anus (anal gland produces chemical defenses)

Common urban species

- Argentine ant *Linepithema humile*
- Odorous house ant, *Tapinoma sessile*
- Ghost ant, *Tapinoma melanocephalum*
- Pyramid and cheese ants, *Dorymyrmex* and *Forelius*



Argentine ant
applying defensive
secretions from
anal gland to
harvester ant

Argentine ant,
*Linepithema
humile*

Medium (1/8-3/16 inch) dark
colored ants

Smooth, hairless dorsum with
pointed node

Monomorphic

Stale, greasy, musty smell when
crushed

Loose trails, ants move swiftly

Large colonies



Photo by Jack Kelly Clark



Odorous house ant, *Tapinoma sessile*

Small, 1/8-3/16 inch-long, monomorphic workers

Brown to black

“Rotten coconut” or blue cheese smell when crushed

Fast moving

Smooth, hairless dorsum with flattened node

Distinguishing odorous house and Argentine ants

Shape of node (pointed in Argentine ant, flat on OHA)

Prominent bump (propodeum) on Argentine ant, in front of (anterior to) pedicel



Argentine ant



Odorous house ant

Key points

Strong foraging trails can be used to locate colonies

Nest treatment alone rarely effective due to their habit of forming numerous shallow nests outdoors and sometimes hidden indoor nests

Will take sweet baits (25% sugar)



Odorous house ants on syrup bait placement

Ants in the
subfamily
Myrmicinae
(ants with stingers)

Characteristics

- Two nodes
- Tip of abdomen with stinger (which may or may not be visible) but without circular fringe of hairs

Common urban species

- Leaf cutter ants, *Atta texanus*
- Acrobat ants, *Crematogaster* spp.
- Pharaoh ant, *Monomorium pharaonis*
- Harvester ants, *Pogonomyrmex* spp.
- Fire ants, *Solenopsis* spp.
- Pavement ants, *Tetramorium* spp.

Leaf-cutter ants

Atta texanus

Regional pest, found in Louisiana, Texas

Large, 3/16 to 1/2 inch polymorphic workers

Reddish in color

Spines on head

Three pairs of spines on thorax





Key points

Agriculturally destructive and serious pest in other parts of New World

In U.S. causes damage to landscape plants, pine plantations, concrete structures

Large, multi-cratered nest



Acrobat ants, *Crematogaster* species

Small to medium sized (1/8 to 3/8 inch) monomorphic, red and black ants

Heart shaped abdomen

Spines on thorax

Pedicel attached to top of gaster



Key points

Nest in trees, wall voids

Honeydew feeders

Prefer areas of higher moisture in structures

Strong trails--should be followed to suspected nest site

Pharaoh ant,
*Monomorium
pharaonis*

Minute, 1/12-inch, yellowish
brown

Antenna with 12 segments
and 3-segmented club

Darker tip on gaster





Key points

Readily nests indoors

Indoor nests frequently forage outdoors in summer

Nest location difficult

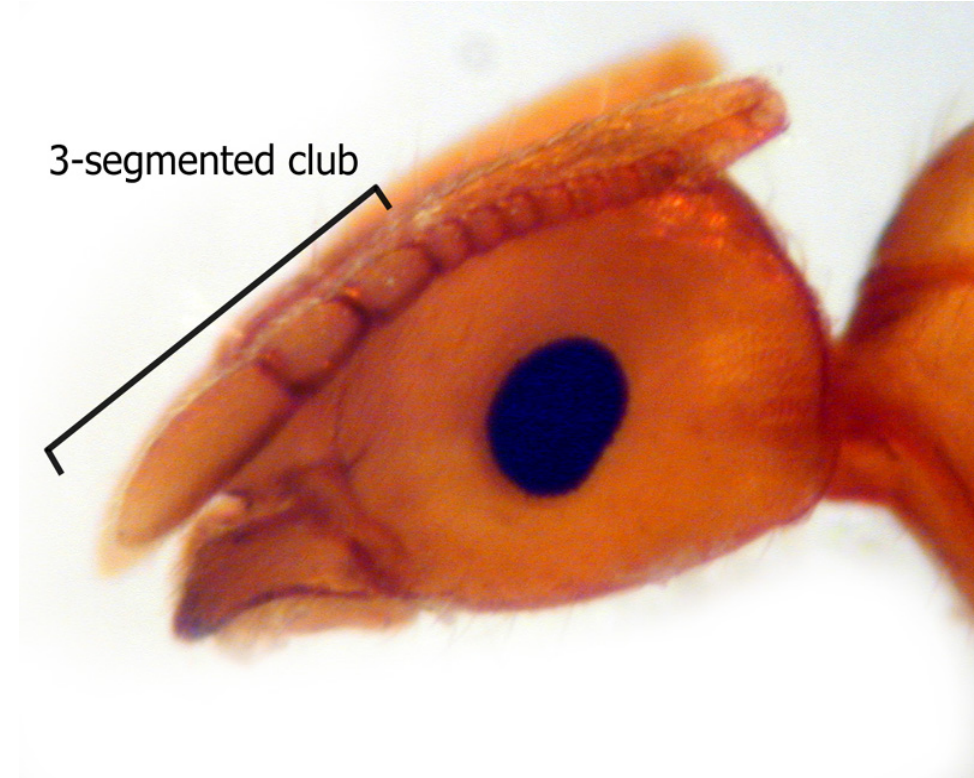
Baiting most effective

May be confused with thief ant

Thief ant



Pharaoh ant



Distinguishing thief and Pharaoh ants

Harvester ant, Genus *Pogonomyrmex*

Large 1/5-1/2 inch, monomorphic workers

Red to black

May have spines

Row of hairs on underside of head used to aid in seed carrying



Image courtesy Dale Ward <http://www.tightloop.com/ants/>

Key points

Outdoor nester

Large clearing around single exit hole for nest

Will sting!

Beneficial competitor with fire ants





Fire ant, *Solenopsis invicta*

Most easily identified by mound, sting

Small-medium 1/8 to 1/4-inch, reddish-brown polymorphic workers

Two segmented antennal club

Red imported fire ant most important species



Mound type



© Alex Wild
alexanderwild.com

Pavement ant, *Tetramorium* sp

Slow moving, medium-sized (1/4 inch) brown and black ants

Series of ridges running the length of head

Spines on thorax

Nuisance because of conspicuous soil nests around concrete slabs

some species resemble fire ants

Which of the following is true of odorous house ant but NOT the Argentine ant?

odor when crushed

slit-like anus

monomorphic

flattened node



Which of the following ants is polymorphic, possesses a sting and lacks spines on its thorax?

fire ants

harvester ant

pharaoh ant

pavement ant



Myrmicine ants include:

Carpenter ants, crazy ants, false honey ants

Argentine ants, odorous house ants, ghost ants

Leaf cutting ants, harvester ants, fire ants

All of the above



True or False: There are connections between how ants behave and how we treat for them.

True

False

Ant quiz questions:

Which of the following is true of odorous house ant but NOT the Argentine ant?

- a) odor when crushed
- b) slit-like anus
- c) monomorphic
- d) flattened node

d) Odorous house ant has a flat, not pointed node

Ant quiz questions:

Which of the following ants is polymorphic, possesses a sting and lacks spines on its thorax?

- a) fire ant
- b) harvester ant
- c) pharaoh ant
- d) pavement ant

a) fire ants

UNLESS OTHERWISE INDICATED,
PHOTOS BY MIKE MERCHANT

Questions