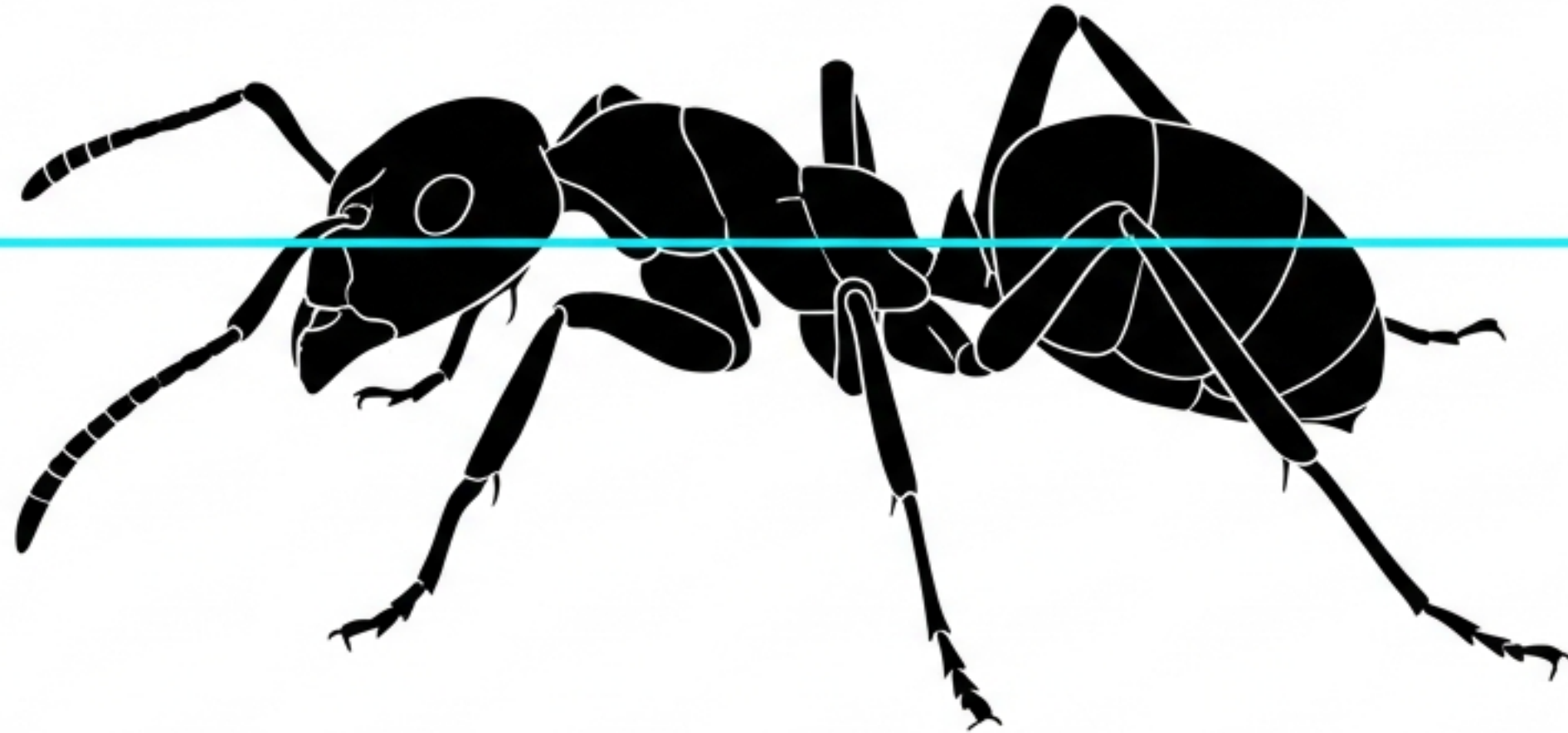


The Diagnostic Field Guide to Ant Identification

Essential Biology, Taxonomy, and Morphology for the Pest Management Professional



ACE Certification Prep Module: General Pest Knowledge



The Biological Imperative: Why Precise Identification Matters

With 8x as many kinds of ants as cockroaches, generic treatments fail. Every species has a unique biological footprint.

Nesting Sites

Wood cavities vs. shallow soil vs. wall voids.

Food Preferences

Sweets & honeydew vs. proteins vs. fungus.

Damage Potential

Foundation destabilization vs. structural wood destruction.

Human Threat

Nuisance trailing vs. medical significance (stings).

Morphological Blueprints: The Diagnostic Toolkit

Antennae

Most ants possess elbowed (geniculate) antennae. Distal segments often form an enlarged "club".

Petiole (Nodes)

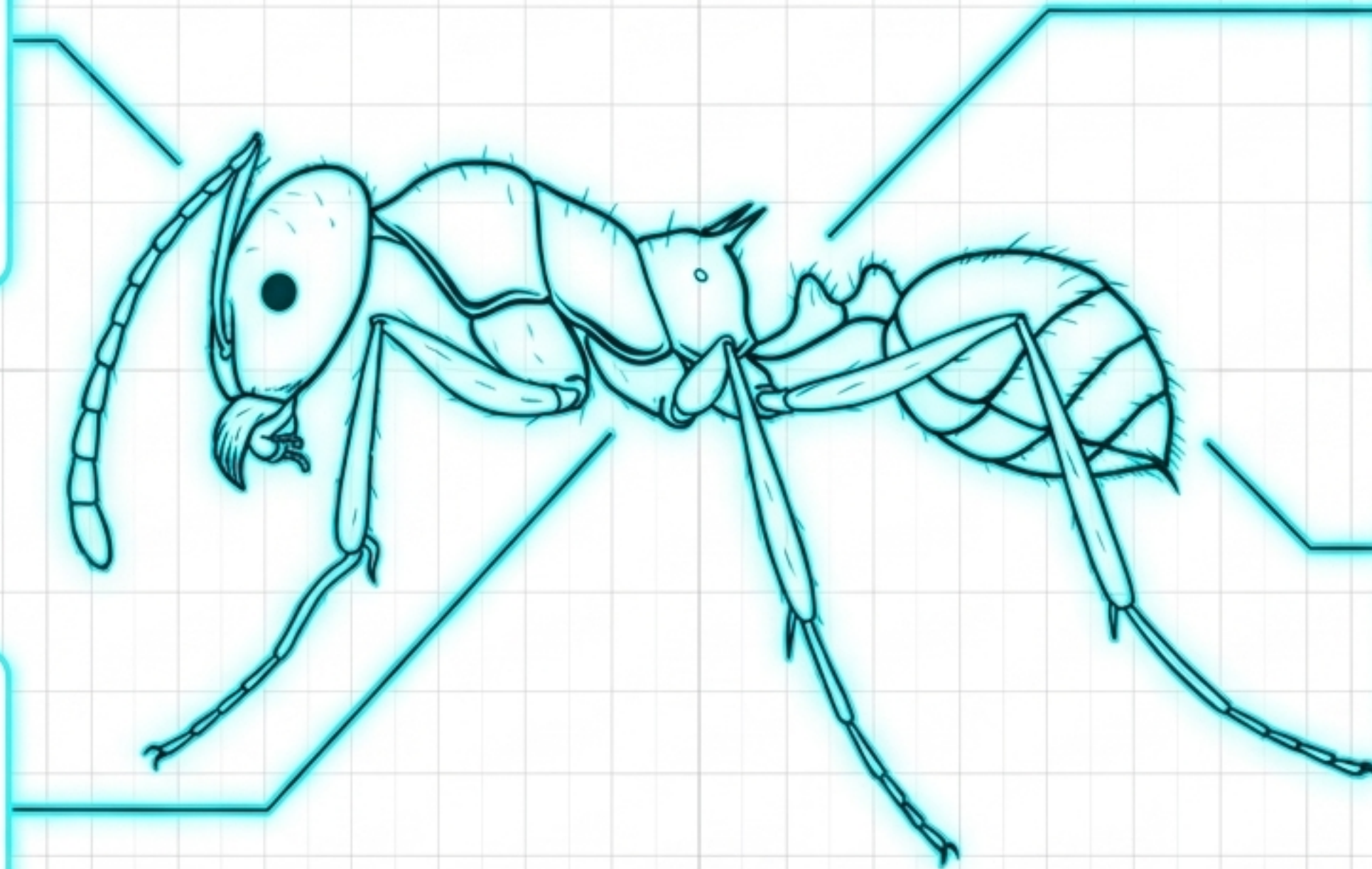
The "waist" between thorax and gaster. Counting these is the most critical first step in identification.

Gaster

The bulbous rear segment (abdomen). Look for stingers or fringe hairs at the tip.

Thorax

The middle segment, bearing the legs. Profile shape (rounded vs. spined) is highly diagnostic.

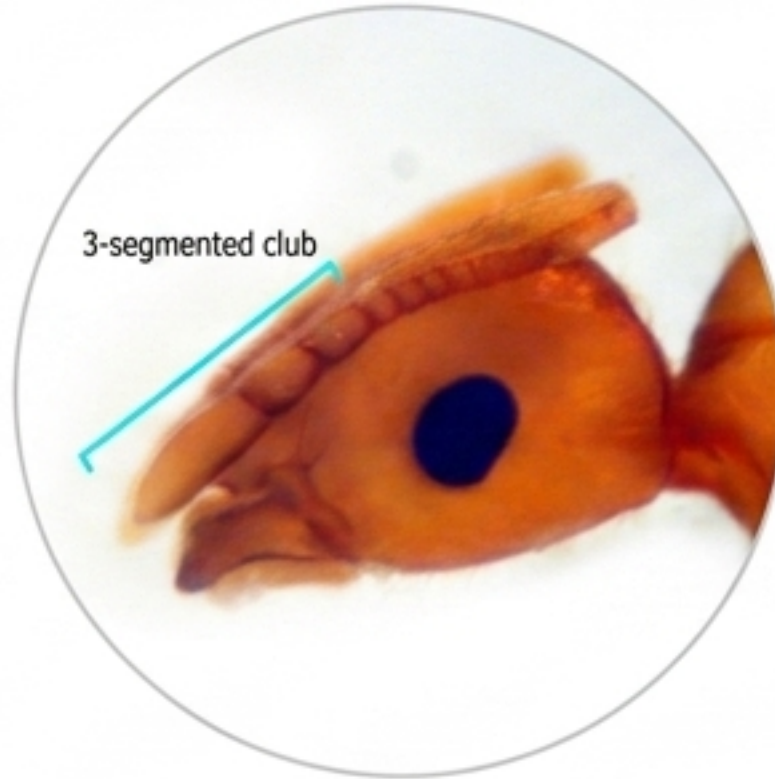


The Microscopic Differentiators



1 Node vs 2 Nodes

- Look closely at the waist. A single node may be peaked/pointed or flattened.
- Takeaway: Determines the primary subfamily.



Club Segments

- Count the enlarged distal segments. Usually 2 or 3 segments if a club is present.



Fringe vs. Slit

- At the tip of the gaster. Formicinae feature a circular opening surrounded by a ring of hairs. Dolichoderinae feature a slit-like opening.

Caste Systems: Monomorphic vs. Polymorphic

Polymorphic Colonies:



- Workers vary significantly in size (minor to major). Easiest behavioral character to see in the field. (e.g., Fire ants, Carpenter ants).

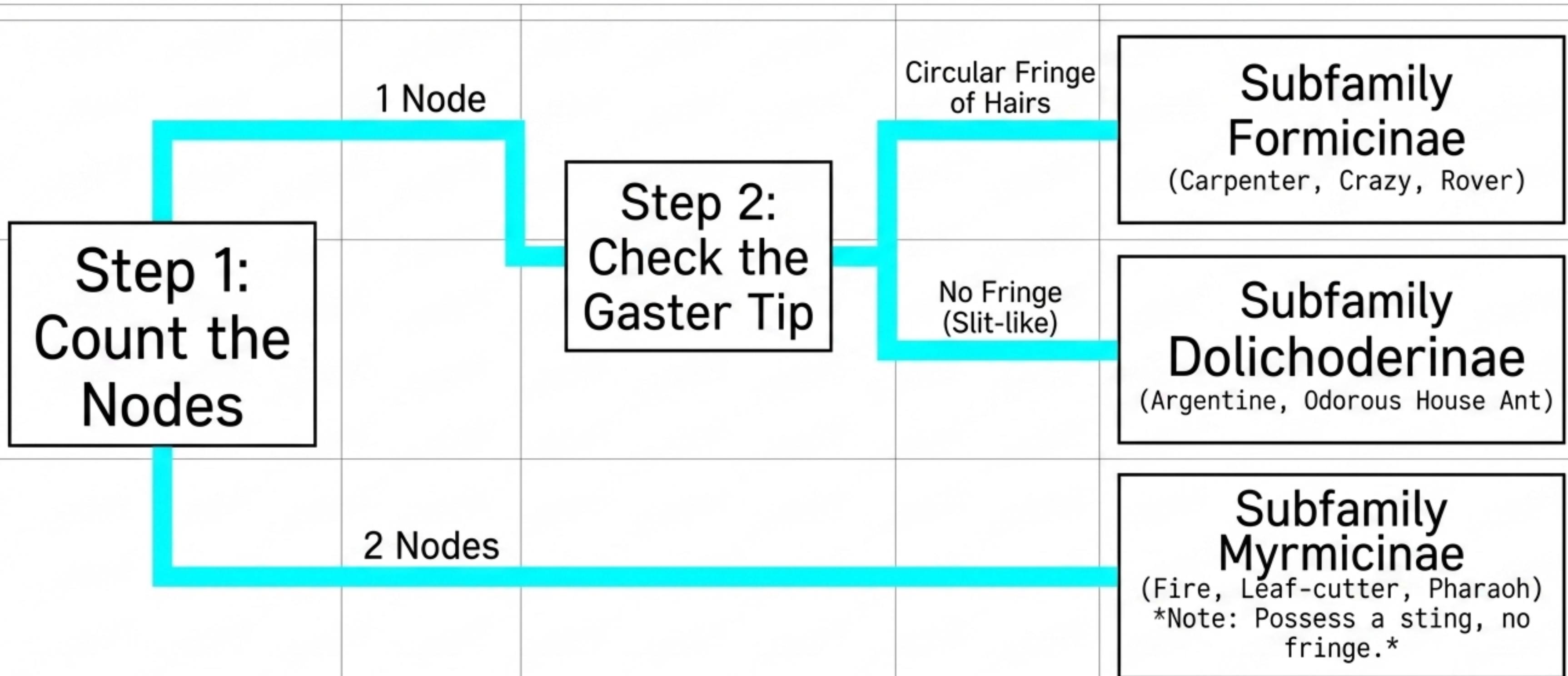
Monomorphic Colonies:



- All workers are identical in size and shape.

RULE OF THUMB: You need workers to identify ants. Reproductives (swarmers) have pinched waists, unequal-length wings, and elbowed antennae, but their morphology makes standard worker keys unreliable.

The Primary Diagnostic Split



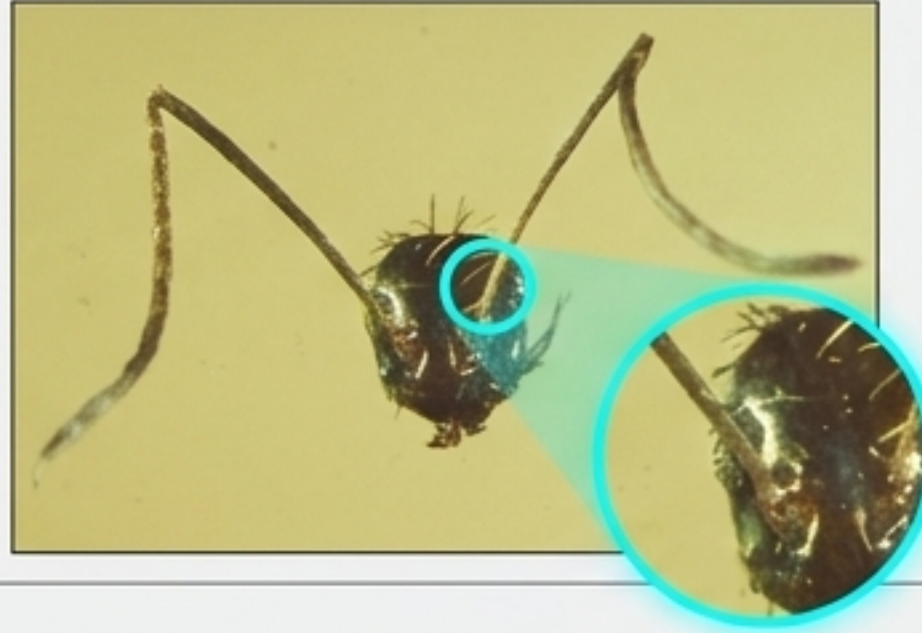
Subfamily Formicinae (1 Node | Fringe Hairs)



Carpenter Ants (*Camponotus* spp.)

Large (1/4 - 1/2 in) |
Polymorphic | Thorax rounded
in profile.

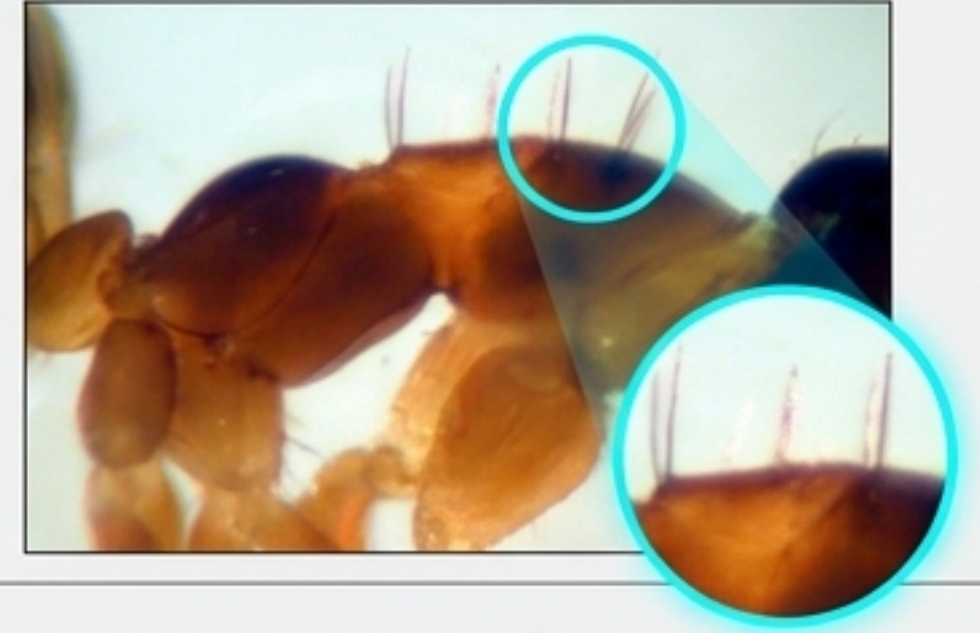
- **Behavior:** Scavengers/sweet-loving. Difficult to bait. Nests in hollow above-ground cavities.
- **Sign:** Produces "frass" (sawdust, dead insects, pupal cases).



Crazy Ants (*Paratrechina* spp.)

Small-Med (1/8 - 1/4 in) |
Monomorphic | Antennal scape
much longer than head.

- **Behavior:** Erratic, "crazy" running behavior.



Rover Ants (*Brachymyrmex* spp.)

Small (1/16 in) | Monomorphic |
9 antennal segments, no club.

- **Diagnostics:** Look for the distinct row of paired hairs on top of the thorax.

Subfamily Dolichoderinae: The 1-Node Lookalikes

Characteristics: 1 Node | No fringe of hairs (slit-like anus).

Argentine Ant (<i>Linepithema humile</i>)	Odorous House Ant (<i>Tapinoma sessile</i>)
	
• Specs: Medium (1/8-3/16 in), Monomorphic, Smooth dorsum. • Key Differentiator 1: Pointed node. • Key Differentiator 2: Stale, greasy, musty smell when crushed. • Behavior: Loose trails, rapid movement.	• Specs: Small (1/8-3/16 in), Monomorphic, Smooth dorsum. • Key Differentiator 1: Flattened node. • Key Differentiator 2: Rotten coconut smell when crushed. • Behavior: Fast moving, strong foraging trails. Shallow nests.

Subfamily Myrmicinae: The Heavy Hitters (2 Nodes | Stinger)



Fire Ants (*Solenopsis* spp.)

Specs: Small-Medium (1/8-1/4 in) | Polymorphic

Key Traits: No spines on thorax.

- Distinct mound-building behavior.
- Aggressive sting.



Leaf-Cutter Ants (*Atta texana*)

Specs: Large (3/16-1/2 in) | Polymorphic

Key Traits: Spines on head.

- Three pairs of spines on thorax. Causes foundation damage via large, multi-crater nests.



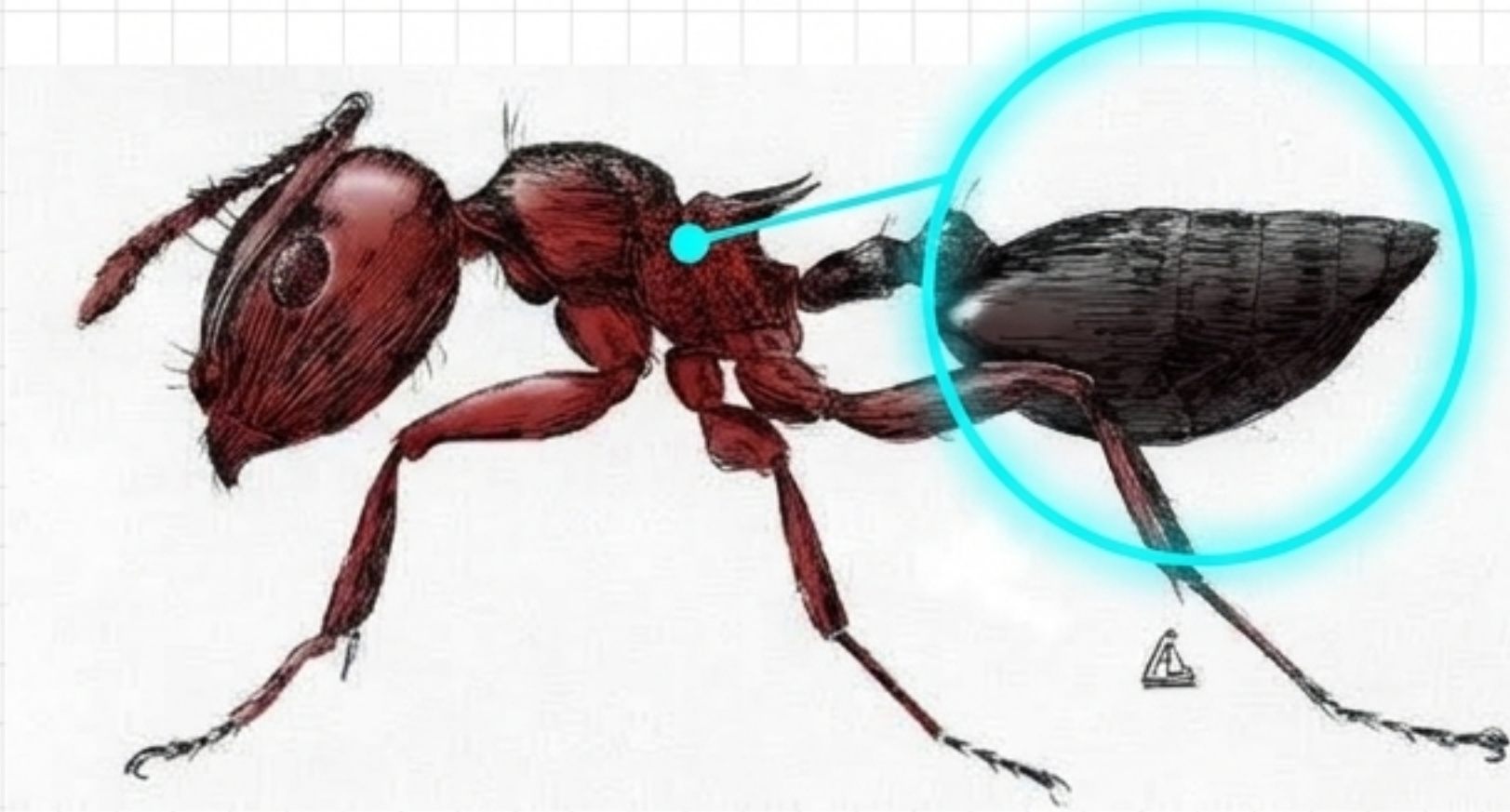
Harvester Ants (*Pogonomyrmex* spp.)

Specs: Large (1/5-1/2 in) | Monomorphic

Key Traits: Row of hairs (beard) on underside of head. Single exit hole nest with large outdoor clearing. Powerful sting.

Subfamily Myrmicinae: Structural Invaders

Acrobat Ants (*Crematogaster* spp.)



Specs: Small-Med (1/8-3/8 in) | Monomorphic | Red & black.

Key Traits: Heart-shaped abdomen (often raised over head when disturbed). Spines on thorax.

Behavior: Nests in trees and wall voids. Seeks high moisture. Strong trailers.

Pavement Ants (*Tetramorium* spp.)



Specs: Medium (1/4 in) | Monomorphic | Brown/Black.

Key Traits: Series of parallel ridges running the entire length of the head. Spines on thorax.

Behavior: Slow-moving nuisance nesters under sidewalks. Resemble fire ants but lack mounds/aggression.

The Tiny Amber Ants: Pharaoh vs. Thief Ant

Both species are minute (~1/12 inch) and yellowish-brown. Accurate ID prevents failed baiting programs. Look to the antennae.

Pharaoh Ant (*Monomorium pharaonis*)

Specs: (~1/12 inch) 3-seg antennae

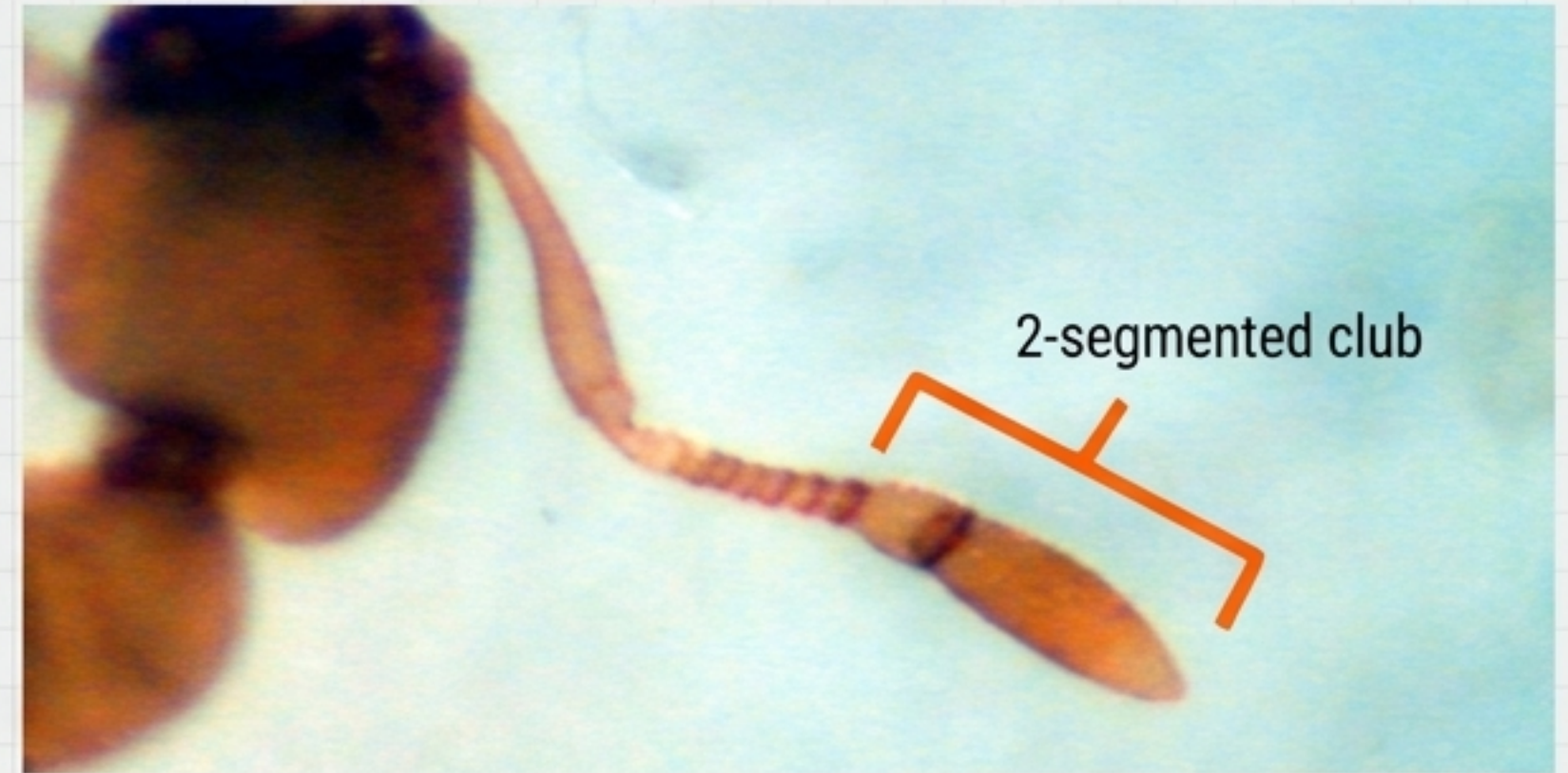


Differentiator: 3-Segmented Club.

- **Behavior:** Readily nests indoors; difficult to locate. Baiting is most effective. Noticeably darker tip on gaster.

Thief Ant (*Diplorhoptum molesta*)

Specs: (~1/12 inch) 3-seg antennae



Differentiator: 2-Segmented Club.

- **Context:** Accurate identification is critical, as thief ants require different, specific treatment protocols than Pharaoh ants.

The Master Diagnostic Matrix

Species	Subfamily	Nodes	Caste	Unique Diagnostic Feature	Behavioral Note
Carpenter	Formicinae	1	Poly	Rounded thorax profile	Produces wood frass
Crazy	Formicinae	1	Mono	Extremely long antennal scape	Erratic running pattern
Argentine	Dolichoderinae	1	Mono	Pointed Node	Greasy/musty smell
Odorous House	Dolichoderinae	1	Mono	Flattened Node	Rotten coconut smell
Fire Ant	Myrmicinae	2	Poly	Lacks thorax spines	Mound building / aggressive sting
Acrobat	Myrmicinae	2	Mono	Heart-shaped gaster	Seeks moisture/wall voids
Pavement	Myrmicinae	2	Mono	Parallel facial ridges	Sidewalk nesting nuisance
Pharaoh	Myrmicinae	2	Mono	3-segmented antennal club	Nests primarily indoors

ACE Certification: Knowledge Check

Case File 1: The One-Node Dilemma

Question: You have an ant with 1 node and a slit-like anus. Which of the following is true of the Odorous House Ant but NOT the Argentine Ant?
(Options: Odor when crushed, slit-like anus, monomorphic, flattened node)

Diagnostic Reveal: Flattened node. (Argentine ants possess a pointed node).

Case File 2: The Two-Node Stinger

Question: You are observing a colony of ants. Which of the following ants is polymorphic, possesses a sting, and lacks spines on its thorax?
(Options: Fire ant, Harvester ant, Pharaoh ant, Pavement ant)

Diagnostic Reveal: Fire Ant. (Leaf-cutters, Acrobat, and Pavement ants all possess thorax spines; Pharaoh and Pavement are monomorphic).

Diagnostic methodology complete. Ready for field application.