



# Field Inspector's Blueprint: Wood Destroying Insects

ACE Preparatory Diagnostic Guide

Order Isoptera | Order Coleoptera | Order Hymenoptera

## Information Panel

**Order:**  
Isoptera (Equal wings)

**Lifecycle:**  
Simple Metamorphosis

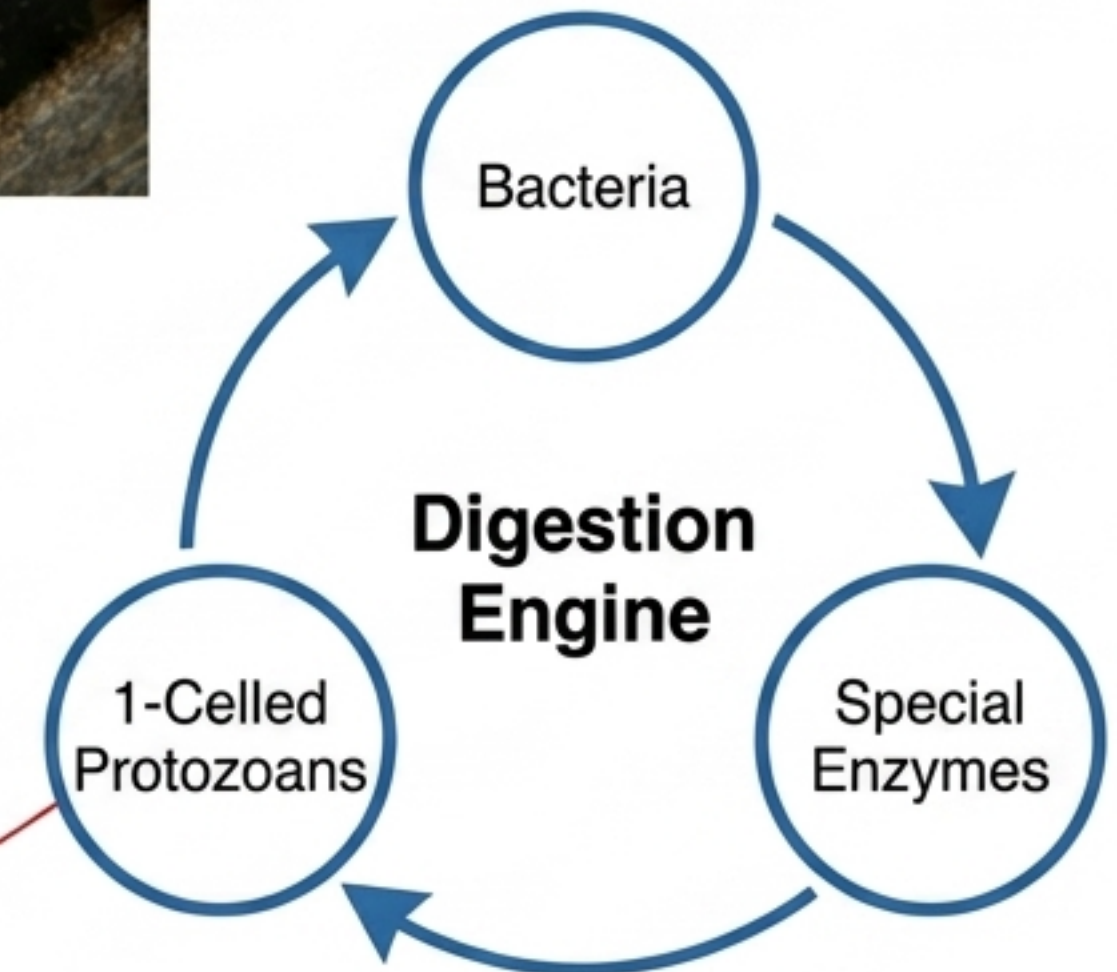
**Colony Structure:**  
3 Castes (Workers, Soldiers, Reproductives - primary & secondary)



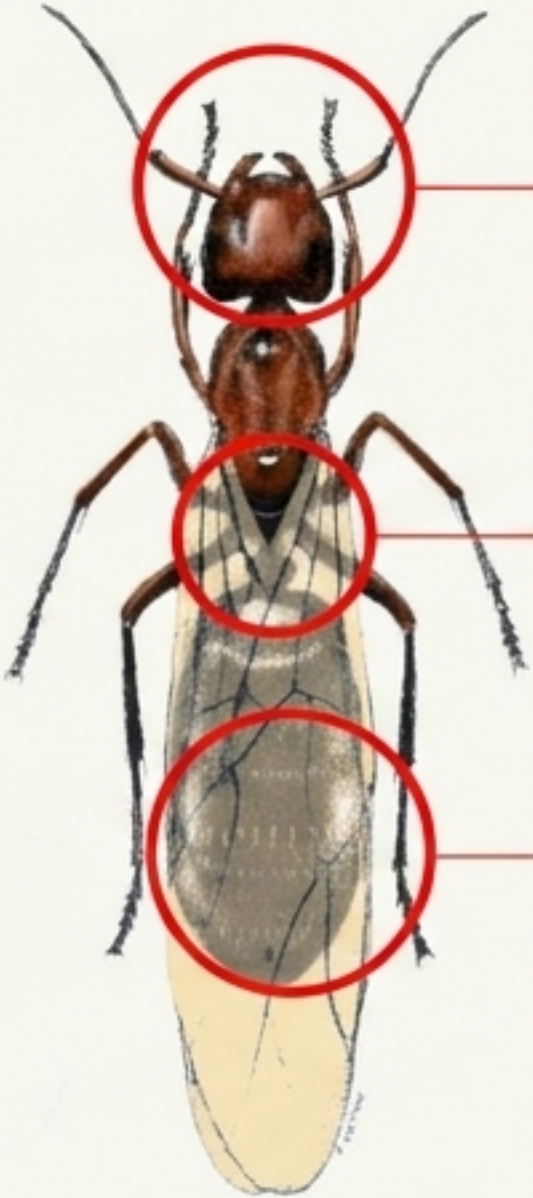
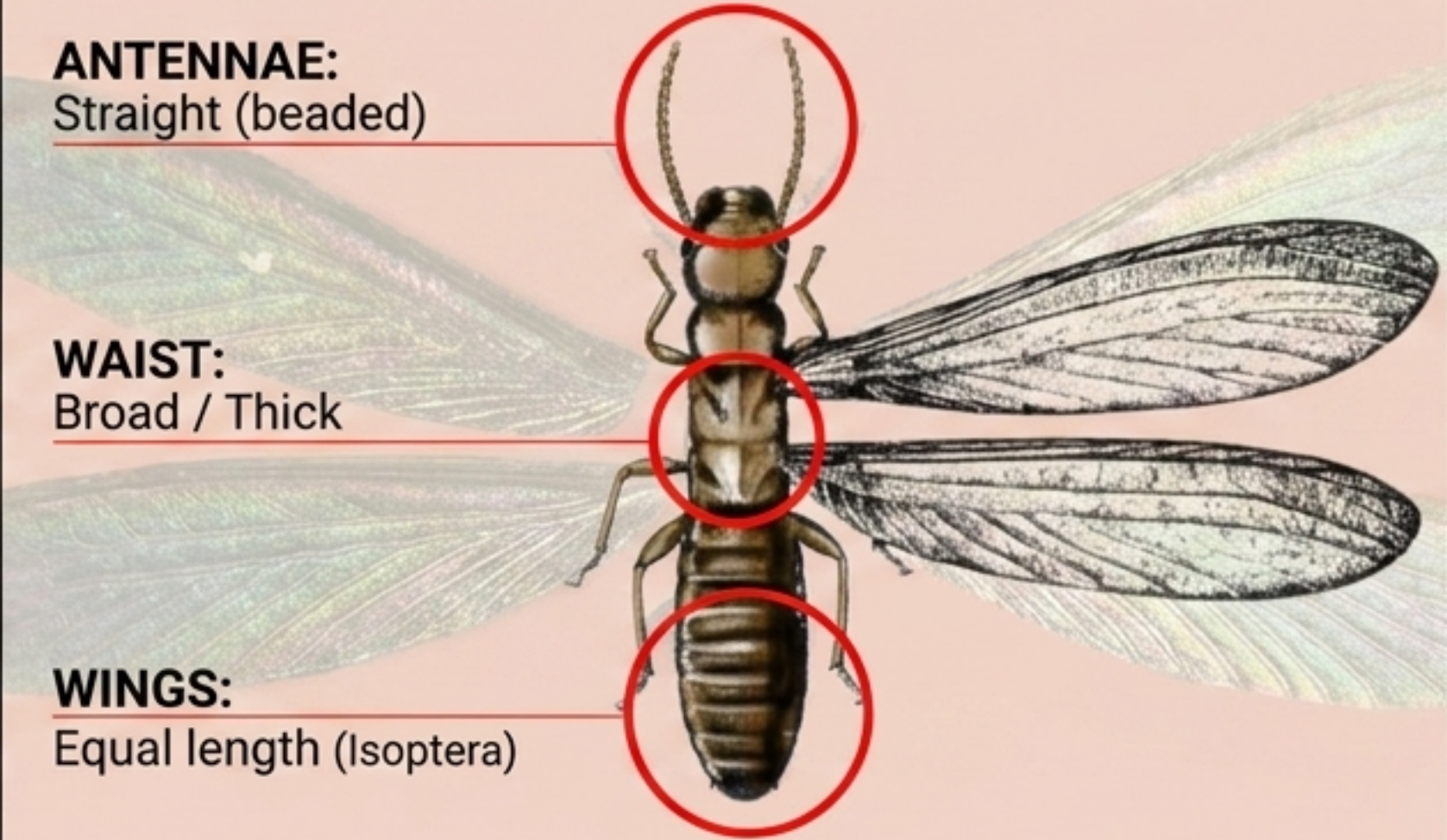
**Workers:** Foragers and primary wood consumers.

**Soldiers:** Defenders (Requires soldiers or swarmers for accurate species ID).

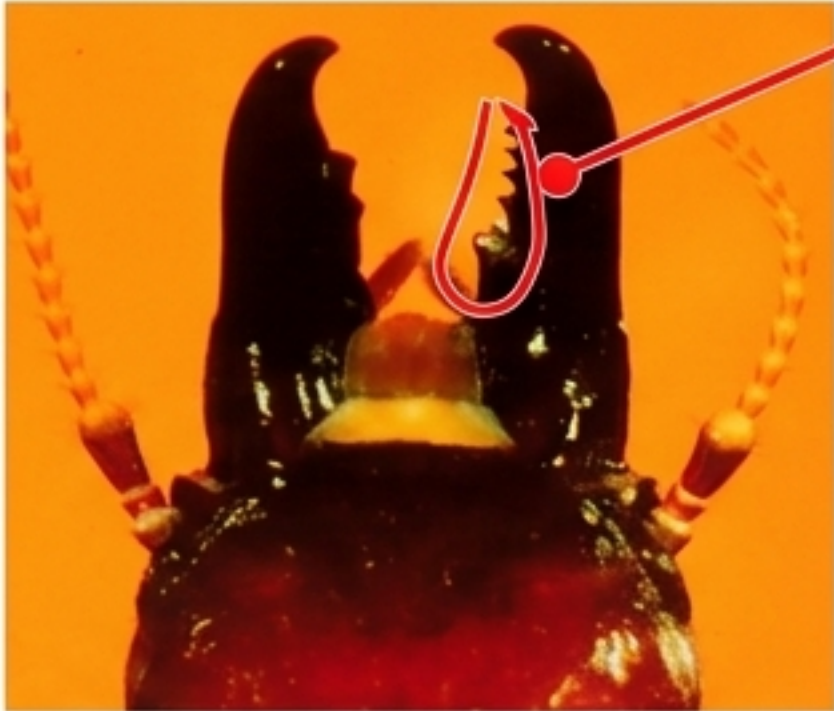
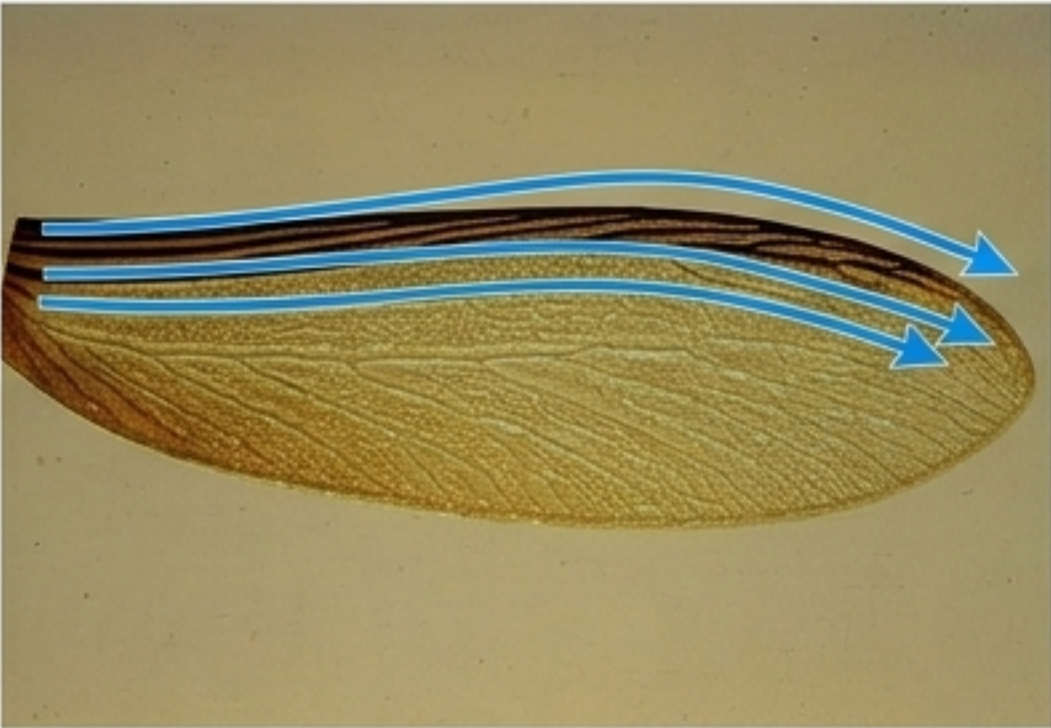
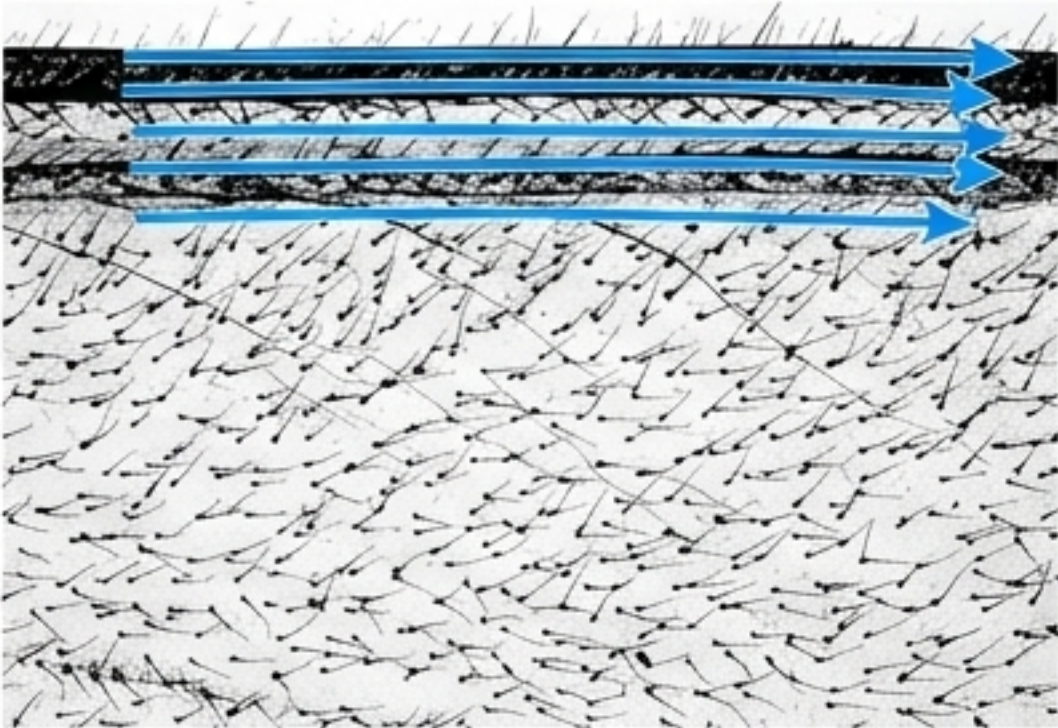
**Trophallaxis Note:**  
Nymphs obtain protozoa from workers through food sharing.



# THE ULTIMATE SWARMER MATRIX

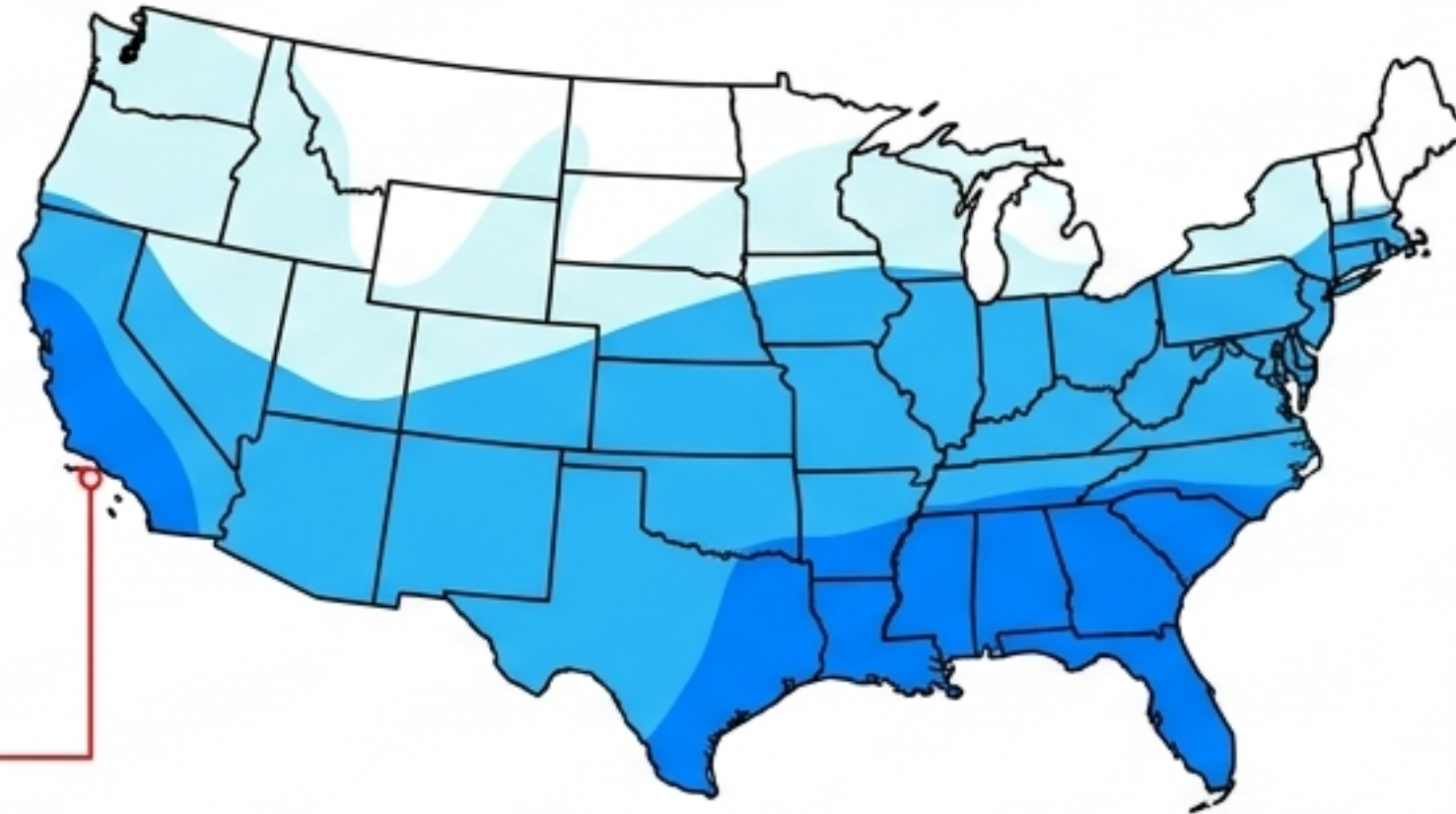
| FLYING ANT                                                                                                                                                                                                                                  | TERMITE ALATE                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>ANTENNAE:</b><br/>Elbowed</p> <p><b>WAIST:</b><br/>Pinched / Constricted</p> <p><b>WINGS:</b><br/>Unequal length<br/>(front longer than back)</p> |  <p><b>ANTENNAE:</b><br/>Straight (beaded)</p> <p><b>WAIST:</b><br/>Broad / Thick</p> <p><b>WINGS:</b><br/>Equal length (Isoptera)</p> |

# MICROSCOPIC COMPARISON MATRIX: SUBTERRANEAN VS. DRYWOOD TERMITES

|                   | COLUMN 1: SUBTERRANEAN TERMITES<br>(RHINOTERMITIDAE)                                                                                               | COLUMN 2: DRYWOOD TERMITES<br>(KALOTERMITIDAE)                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOLDIER MANDIBLES | <p><b>Mandibles:</b><br/>Smooth inner edges.</p>               |  <p><b>Mandibles:</b><br/>Serrated (saw-like) inner edges.</p>      |
| SWARMER WINGS     |  <p><b>Wings:</b> Only 2 strong veins on the leading edge.</p> |  <p><b>Wings:</b> 4 strong anterior veins on the leading edge.</p> |

# SUBTERRANEAN TERMITE DISTRIBUTION

(Region I: Very Heavy to Region IV: None to Slight)



Specimen Profile

## Eastern Subterranean (*Reticulitermes flavipes*)



- **Status:** Most common US species.
- **Colony:** 50,000 to 350,000+.
- **Behavior:** Mating flights early to late spring.

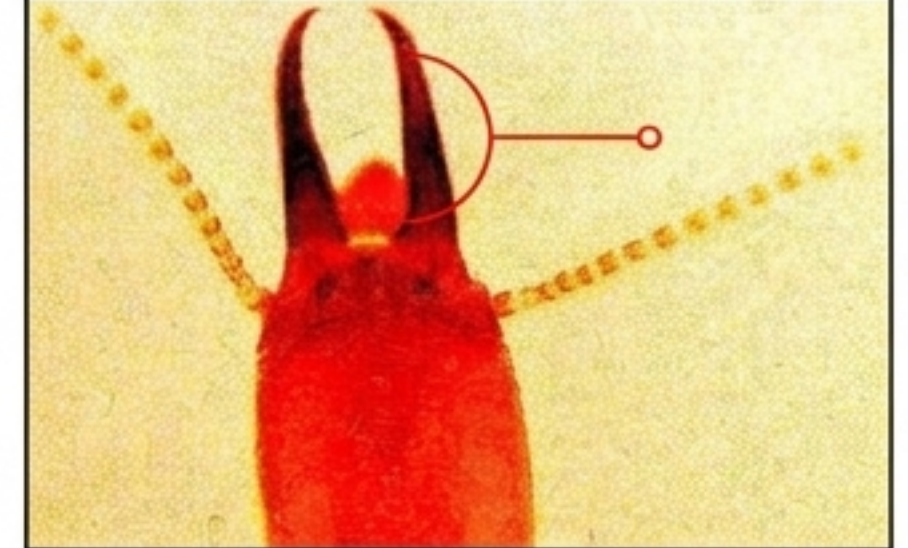
Specimen Profile

## Western Subterranean (*Reticulitermes hesperus*)

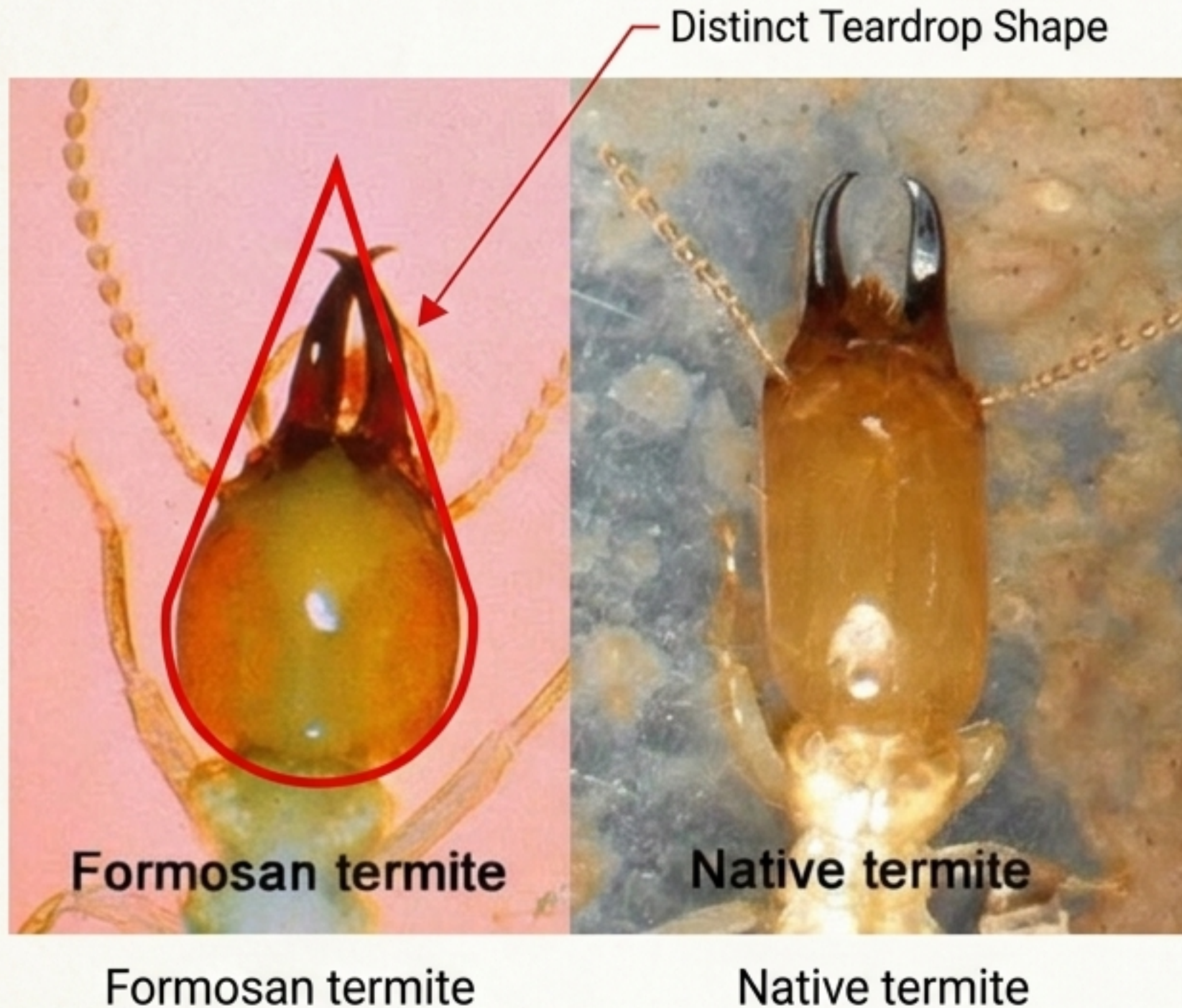
- **Range:** West Coast to Mexico, NV to ID.
- **Colony:** 5,000 to 500,000.
- **Behavior:** Golden brown alates fly evening/night after summer rains.

Specimen Profile

## Desert Subterranean (*Heterotermes aureus*)



- **Range:** SW US (SoCal, AZ, Mexico). Main sub-termite in region.
- **Colony:** 45,000 to 300,000.
- **Behavior:** Pale alates. Foraging includes specialized drop tunnels.



## Formosan Subterranean Termite (*Coptotermes formosanus*)

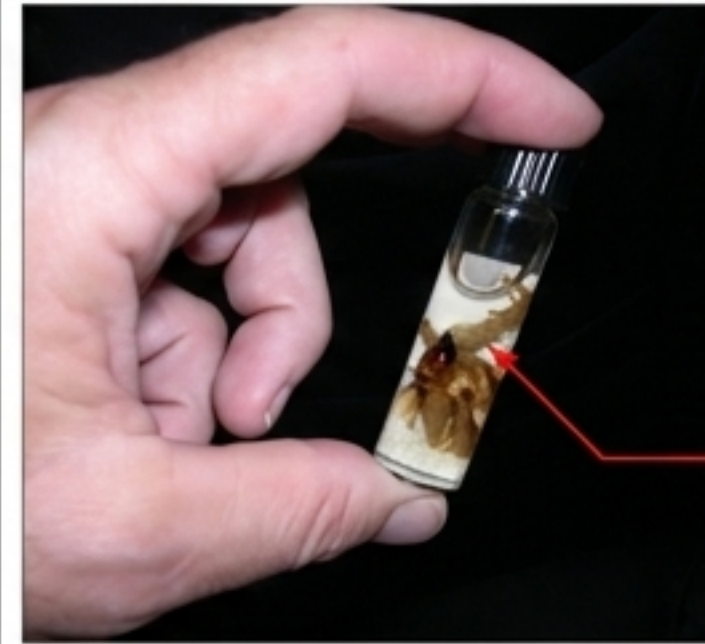
- **Origin/Spread:** First collected in SC (1957); now spans southern coastal communities.
- **Vector:** Recycled railroad timbers are a major transmission source.
- **Threat Level:** Massive colonies exceeding 1 million members.

### Key Field Identifiers

- **High** percentage of soldiers in colony (approx. 10%).
- **Soldier Head:** Distinct teardrop shape.
- **Swarmer Wings:** Covered in dense hairs.
- **Swarmer Body/Behavior:** Yellowish-orange, swarms strictly at night.

### DRYWOOD TERMITES

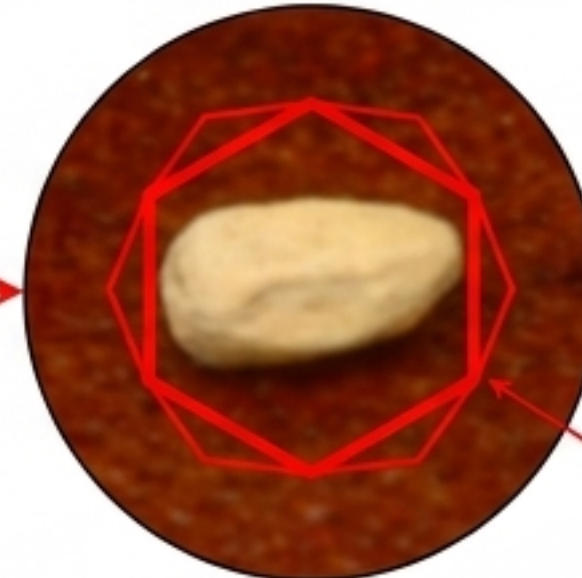
- **Moisture:** Requires <15% moisture. Zero ground contact needed.
- **Swarmers:** Pale yellow, night swarms. Small colonies (<5,000).



### DAMPWOOD TERMITES

- **Moisture:** Not subterranean, but strictly requires high moisture in wood.
- **Size:** Noticeably larger than other termite species.

## EVIDENCE CALLOUT



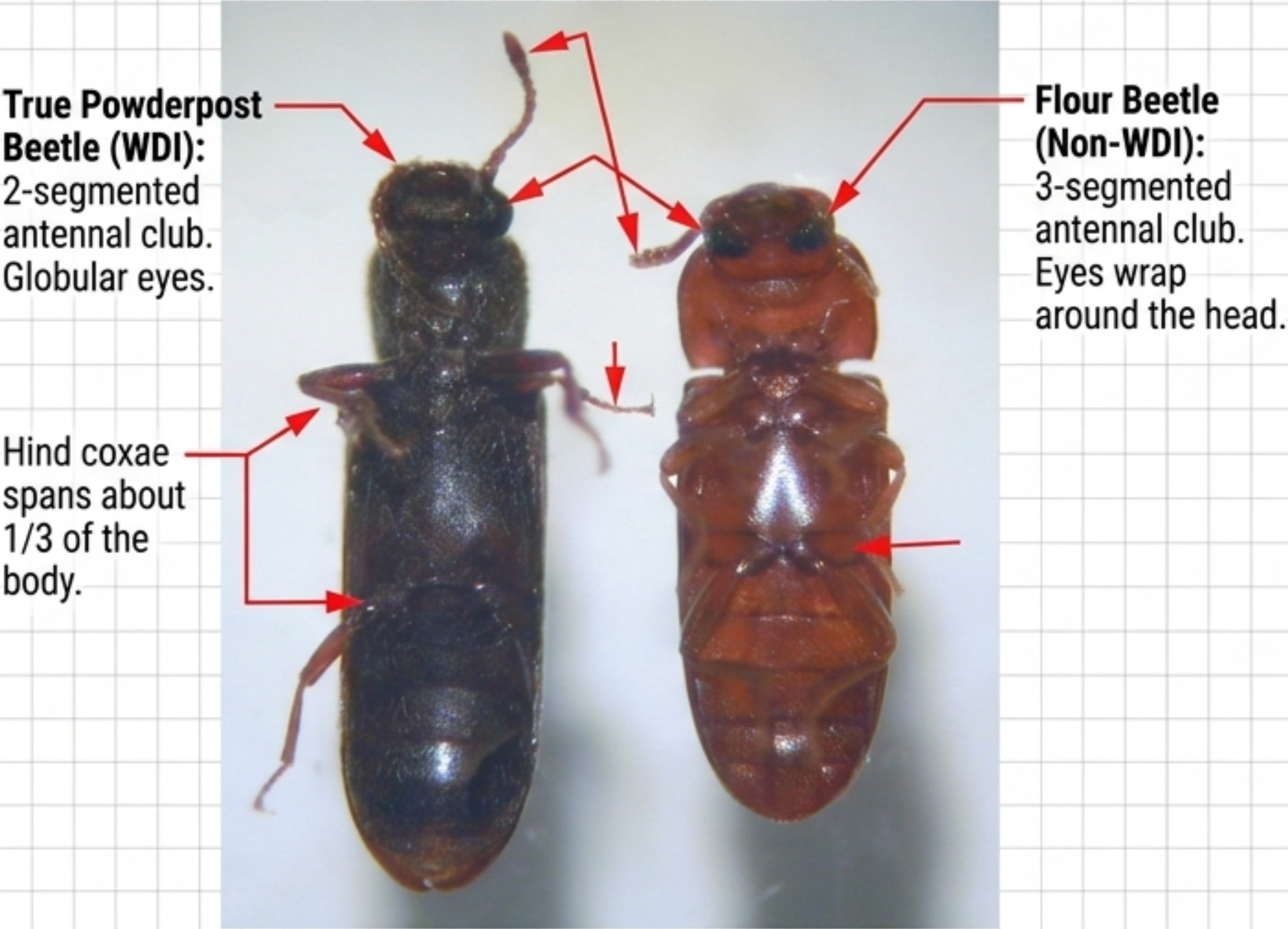
### DRYWOOD FECAL PELLETS

- **Characteristics:** Hard, dry, elongate-oval with rounded ends. Color ranges creamy to black. Does not change shape/size over time.
- **Diagnostic Key:** Six concave sides.

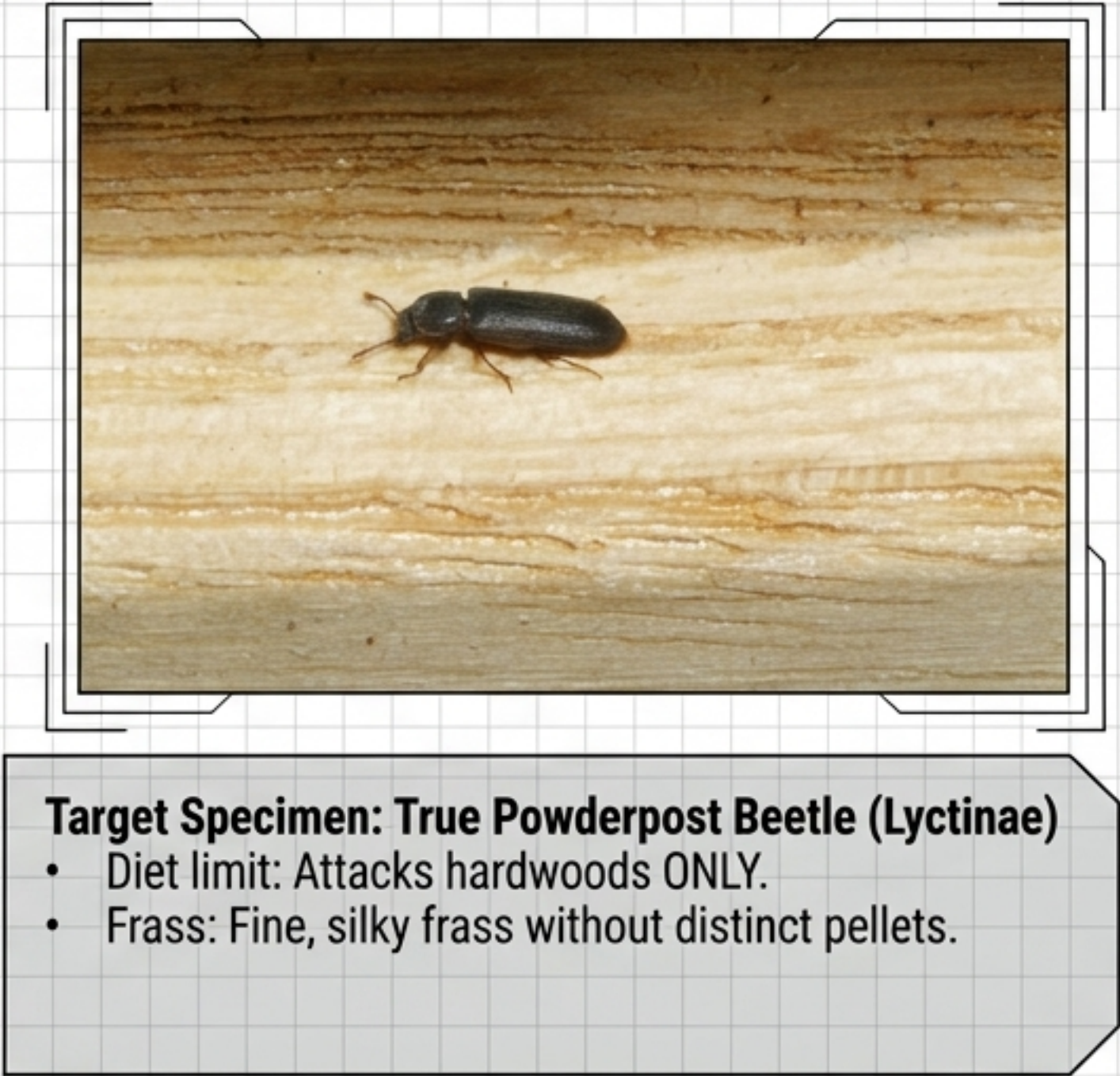
Order Coleoptera | Complete Metamorphosis

Attacks both hardwoods and softwoods depending on species. Often brought into homes via infested lumber.

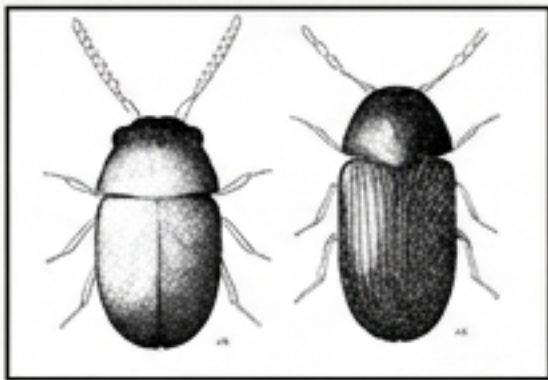
COMPARATIVE ANATOMY



TARGET SPECIMEN



# THE BORER BEETLE DIAGNOSTIC TABLE



## False Powderpost Beetle (Bostrichid)

## Anobiid Beetle

## Old House Borer (Cerambycidae)

Exit Holes



Round, 1/16 to 5/16 inch

Round, 1/16 to 1/8 inch

OVAL, 1/4 to 3/8 inch

Frass Texture



Coarse, tightly packed

Elongated, loosely  
packed

Tightly packed,  
coarse frass

Wood  
Preference



Attacks both soft and  
hardwoods

Attacks both hard and  
softwoods

Attacks softwoods ONLY

Behavioral  
Note

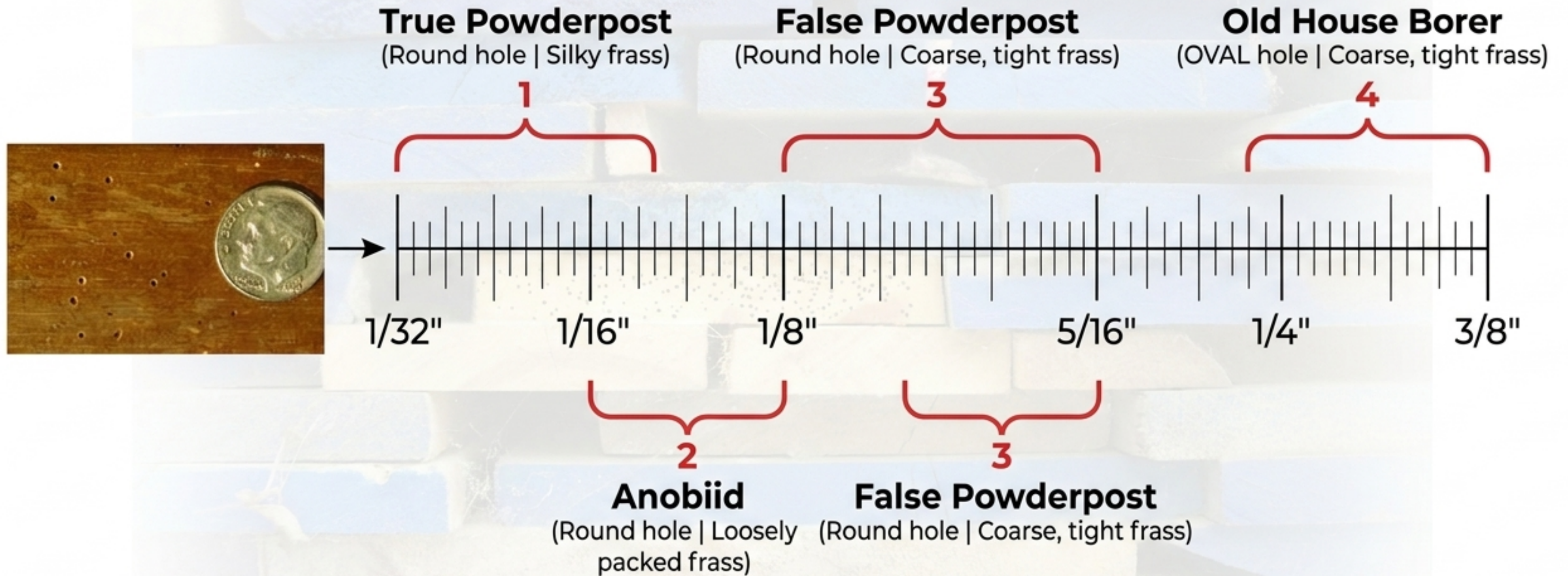


Tend not to reinfest

Prefers high moisture  
content (>15%)

Targets wood less than  
10 years old

# The Field Evidence Scale



# Carpenter Ants (*Camponotus* spp.) | Order Hymenoptera | Family Formicidae.

## Anatomical Differentiators



Single node  
between  
abdomen  
and thorax

**Polymorphic** (Multiple worker sizes within the colony).

**Relatively large** physical size.

## Behavior & Field Evidence

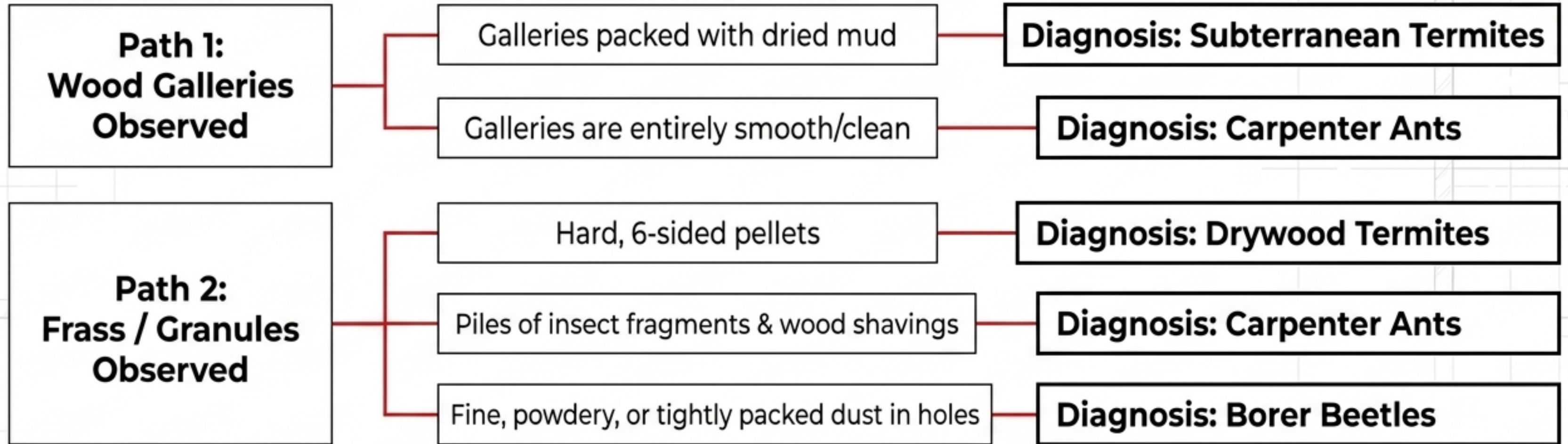
**Primarily nocturnal**; excavates wood (trees, stumps, structures) for nesting, not feeding. Satellite colonies common.

**Galleries:** Smooth interior walls, completely devoid of mud.

**Frass Ejection:**  
Creates frass windows. Look closely to confirm insect fragments and pupal cases mixed in.



# Master WDI Field Evidence Decoder



## Inspector Certification Panels

### Panel 1: Biological Mechanics

Termites use which of the following to digest the cellulose found in wood?

- ☐ Bacteria
- ☐ Protozoa
- ☐ Enzymes
- ☒ All of the above.



## Inspector Certification Panels

### Panel 2: Environmental Limitations

Which of the following termite species are most likely to be found attacking wood with moisture levels less than 15%?

- ☐ Formosan termite
- ☐ Eastern subterranean termite
- ☐ Desert termite
- ☒ Powderpost termite (*Cryptotermes brevis*).



**Maintain <15% structural wood moisture to inhibit majority of WDI intrusion.**