FLORIDA 4-H INSECTATHON INSECT DAMAGE ID STUDY MATERIALS

TOPIC: INSECTS OF STRUCTURAL, MEDICAL, AND VETERINARY IMPORTANCE

CREATED BY

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BED BUG: CIMEX LECTULARIUS

- **Order:** Hemiptera
- **Morphology:**
- **Winged:** yes, but wings are greatly reduced
- **Mouth Parts:** piercing-sucking
- **Other descriptors:** The adult bed bug is a broadly flattened, ovoid insect with greatly reduced wings (Schuh and Slater 1995). The leathery, reduced fore wings (hemelytra) are broader than they are long, with a somewhat rectangular appearance. The sides of the pronotum are covered with short, stiff hairs (Furman and Catts 1970). Before feeding, bed bugs are usually brown in color and range from 6 to 9.5 mm in length. After feeding, the body is swollen and red in color (USDA 1976).

BED BUG: INSECT PHOTOS

Left to right:
Figure 1. Adult bed bug, *Cimex lectularius* Linnaeus, feeding. Photograph by Joseph Smith, University of Florida.
Figure 2. Dorsal view of an adult bed bug, *Cimex lectularius* Linnaeus. Photograph by David Almquist, University of Florida.
Figure 3. Lateral view of an adult bed bug, *Cimex lectularius* Linnaeus. Photograph by Joseph Smith, University of Florida.

BED BUG: DAMAGE PHOTOS

Figure 1. Photo of a person's arm with bed bug bites. Typically clustered in a linear fashion. In otherwords, more than one bite, close together and in a line. (courtesy of Harold Harlan, AFPMB).
Figure 2. This is a close up of a chair. The black spots are excrement left behind after feeding. (Photo courtesy of Harold Harlan).
Figure 3. Bed bugs along the bottom edge of an electrical outlet. There seems to be some excrement left here as well. Outlets are a favorite hangout for bed bugs since they are dark and enclosed. Remember, bed bugs like to hide in the dark.

BLISTER BEETLES: MELOIDAE

- **Order:** Coleoptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** biting-chewing
- **Other descriptors:** Adults are soft-bodied, long-legged beetles with an unusually narrow neck. Body length generally ranges between 3/4 and 2 cm in the Florida species. Blister beetles (Meloidae) are commonly confused with beetles in the family Oedemeridae (false blister beetles) (Arnett 2008) and the Tenebrionidae subfamily Lagriinae (long-jointed beetles).

BLISTER BEETLES

There are 26 known species in Florida. Here are a few:

Above Adult *Epicauta floridensis* Werner (left), and *E. cinerea* Forster (right). Photograph by Lyle J. Buss, University of Florida.

Above Adult bronze blister beetle, *Lytta polita* Say. Photograph by James Castner, University of Florida.

Above Adult *Pyrota lineata* (Olivier) a blister beetle. Photograph by Lyle J. Buss, University of Florida.

BLISTER BEETLES: DAMAGE PHOTOS

Blisters resulting from smashing a single blister beetle on the neck. While uncomfortable, no medical treatment was implemented and the blisters soon diminished on their own. Photograph by Samuel Grubb

BLISTER BEETLES: DAMAGE PHOTOS

Though most people consider them a medical pest, several of the Florida blister beetles feed on cultivated plants. Species of *Epicauta*, particularly the margined blister beetle, *E. funebris*, and the striped blister beetle, *E. vittata*, often damage alfalfa, beet, potato, tomato, and other crops by defoliation. Because of the beetles' gregarious behavior, their attacks can be locally catastrophic.

Left Crop damage caused by adult margined blister beetles, *Epicauta pestifera* Werner. Photograph by James Castner, University of Florida.

CARPENTER BEE: CIMEX LECTULARIUS

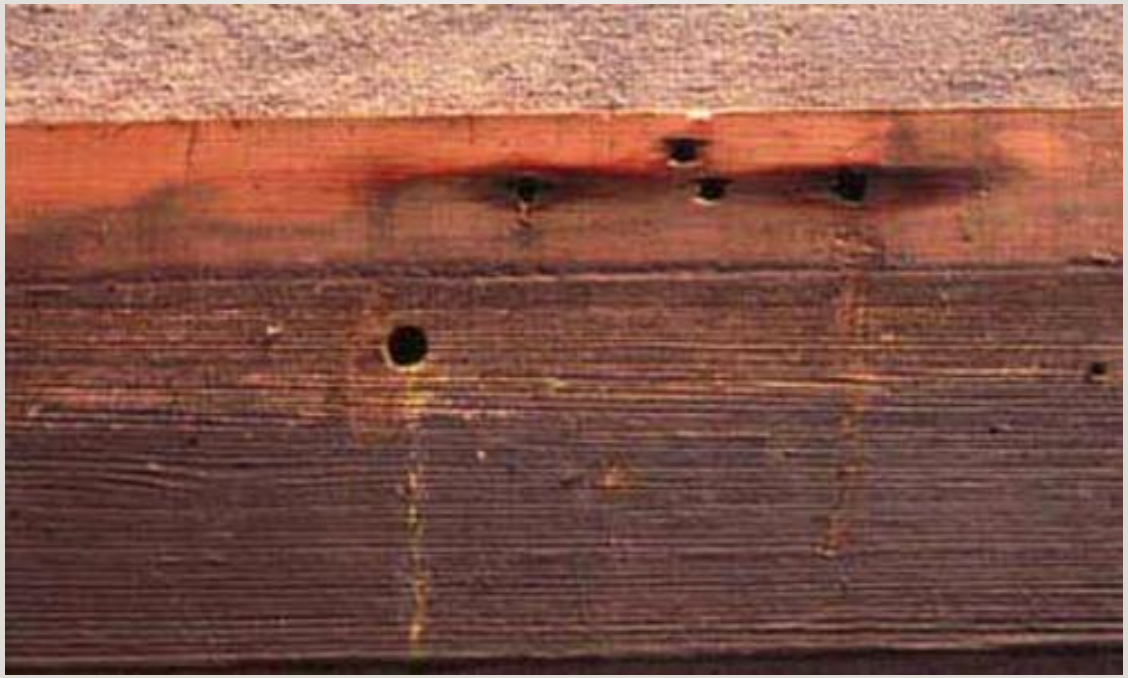
- **Order:** Hymenoptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** mandibular
- **Other descriptors:** Often mistaken for bumble bees, these bees get their common name from their nesting habits: large carpenter bees chew nesting galleries in solid wood or in stumps, logs, or dead branches of trees (Hurd and Moure 1963). They may become economic pests if nesting takes place in structural timbers, fence posts, wooden water tanks, or the like.

CARPENTER BEE: INSECT PHOTO

Adult large carpenter bee, Xylocopa sp. Photograph by Paul M. Choate, University of Florida.

CARPENTER BEE: DAMAGE PHOTO

Entry hole drilled into structural wood by a large carpenter bee, *Xylocopa* sp. Photograph by University of Florida.



RED IMPORTED FIRE ANT: *SOLENOPSIS INVICTA*

- **Order:** Hymenoptera
- **Morphology:** holometabolous
- **Winged:** reproductive forms only
- **Mouth Parts:** biting-chewing
- **Other descriptors:** Two distinct nodes at the waste

RED IMPORTED FIRE ANT: *INSECT PHOTO*

Lateral view of a worker of the red imported fire ant, *Solenopsis invicta* Buren. Photograph by David Almquist, University of Florida.

RED IMPORTED FIRE ANT: *DAMAGE PHOTO*

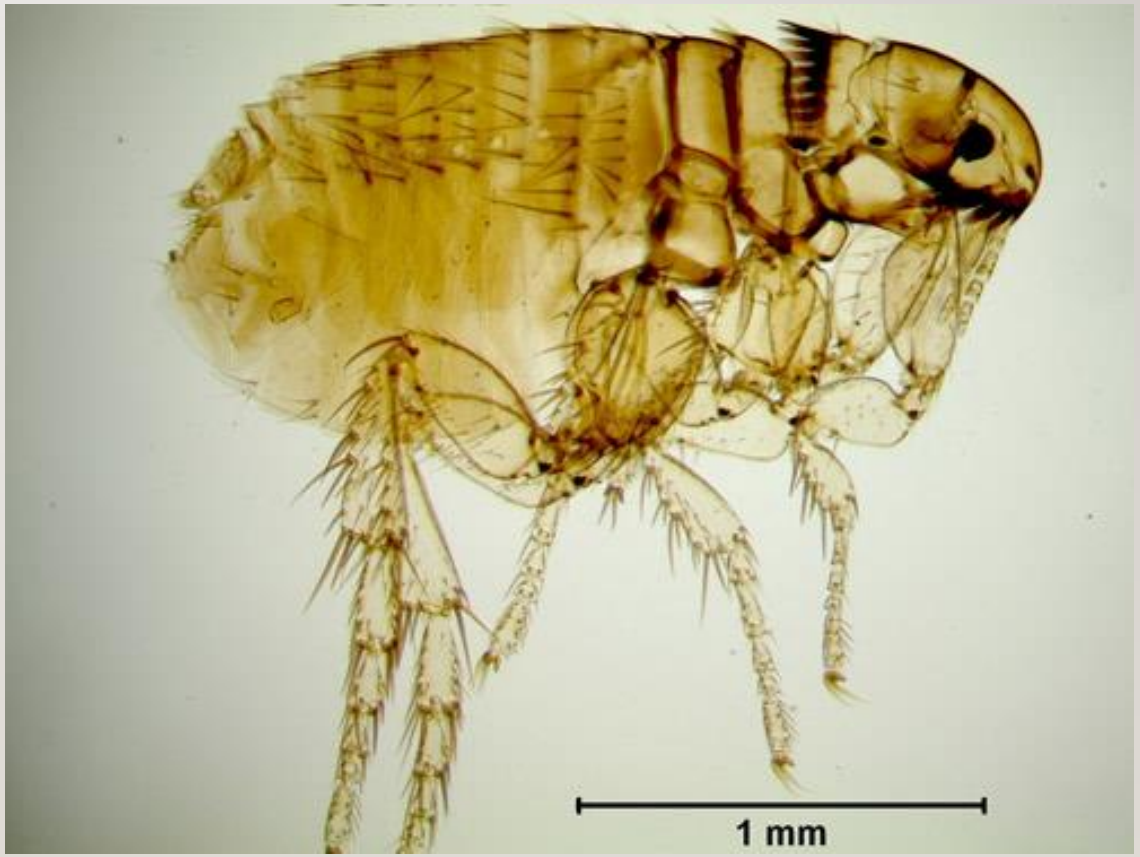
White pustules formed after attack by the red imported fire ant, *Solenopsis invicta* Buren. Photograph by Sanford D. Porter, USDA, Gainesville, FL.

DOG FLEA: *CTENOCEPHALIDES CANIS*

- **Order:** Siphonaptera
- **Morphology:** holometabolous
- **Winged:** no
- **Mouth Parts:** piercing-sucking
- **Other descriptors:** Adult dog fleas are small (2.0 - 3.25 mm), wingless, bilaterally compressed, and heavily chitinized (Bayer Environmental Science 2007, Durden and Hinkle 2009). Members of the genus *Ctenocephalides* have genal and pronotal combs, large black eyes and 5-segmented labial palps (Ewing and Fox 1943).

DOG FLEA: *INSECT PHOTO*

Ctenocephalides canis (Curtis) adult.
Photograph by Krista Seraydar,
University of Florida



DOG FLEA: *DAMAGE PHOTO*

Dogs presenting with flea-bite dermatitis. Photographs by Rosanna Marsella, University of Florida.

EUROPEAN HONEY BEE: *APIS MELLIFERA*

- **Order:** Hymenoptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** biting chewing
- **Other descriptors:** Honey bees have two pairs of wings, and a head with compound eyes and antennae. Only females have a stinger.

EUROPEAN HONEY BEE: INSECT PHOTOS

Drone (male) European honey bee, *Apis mellifera* Linnaeus on the left and a worker European honey bee on the right. Photograph by Susan E. Ellis, littleladiesofthehive.com (used with permission).

EUROPEAN HONEY BEE: INSECT PHOTO

European honey bees, *Apis mellifera* Linnaeus, on comb in a colony. Photograph by Ashley N. Mortensen, Entomology and Nematology Department, University of Florida.

EUROPEAN HONEY BEE: INSECT PHOTO

Worker European honey bee, *Apis mellifera* Linnaeus, foraging on a flower. Note hairs covering the body, and the "waist" created by the constriction of the second abdominal segment. Photograph by Susan E. Ellis, littleladiesofthehive.com (used with permission).

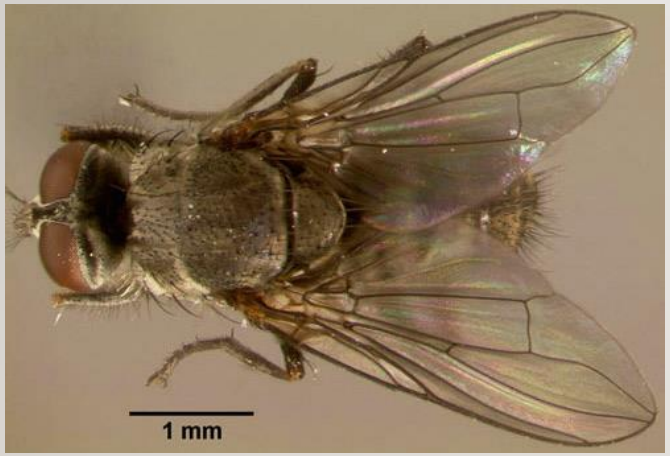
EUROPEAN HONEY BEE: DAMAGE PHOTO

Nuisance colonies of European honey bees, *Apis mellifera* Linnaeus. Left: worker honey bees at the entrance of a colony in the exterior wall of a house. Right: the underside of a carport roof has been cut away to expose the wax combs of a colony. Photographs by Anthony Vaudo, University of Florida.

HORN FLY: *HAEMATOBIA IRRITANS IRRITANS*

- **Order:** Diptera
- **Morphology:** holometabolous
- **Winged:** adults
- **Mouth Parts:** piercing-sucking
- **Other descriptors:** The horn fly is one of the most economically important pests of cattle worldwide. Both males and females feed on blood, feeding almost exclusively on that of cattle.

HORN FLY



Dorsal view of an adult horn fly, *Haematobia irritans irritans* (Linnaeus). Photograph by Dan Fitzpatrick, University of Florida.

Lateral view of an adult horn fly, *Haematobia irritans irritans* (Linnaeus). Photograph by Dan Fitzpatrick, University of Florida.

HORN FLY: DAMAGE PHOTOS

A cloud of horn flies (the numerous white specks), *Haematobia irritans irritans* (Linnaeus), feeding on cows. Photograph by Lane Foil, Louisiana State University.

HUMAN HEAD LOUSE: *PEDICULUS HUMANUS CAPITIS*

- **Order:** Anoplura
- **Morphology:** hemimetabolous
- **Winged:** no
- **Mouth Parts:** biting-chewing
- **Other descriptors:** Because lice have simple or gradual metamorphosis, the immatures and adults look similar, except for size. Lice do not have wings or powerful jumping legs so they move about by clinging to hairs with their claw-like legs. Head lice prefer to live on the hair of the head.

HUMAN HEAD LOUSE: INSECT PHOTO

Body lice, *Pediculus humanus humanus* Linnaeus. Photograph by James L. Castner, University of Florida.

Note: Head lice and body lice are indistinguishable. Body lice are simply larger. So it's ok to use this photo for id of head lice.

HUMAN HEAD LICE: DAMAGE PHOTO

Nits (eggs) of head lice, *Pediculus humanus capitis* De Geer, on scalp. Photograph by Clay Scherer, University of Florida.

MOSQUITOS

- **Order:** Diptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** piercing-sucking
- **Other descriptors:** There are too many species of mosquitoes of medical and veterinary importance to pick just one, so several are pictured in the following slides. Each has a tale-tale look to it, but all mosquitos, being of the order diptera, have one set of wings, and a set of halteres. They also have characteristic long thing legs and a gangly appearance.

MOSQUITOS

Adult female Florida SLE mosquito, *Culex nigripalpus* Theobald, with blood meal. Photograph by Jai Nayar, University of Florida.

MOSQUITOS

Adult Asian tiger mosquito, *Aedes albopictus* (Skuse). Photograph by J.L. Castner, University of Florida.

MOSQUITOS

Adult female yellow fever mosquito, *Aedes aegypti* (Linnaeus), in the process of seeking out a penetrable site on the skin surface of its host. Photograph by James Gathany, Center for Disease Control Public Health Image Library.

MOSQUITOS: DAMAGE PHOTOS

MUD DAUBER: *SPHECIDAE*

- **Order:** hymenoptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** biting-chewing
- **Other descriptors:** *Sceliphron caementarium* is a black wasp with yellow markings and a very thin, long pedicel (the structure that connects the thorax and abdomen). Yellow markings vary among individuals but are likely to be found on the base of the antenna (the scape), the dorsal side of the thorax, the base of the abdomen where it meets the pedicel, and the legs.

MUD DAUBER: INSECT PHOTO

A female *Sceliphron caementarium* (Drury), on her mud nest. Photograph by Lyle J. Buss, University of Florida.

MUD DAUBER: INSECT PHOTOS

Figure 1. Female *Sceliphron caementarium* (Drury). Photograph by Erin Powell, University of Florida.

Figure 2. A blue metallic mud dauber (*Chalybion californicum*) (Saussure) on a *Sceliphron caementarium* (Drury) nest. Photograph by J. L. Castner, University of Florida.

Figure 3. A male organ pipe mud dauber, *Trypoxylon politum* (Say). Photograph by Lyle Buss, University of Florida.

MUD DAUBER: DAMAGE PHOTOS

Left to right:
Figure 1. A nest of an organ pipe mud dauber, *Trypoxylon politum* (Say). Photograph by Lyle Buss, University of Florida.

Figure 2. A *Sceliphron caementarium* (Drury) nest depicting exit holes where adults have exited after completing the immature stages. This nest is made up of around 25 cells. Photograph by Erin Powell, University of Florida.

MUD DAUBER: DAMAGE PHOTOS

Figure 1. The underside of a bridge in north-central Florida with a high density of *Sceliphron caementarium* (Drury) mud nests. Photograph by Erin Powell, University of Florida.

Figure 2. A nest of *Sceliphron caementarium* (Drury) built on the engine of a Nissan truck in Alva, Florida. Photograph by Erin Powell, University of Florida.

PRIMARY SCREWWORM: *COCHLIOMYIA HOMINIVORAX*

- **Order:** Diptera
- **Morphology:** holometabolous
- **Winged:** yes
- **Mouth Parts:** sponge-like (adults); hook-like (larvae)
- **Other descriptors:** The adult primary screwworm, *Cochliomyia hominivorax* is a metallic blue fly with three stripes that run down the top (dorsal surface) of the fly just behind the head, and orange eyes. The center stripe begins partway down the backside and appears shorter than the outer stripes. Adults are roughly 2 to 3 times the size of a house fly. This fly may easily be confused with the secondary screwworm, which also has three lines; however, all three lines begin at the same point behind the head on the secondary screwworm.

PRIMARY SCREWWORM: INSECT PHOTO

Adult screwworm, *Cochliomyia hominivorax* (Coquerel). Note the dark stripes across the backline (thorax) of the fly behind the head. Photograph by Judy Gallagher.

PRIMARY SCREWWORM: LARVAL PHOTO

Larval primary screwworm, *Cochliomyia hominivorax* (Coquerel). Photograph by Heather Stockdale Walden, University of Florida.

PRIMARY SCREWWORM: DAMAGE PHOTO

Small lesions on a Key deer (*Odocoileus virginianus clavium*) killed by primary screwworm, *Cochliomyia hominivorax* (Coquerel), with other blow fly adults visiting the carcass. Samantha Gibbs, U.S. Fish and Wildlife Service.

SADDLEBACK CATERPILLAR: *ACHARIA STIMULEA*

- **Order:** Lepidoptera
- **Morphology:** holometabolous
- **Winged:** adult forms only
- **Mouth Parts:** biting-chewing
- **Other descriptors:** *Acharia stimulea* (Clemens) is a limacodid moth, or slug moth, best known for its larval growth phase. Distinct bright color patterns and the presence of venomous, urticating spines lead to its recognition as the saddleback caterpillar. It is native to a large range in the eastern United States and able to feed on a wide array of host plant species.

SADDLEBACK CATERPILLAR

Mature larvae of the saddleback caterpillar, *Acharia stimulea* (Clemens). Photograph by Lyle J. Buss, University of Florida.

SADDLEBACK CATERPILLAR

Adult stage of the saddleback caterpillar, *Acharia stimulea* (Clemens), showing the white dots on the wings. Photograph by Lyle J. Buss, University of Florida.

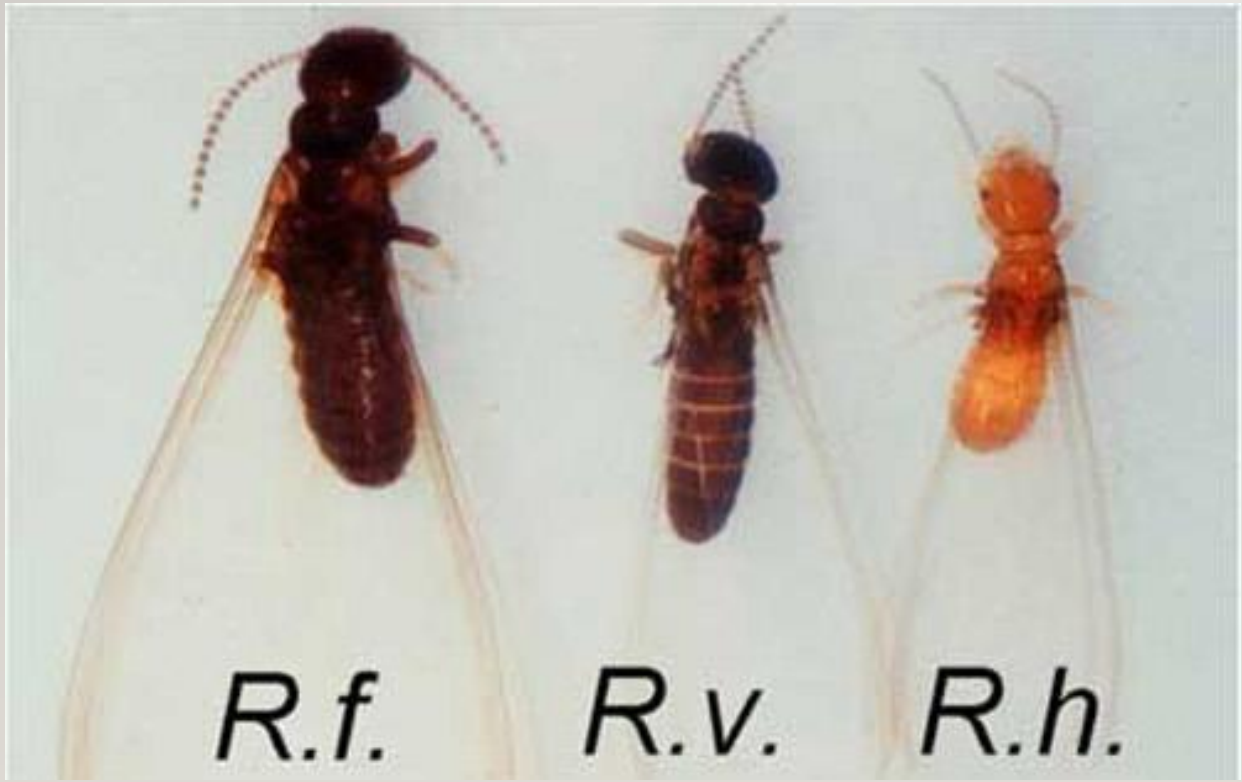
SADDLEBACK CATERPILLAR

Stings from stinging caterpillars such as the saddleback caterpillar result in rashes. Affected areas look much like this rash resulting from stings from the southern flannel moth caterpillar.

TERMITES

- **Order:** Isoptera
- **Morphology:** holometabolous
- **Winged:** reproductive forms only
- **Mouth Parts:** biting-chewing
- **Other descriptors:** Like mosquitoes, there are many species of termites, so no one specific species is highlighted in the following slides. However, termites are often confused with ants. Two ways to tell if you're looking at an ant or a termite are: 1) ants have a constricted waste 2) ants have elbowed, or bent, antennae. Termites have neither of these things.

TERMITES: INSECT PHOTOS

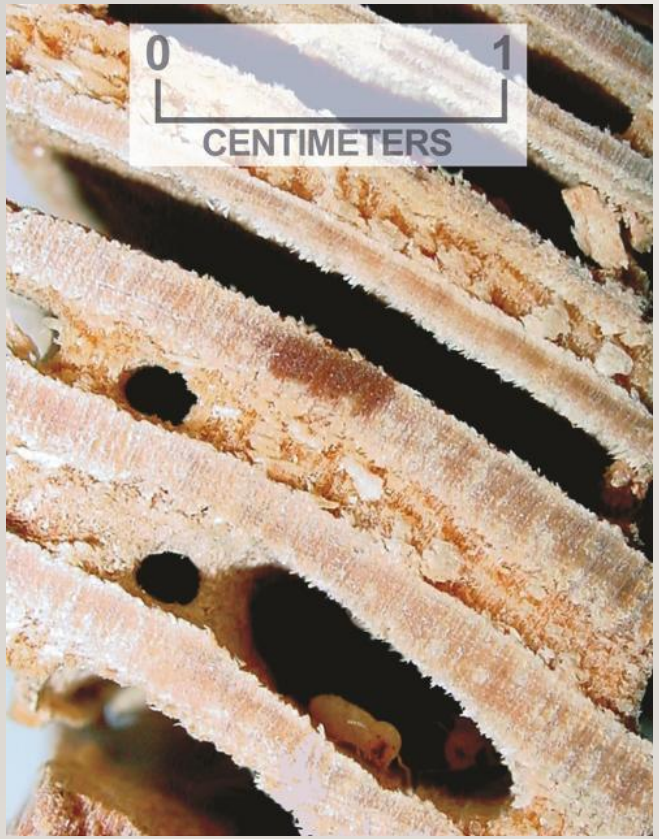


Alates (reproductive forms) of eastern subterranean termite, *Reticulitermes flavipes* (Kollar) (*R.f.*), and other native subterranean termites, *Reticulitermes virginicus* (Banks) (*R.v.*) and *Reticulitermes hageni* Banks (*R.h.*). Photograph by Nan-Yao Su and Rudolf H. Scheffrahn, University of Florida.

TERMITES: INSECT PHOTOS

Soldiers (orange-brown, oval-shaped head) and workers of the Formosan subterranean termite, *Coptotermes formosanus* Shiraki. Photograph by Nan-Yao Su, University of Florida

TERMITES: DAMAGE PHOTO



Wood damage by subterranean termites. Usually damage is with the grain and is covered with muddy material

RESOURCES:

Bed bugs

- http://entnemdept.ufl.edu/creatures/urban/bed_bug.htm
- https://www.epa.gov/bedbugs/how-find-bed-bugs

Blister Beetles:

- http://entnemdept.ufl.edu/creatures/urban/medical/blister_beetles.htm

Carpenter Bees

- http://entnemdept.ufl.edu/creatures/misc/bees/xylocopa.htm

Fire Ants

- http://entnemdept.ufl.edu/creatures/urban/ants/red_imported_fire_ant.htm

Fleas

- http://entnemdept.ufl.edu/creatures/URBAN/OCCAS/dogflea.htm

Honey Bees

- http://entnemdept.ufl.edu/creatures/MISC/BEES/euro_honey_bee.htm

Horn Fly:

- http://entnemdept.ufl.edu/creatures/livestock/flies/horn_fly.htm

Human Head Lice

- http://entnemdept.ufl.edu/creatures/urban/human_lice.htm
- http://entnemdept.ufl.edu/creatures/urban/human_lice.htm

Mosquitoes

- http://entnemdept.ufl.edu/creatures/aquatic/fl_sle_mosquito.htm
- http://entnemdept.ufl.edu/creatures/aquatic/asian_tiger.htm
- http://entnemdept.ufl.edu/creatures/aquatic/aedes_aegypti.htm

Mud Daubers

- http://entnemdept.ufl.edu/creatures/MISC/WASPS/Sceliphron_caementarium.htm

Primary screw worms

- http://entnemdept.ufl.edu/creatures/livestock/primary_screwworm.htm

Saddleback caterpillars:

- http://entnemdept.ufl.edu/creatures/urban/medical/saddleback_caterpillar.htm
- http://citybugs.tamu.edu/factsheets/biting-stinging/others/ent-3010/

Termites:

- http://entnemdept.ufl.edu/creatures/urban/termites/native_subterraneans.htm
- http://entnemdept.ufl.edu/creatures/urban/termites/formosan_termite.htm
- http://edis.ifas.ufl.edu/LyraEDISServlet?command=getImageDetail&image_soid=IMAGE IG: TERMWOOD&document_soid=IG097&document_version=60505