Bed Bug Basics

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Challenge of bed bugs

- Bed bugs are here to stay
- Bed bugs are expensive
- Bed bugs cannot be ignored
- Bed bugs are a big headache to anyone owning or managing rental properties, hotels, etc
Recent History

• Familiar to people of the early 1900s
  – Up to one-third of residences in some cities
  – Rated in the “top three pests”

• Steady decrease in mid-20th century
  – DDT (?)
  – Sanitation
  – Standard of living

• Re-appearance in mid 1990s
Recent Rise

- Change in pest control tactics
  - Emergence of baits for ants, roaches
  - Improved pest control for targeted pests
  - Bed bugs feed only on blood
  - Unaffected by baits

- Insecticide resistance

- Lack of recognition of infestation

- Thrift shops, flea markets, garage sales
What are Bed Bugs?
Bed Bugs

- Blood-feeding ectoparasite
- Completely dependent on humans
  - Prefer to feed only on people
  - Well adapted to homes
  - Travel well with people
  - Almost always introduced by our activities (introduced through personal items: luggage, purses, briefcases, etc.)
Bed Bug Description

- Up to 3/16 inch long
- Flattened, oval body
- Reddish brown in color
- Nymphs look like adults, but translucent
Bed Bug Life Cycle

- Simple life cycle
- 5 nymphal stages
  - Nymph must have a blood meal before molting
- Nymphs are colorless at first
Bed Bug Habits

• Hide during the day
• Dark, protected cracks and crevices
• Prefer fabric, wood & paper surfaces
• Usually close to the host
Bed bugs “hiding” at ceiling / wall junction
Blood Feeding

- Blood smears in hiding spots
- Blood smears on sheets and cases
Bed Bug Bites

• Usually on exposed skin – face, neck, extremities
• Impossible to diagnose insect from the bites
• Allergic reactions are to the saliva and vary by individual
Bed Bug Bites

• No disease transmission
• Medical significance: itching, discomfort, inflammation, sleeplessness, anxiety, embarrassment
Proper Identification

Bed Bug vs. Bat Bug

• Very similar in appearance
  – Need a microscope
• Bat bugs feed on bats
  – Bat bugs can also bite humans
• A problem in homes with bats or birds
Bed Bug

Short stiff hairs on thorax

Bat Bug

Long, soft hairs on thorax
Bat Bugs

- Often found throughout home, not just near beds
- Usually not in large numbers
- Homes will have bats roosting in the attic
- Often get reports of bat bugs in fall when bats migrate away
- Hungry bugs wander into home
Detecting Bed Bugs

- Visual
- Monitors
- Climb-up Interceptors
- Sticky traps
- Scent detection canines
Delusory Parasitosis

- Unexplained biting or crawling sensation
- Itching or irritation of unknown origin
- Fixation: insect or mite problem
- No arthropods present
Biting Pests

Obvious

• Mosquitoes
• Ticks
• Lice
• Fleas
• Bat bug and Bed bug
• Masked hunter

Cryptic

• Bird mites
• Rodent mites
• Scabies
• Chiggers
Send me a Sample

- Lint balls
- Thread balls
- Dried blood
- Dead skin
- Dried serum
- Soil particles / Sand
- “other debris excoriated from the skin”
You have Bed Bugs!

• Do NOT discard furniture
  – May not be necessary
  – Greatly adds to cost
  – Spreads the bed bugs

• If possible do not sleep elsewhere in house
You have Bed Bugs!

• Bed bugs are a challenge to eradicate
  – Professionals needed
  – Repeated treatment will be needed
  – A good relationship with your pest control professional is important

• They do not transmit diseases
  – However, bed bug infestations can be psychologically difficult
  – Costly and a public relations concern for hotels, dorms, hospitals, etc.
Control Techniques

- Chemical
- Steam
- Encasement
- Thermal remediation
- Freezing treatments
Questions on Bed bugs before we move on??
Cockroaches

- Adults
- Egg case (Ootheca)
- Nymphal stages
Cockroach Egg Cases

Oriental

American

German

Brownbanded
American cockroach

- Basements, sewers
- Warm & moist places
  - furnaces
  - steam pipe tunnels
  - grease traps
German cockroach

- Most common
- Kitchens, restrooms
- Prefers warm, moist, dark voids (3/16” wide)
Oriental cockroach

• Moist areas
• Cooler areas of a building (basements, service ducts, crawl spaces)
Brownbanded cockroach

Warm, dry areas
High locations
American  Oriental  German  Brown-banded
Cockroach IPM

• Reduce access to
  – Food
  – Water
  – Shelter
• Baits
• Sprays
Cockroach questions before we move to ants?
Guide to Common Ants in Iowa
(Wingless workers only)
Prepared by Donald R. Lewis and Laura Jesse, Department of Entomology
Iowa State University

Pharaoh Ant, *Monomorium pharaonis*
1/16 inch; 2 nodes, light yellowish red
12 antenna segments, w/ 3 segment club

Larger Yellow Ant, *Acothomyops interjectus*
1/4 inch; 1 node, Yellow-orange
Very small eyes

Thief Ant, *Solenopsis molesta*
1/16 inch; 2 nodes
Light brown to yellow
10 antenna segments, w/ 2 segment club

Field Ant, *Formica spp.*
3/8 inch; 1 node
Brown to black
Thorax silhouette uneven in side view

Odorous House Ant, *Tapinoma sessile*
1/8 inch; 1 node that is not easily seen
Dark brown to black
Abdomen slopes forward over node

“Smaller” Carpenter Ant, *Camponotus nearecticus*
1/4 - 1/2 inch; 1 node, Brown; red thorax
Evenly rounded thorax

Pavement Ant, *Tetramorium caespitum*
1/16 to 1/8 inch; 2 nodes
Yellowish red; One pair of spines on thorax
Sculptured lines on head

Carpenter Ant, *Camponotus pennsylvanicus*
1/2 to 3/4 inch; 1 node
Black
Evenly rounded thorax

www.ent.iastate.edu
Ant Anatomy

- Head:
  - Compound eyes
  - Antennae
  - Mandibles
  - Ocelli

- Mesosoma:
  - Petiole

- Gaster:
  - Node
  - Pedicel

Legs
Carpenter Ant

- 1/4 to 1/2 inch
- 1 node
- black or 2-toned
- evenly rounded thorax
Major worker

Minor worker

Pupae
Many sizes of workers.
Field Ants

Field ants may be black, brown, tan, reddish, or red and black in color. Often confused with carpenter ants.
Carpenter ants

• Do not eat wood!
• Not a serious household pest
• Strong walkers, forage long distances
• Colonies can be indoors or outdoors
• Difficult to control
  – Baits do not work well
Odorous House Ant

1/16-1/8 inch
dark brown
one node / hidden
no circle of hairs
rotten coconut odor
when crushed
Odorous House Ant

• Scavengers
• Dead and live insects
• Sweets
• Honeydew from aphids, mealybugs
• Numerous queens
**Odorous House Ant**

- **Nests - outdoors**
  - Under mulch, soil, stones, debris
- **Nests – indoors**
  - Wall voids, potted plants, appliances
- **Nests can be moved**
- **Trail-making indoors and out**
Odorous House Ant

- Difficult to control
- Remove ready access to food and moisture
- Caulk entry points
- Not readily controlled with bait, alone
- Takes more than a residual insecticide barrier
Odorous House Ant

- Do not disturb foraging trails
- Apply non-repellent residual liquid
- Spot treat with a variety of ant bait formulations, both outdoors and indoors.
- Match bait choice to forager acceptance
- Bait preference may change over time; re-inspect weekly or bi-weekly
- Track workers to determine nest locations
Odorous house ants

• If ants don’t respond immediately to a fresh bait deposit, switch to an alternative bait formulation. Try a combination of products.
Larger Yellow Ant

1/4 inch
yellow-orange
1 node
small eyes
citronella odor when crushed
Wander indoors in the fall, not a pest
Larger Yellow Ant

Also called Citronella Ant or Foundation Ant. Gives off "citronella" odor when crushed.
Grease Ant (Thief Ant)

1/16 inch
yellowish-brown
2 nodes
Antennae = 10 segments
Club = 2 segments
Pavement Ant

1/8 inch
dark brown
2 nodes
spines on thorax
grooves on head
Swarmers
Winged termites
Ant vs Termite

- **TERMITE**
  - Straight antennae
  - Broad waist
  - Elbowed antennae
  - Wings equal in size

- **ANT**
  - 2nd pair wings smaller
  - Slender waist
Pest ID Resources

• Polk Co Health Dept Bed Bug: http://cms.polkcountyiowa.gov/health/Pages/Bedbug.aspx
• ISU Plant & Insect Diagnostic Clinic
  – Samples
• Digital images to insects@iastate.edu
• BugGuide.org
• Google – site:edu or site:gov
  – Ex: household ants site:edu
Welcome to the Plant and Insect Diagnostic Clinic!

We have information pages on:
Insects  Plants  Plant Diseases

We also have pest related articles.

Submit a sample for diagnosis or identification

The Plant and Insect Diagnostic Clinic provides diagnosis of plant problems (plant diseases, insect damage, and assessment of herbicide damage) and the identification of insects and weeds from the field, garden, and home. The PIDC is a joint effort between Iowa State University Extension Plant Pathology, Entomology, Horticulture, and Agronomy.

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Terms and Conditions
View Driving Directions
Sample Submission

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The ISU Plant and Insect Diagnostic Clinic staff can diagnose plant health problems caused by diseases, insects or the environment. In addition, they also can identify insects, weeds and fungi. Once they have diagnosed your disease or identified your insect pest, they can advise you on the best course of action to take.

Fees

Plant problem diagnosis (disease, insect, herbicide, abiotic) $20.00
Plant & mushroom ID $10.00
Insect ID $10.00

Forms (Link to PDF download)

Plant Problem Diagnosis
Household Pest Identification
Thank you! Questions?

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