


Think Like The Enemy
Pests 101

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STOP
Pests
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You are a cockroach.



University of Nebraska
Department of Entomology



What all pests need

- Food
- Water
- Shelter



Every infestation starts with an introduction



Pest management must include managing introductions



Find pests that get in before an infestation grows



Use more than one control method to get rid of pests


- Biological
- Mechanical
- Change procedures/practices
- Pesticides



Is your pest management working?

3/29/12

Apt 30: 3 roaches on one monitor in the living room. Baited living room & changed monitors. Asked resident to have kids eat in the kitchen, not on the couch. Will return in 2 weeks. Good housekeeping. No maintenance work needed.



Integrated Pest Management (IPM)

1. Inspect and monitor
2. Identify
3. Determine the scale of response
4. Respond
 - Non-chemical control
 - Changing people's behavior
 - Chemical control
 - Biological control
5. Evaluate effectiveness

The IPM team

Property Manager
In charge of the IPM team

Maintenance Crew

Janitorial/Custodial Services

Landscaping Services

Resident Support Services

Pest Management Professional (PMP)

Resident



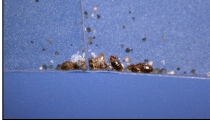
Team members teach each other and document what they see and do.

IPM is not...

- Using only bait
- Applying more than one kind of pesticide
- A certain set of pesticides
- Using spices and herbs
- A service that can be completely contracted out

Priority pests

- Cockroaches cause asthma in infants, trigger asthma attacks, and contaminate food
- Rodents such as mice and rats carry diseases, bite, destroy property, may cause fires, and may trigger asthma attacks
- Bed Bugs and their bites are a nuisance and are expensive to eliminate

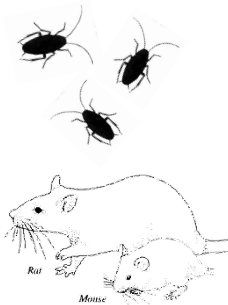




Other public health pests

- Mosquitoes transmit West Nile Virus
 - Need standing water
- Ticks transmit Lyme Disease
 - Get on people from bushes and rodents
- Fleas cause itchy welts
 - Come into buildings on pets and wild animals
- Bird and rodent mites make us itch
 - May move into a unit when the wild host moves out
- Lice make us itch
 - Spread on used or shared items and via person-to-person contact
- Dust mites cause asthma
 - Flourish with high humidity and poor sanitation

Think like the enemy

- What they are
- What they eat
- Where they live

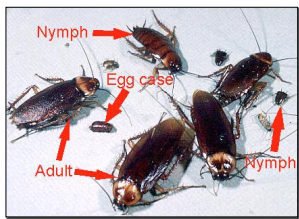


What is a cockroach?

- An insect
- Lives in areas where humans provide food and water
- Active at night
 - If you see cockroaches during the day, the infestation is serious

What is a cockroach?

- Multiple eggs in each egg case
- Many eggs means many nymphs (babies)
- Nymphs look like small versions of the adults



Common cockroaches

hot → cool →

American → Oriental → German → Brown-banded

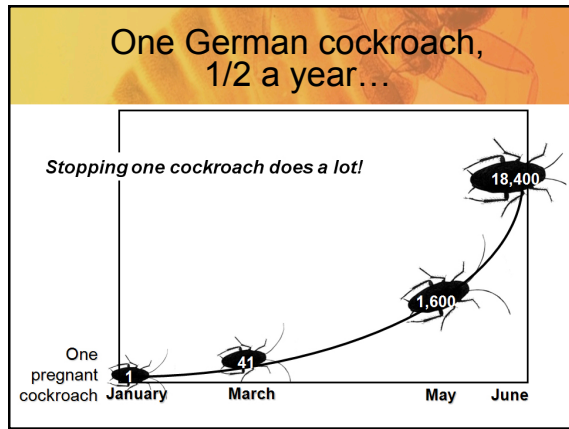
sewers & basements → most common → high & dry

German cockroach

- Medium size (3/4"), bronze, with "racing stripes" behind the head
- Found everywhere, but likes warmth, moisture, and darkness
- Reproduces quickly
- Mother carries eggs to term even if she is dead
- Eats almost anything

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<h4 style="text-align: center;">American cockroach</h4> <ul style="list-style-type: none"> • a.k.a. "palmetto bugs" or "water bugs" • Large (1-1/2"); brown color • Glides in the air • Lives in sewers and basements • Likes it hot 	<h4 style="text-align: center;">Oriental cockroach</h4> <ul style="list-style-type: none"> • a.k.a "water bugs" • Large (1"); black color • Lives in sewers, basements, and mulch • Likes it cool
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Signs of cockroaches

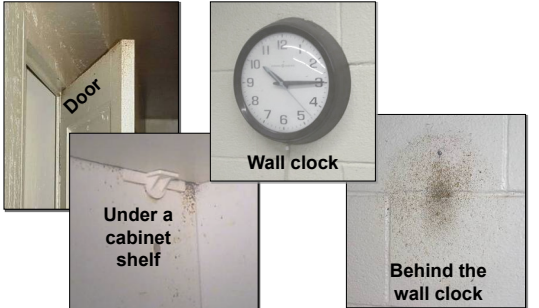
- Live cockroaches
- Dead cockroaches and their parts
- Frass
- Egg cases

Dead cockroaches

German cockroaches on a sticky trap

Brown banded cockroaches by a door hinge

Frass



Door



Under a cabinet shelf

Wall clock

Behind the wall clock

Where cockroaches live


- Anywhere in a building
- Prefer spots near water but also need food and warmth
- In cracks and crevices where their bodies touch surfaces above and below

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What cockroaches eat

- Crumbs
- Grease
- Trash
- Cardboard glue
- Just about anything




Under the bag in a trash can

Where cockroaches drink

- Sinks
- Counters
- Floors
- Pet bowls
- Shower stalls
- Sweaty pipes
- Refrigerator drip pans and gaskets
- AC units

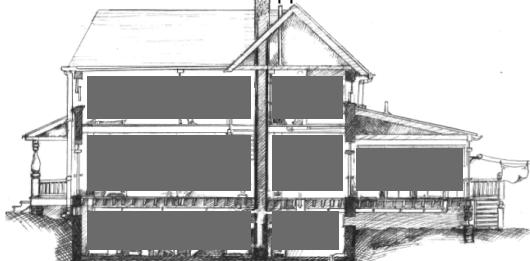
Think like a cockroach

We think of a building as rooms, hallways and stairwells



Think like a cockroach

To a cockroach, a building is the spaces between walls and around and in appliances



Cockroach review

- Like to be wedged in cracks/crevices
- Love warmth
- Signs include frass, cockroaches, and egg cases
- Most likely to travel between units along water pipes and heat ducts
- Populations limited by food, water, and shelter
- Females do not feed or wander far while pregnant

Also in the walls...

- Carry infectious diseases
- May cause asthma attacks
- Bite
- Damage food and property
- Can attract other pests
- Are repulsive

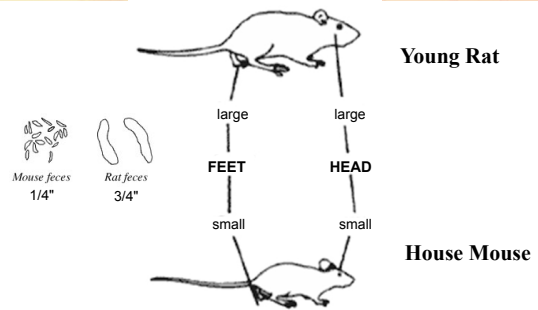


What is a rodent?

- Gnaw to wear down their teeth and get where they want to go (can cut anything softer than steel)
- Are most active at night
- Make lots of babies fast
- Travel the same paths nightly, staying close to walls



Rodent identification



Rats

- Will travel 450 feet from their burrow, but prefer to live close to food and water sources
- Usually live outside and come inside for food and water



Norway rat burrow

Rats


- Need a hole the size of a quarter to enter



- Are very smart, cautious, and afraid of new things
- Need water every day

Mice


- Breed rapidly
 - A single pair can become an infestation quickly!
 - Take action when evidence of ONE mouse is seen or heard
- Don't travel far—just 30 feet from their nest



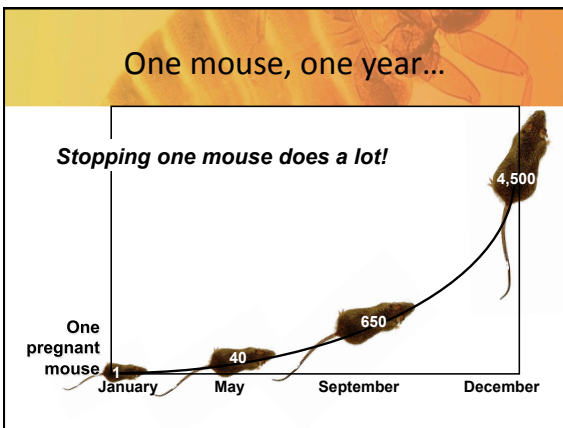
One day old mouse pups

Mice

- Mice need a hole the size of a dime to enter





- Mice are curious
- Don't need to drink water daily



Signs of rodents



- Sightings
- Noise
- Gnaw marks
- Nests
- Rat burrows
- Droppings
- Holes and rub marks
- Indicator pests

Holes and rub marks






Indicator Pests

Found near dead animals or trash

Found near grain or bait stored in walls

What rodents eat and drink

Rodents eat


- Human and animal food available in the area

Rodents drink


- Rats drink water
- Mice can get the water they need from their food

Where rodents live

- Rats: Outside, but will come in if the place is hospitable
- Mice: Nest in walls, stored fabric, cars, boxes, or the ceiling



Rat burrow by a wall




Mouse nest in a hat

Rodent review

- Mice are curious
- Rats are cautious
- Signs include droppings, rub marks, gnawed holes, and indicator pests
- Can fit through small holes and gaps
- Love warmth
- Travel the same paths along walls

What is a bed bug?

- A blood-sucking insect
- Flat
- Range in size from a sesame seed to a apple seed
- Light brown to mahogany red depending when they last fed




Adult bed bug feeding on a human

Past and Present


- Prior to WWII, bed bugs were part of life
- DDT and other organophosphates seemed to eliminate them
- Pest control technology and principles advanced, while bed bugs were off the radar
- 2007: they're back...

Bed bugs are back! An IPM answer


Bed bugs recently resurged with a vengeance in many homes because they had the sense to survive the use of insecticides. They are the most common pest problem for people of all incomes and ethnicities. Since WWII, we have seen a resurgence of bed bugs in homes and hotels. This resurgence is due to the fact that bed bugs have become resistant to many insecticides and have been found in many homes and hotels. This resurgence is due to the fact that bed bugs have become resistant to many insecticides and have been found in many homes and hotels.



Bed bug life cycle



Fed



Unfed

Bed bug behavior



- Most active at night
- Hide in cracks and crevices, often in groups
- Cannot fly, jump, or burrow into skin... they crawl
- Hitchhike on coats, bags, furniture, wheelchairs...



Bed bug crawling into a screw hole to hide


What bed bugs eat and drink

Blood





Can be confused with...


- Ticks
- Cockroach nymphs
- Other kinds of bug bites
- Allergic reactions to chemicals




Tick




Mosquito Bites



Cockroach Nymph



Bat Bug



Spider Beetle


Signs of bed bugs

- Bites
- Fecal spots
- Shed skins
- Dead bed bugs
- Live bed bugs



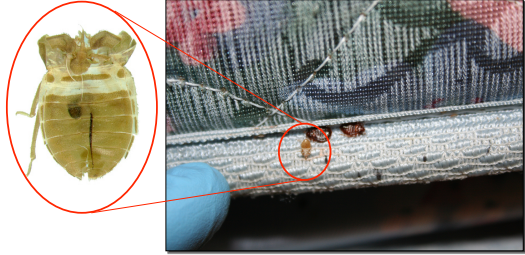
Fecal spots

- Fecal spots are bed bug droppings
- Different from frass—frass is gritty, fecal spots are smooth.
- A current bed bug infestation cannot be confirmed by fecal spots alone
- Live bed bugs must be found



A bad infestation

Shed skins



Bed bug signs on a mattress seam

Where bed bugs live

- In the building
- In any crack or crevice where a credit card edge could fit
- In anything near where people rest



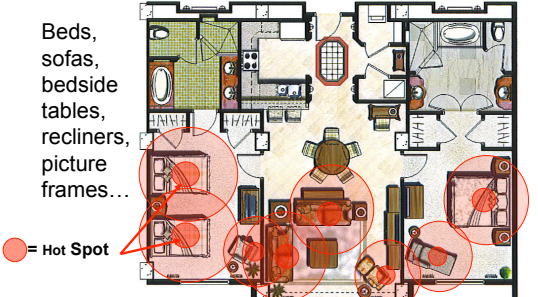
Mattress piping



Switch plates

Where bed bugs live

Beds, sofas, bedside tables, recliners, picture frames...



● = Hot Spot

Areas at-risk for introduction and infestation

- Introduction is likely where people
 - frequently travel
 - set down personal belongings
 - sit or lay down for long periods of time
- Infestation is likely where bed bugs can
 - Crawl (upholstered furniture or bedding)
 - Feed on a person for 5 minutes without being detected
 - Hide in cracks or folds

IPM for your properties

- PIH 2011-22: Promotion of Integrated Pest Management (IPM)
- Notice H 2011-20/PIH 2012-17: Guidelines on Bed Bug Control
- www.stoppests.org



IPM resources

Websites

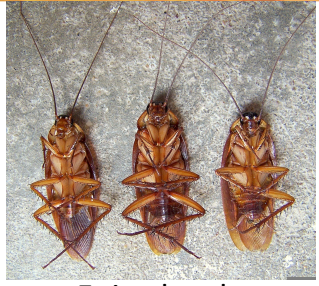
- The Northeastern IPM Center's IPM in Multifamily Housing website and blog: www.stoppests.org
- The National Center for Healthy Housing: www.nchh.org
- The National Pesticide Information Center: <http://npic.orst.edu/>
- Boston's Healthy Pest Free Housing Initiative: <http://www.bphc.org/hpfi/AboutUs/Pages/home.aspx>
- HUD's Office of Healthy Homes and Lead Hazard Control

People

- Allison Taisey: aat25@cornell.edu or 607-220-6417
- Local Cooperative Extension Office: <http://www.nifa.usda.gov/Extension/>



The end.



Enjoy lunch.

