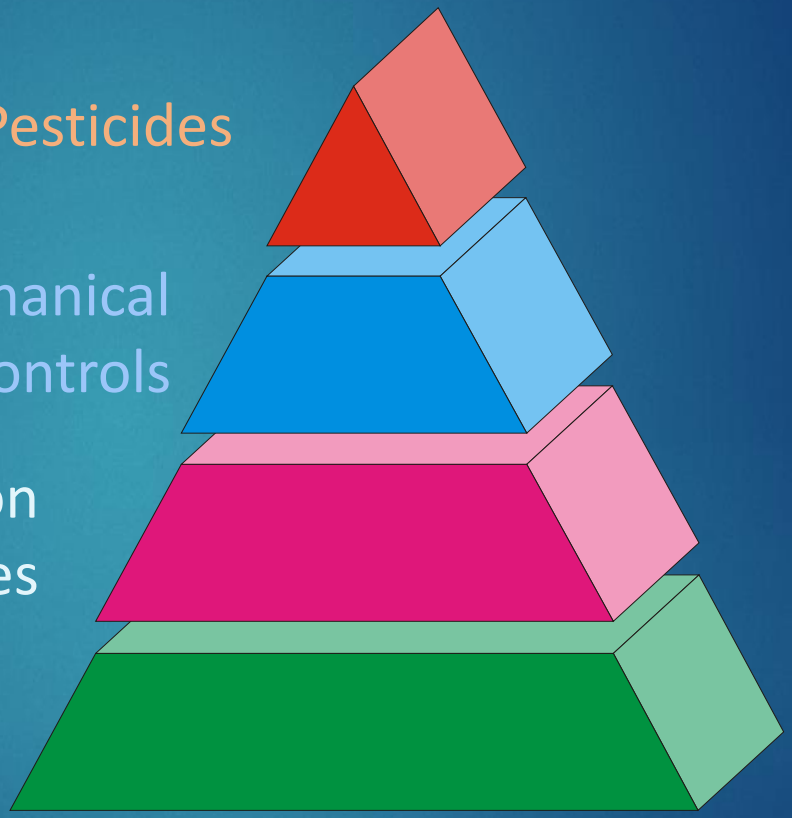
How to Conduct a Pest Assessment at your School

Center of Expertise for School IPM

School IPM Refresher

- Integrated Pest Management (IPM) is a smarter, usually less costly option for effective pest control in the school community.
- An IPM program employs common sense strategies to reduce sources of food, water and shelter for pests in your school buildings and grounds.
- IPM programs take advantage of all pest management strategies, including the judicious use of pesticides.

IPM Basics

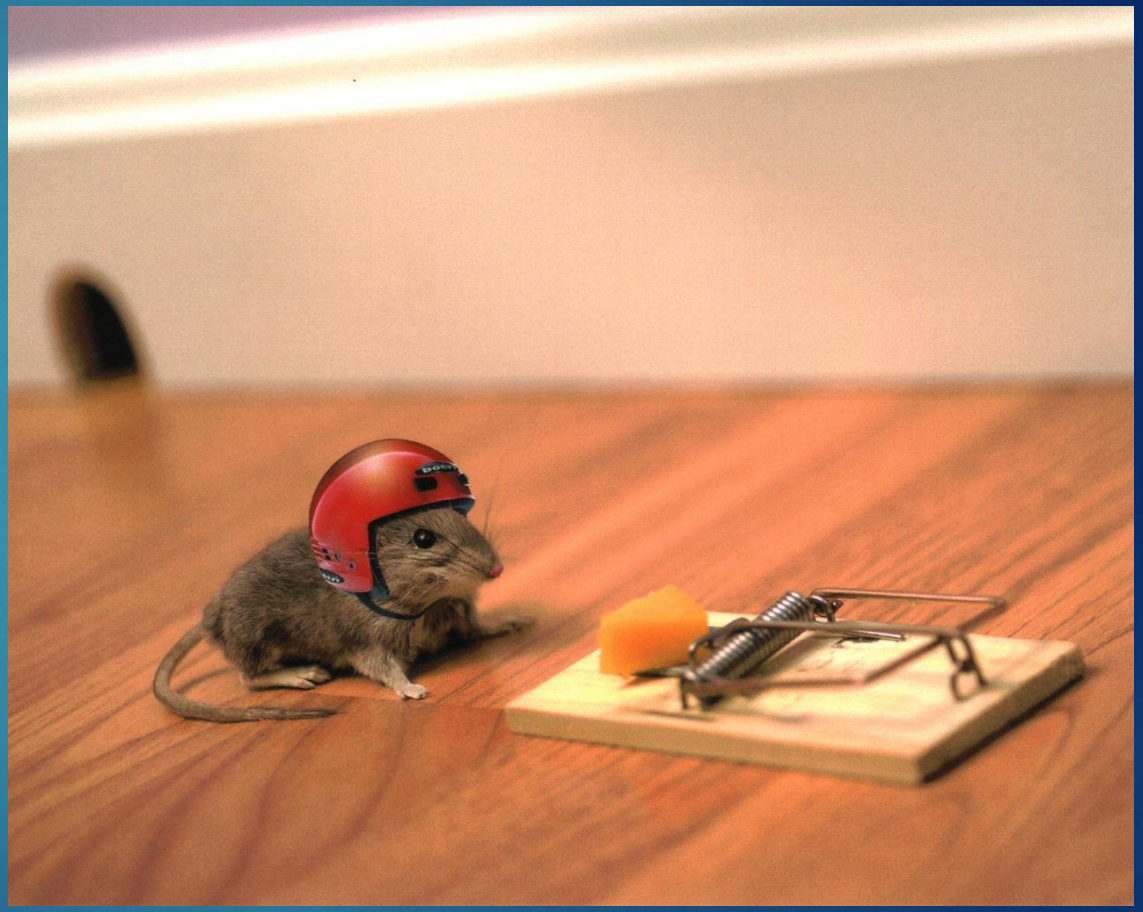

Pesticides
Physical & Mechanical Controls
Cultural & Sanitation Practices
Education & Communication

Key Concepts

- Inspect and monitor for pests and pest conducive conditions
- Prevent and avoid pests through exclusion and sanitation
- Use treatments that minimize impacts on health and the environment
- Everyone has a role - custodians, teachers, students, principals, and pest management professionals

Make Informed Decisions

- Consider all options
- Inspect
- Monitor
- Identify
- Keep records



Benefits of School IPM

- **Smart**: addresses the root cause of pest problems
- **Sensible**: provides a healthier learning environment
- **Sustainable**: better long-term control of pests
- **Savings**: may reduce energy and pest management costs

Presenters

Stephen Vantassel

- Montana Dept. of Agriculture
- Vertebrate Pest Specialist
- Consultant and Expert on Wildlife Damage Management
- Author - *The Wildlife Removal Handbook* and *Wildlife Damage Inspection Handbook*

Dean Walendzak

- Monroe County Community School Corporation
- Administrator - Environmental / Energy Program
- IPM Program Leader
- BS (Univ. of Dayton); MA (Walsh Univ.)

Photo: Erin Bauer

Photo: Stephen M. Vantassel

Inspecting Schools for Vertebrate & Insect Pests

Photo: Stephen M. Vantassel

Stephen M. Vantassel, CWCP®
Vertebrate Pest Specialist
Montana Department of Agriculture

Goals of Inspection

- **Prevention:** identify potential issues/concerns and enact mitigation

Photo: Stephen M. Vantassel

- **Prosecution:** identify the cause of active problems

Photo: Jim Horton

3 Elements of Successful Inspections

KNOWLEDGE

PERSISTENCE **EQUIPMENT**

AND…

Support of Administration

Why do institutions always have the money to pay the lawsuit

but

never have the money to resolve/prevent the problem?

Persistence

- How much "heart" do you have?
- Fatigue: the great enemy
- Don't short-cut the inspection process!

Inspecting after cleaning up can be tough!

Core Inspection Equipment-Vertebrate

- Spotlight (1 million candela)
- Flashlight (1,000 lumens)
- Mirror
- Ladders (Type 1)
  - Step
  - Extension
- Binoculars (8x)
- Leather Gloves
- Multi-tool
- Ruler

Why You Need A Good Spotlight

- Ridge Vent

Photo: Stephen M. Vantassel

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Why You Need A Good Spotlight

Photo: Stephen M. Vantassel

Core Safety Equipment

- Fall Protection Equipment
- PPE
- First Aid

Safe inspection practices are the subject for another webinar

Photos: Stephen M. Vantassel

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Core Equipment: Insect Inspection

- Magnifying glass (10x)
- Flat metal spatula
- Specimen tubes
- Bait station keys

Helpful Equipment

- Moisture meter

Strongly Recommended Equipment

- Digital Camera/Cell Phone
  - Optical zoom
  - Small
  - Jobi Gorillapod (tripod)
  - Storage ability
- Notebook

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Extra "Optional" Equipment

- Black Light
  - Longwave (350-405nm)
- Fiber Optic Scope
  - Seesnake Micro ~$250
  - Provision ~$140
- Stethoscope
- Tools
- Flir™
  - 1 gen iPhone $149.00

Photos: Stephen M. Vantassel

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Pre-Inspection Process

- Interview
  - Nature of problem
    - How long?
    - How severe?
  - Location of problem
    - Indoors/Outdoors
    - Encourage specificity
  - Timing of problem
    - Night vs Day
    - Season
  - Actions already taken
  - Have them document
  - Provide suggestions

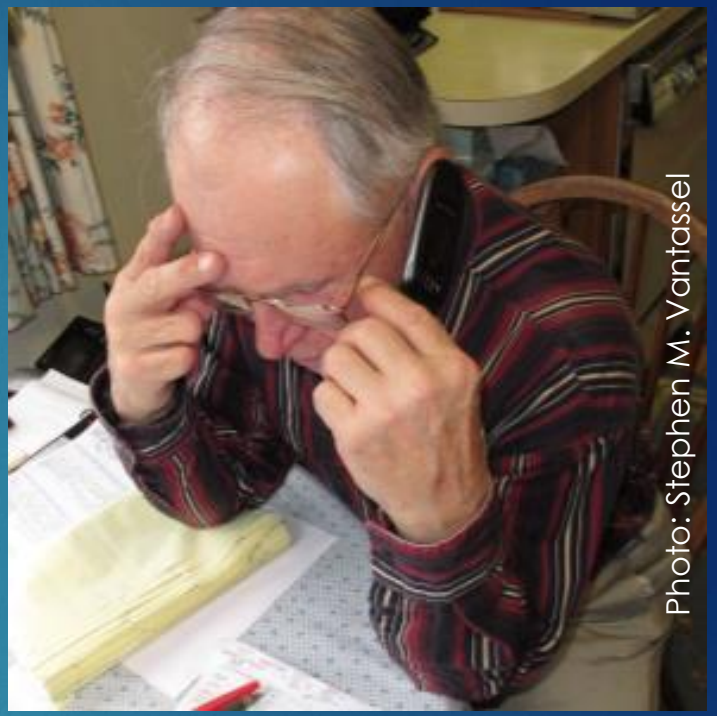

Photo: Stephen M. Vantassel

Take the time to listen to the complaints of your colleagues!!!

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Cautionary Statements


Photo: web

- Underweight "Noise" Evidence
  - Different People "Hear" Differently
  - Problem of Timing
  - Patterns?

Sounds


Photo: web

- Chrr=squirrels
- Scratching=bats/rodents
- Chirping=raccoon
- Grinding=chimney swift

In general,
women hear problems before men.

Cautionary Statements

- Keep an Open Mind
  - Animals Adapt
  - Animals Do "New" Things
  - Animals of the same species do act differently
  - Don't look for zebras!

Photo: web

Inspection Process: Diagnosis

- Think total evidence
  - **Symptoms**– what others tell you
  - **Signs**—what you see

Photo: web

Inspection Theory of "Zones"

- Habitat of the region
  - What verts/insects live there?
- Habitat on Site
  - ID specific attractions
- Structure Itself
  - ID access points
- Micro-habitats
  - Heat
  - Moisture
  - Food

Photo: Stephen M. Vantassel

Animal Sign Categories

Where it lives

Photo: Stephen M. Vantassel

Where/what it eats

Where it travels

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Wide Angle Inspection—Think Habitat

The Big Picture!!

- Clean?
- Repaired?
- Smells?

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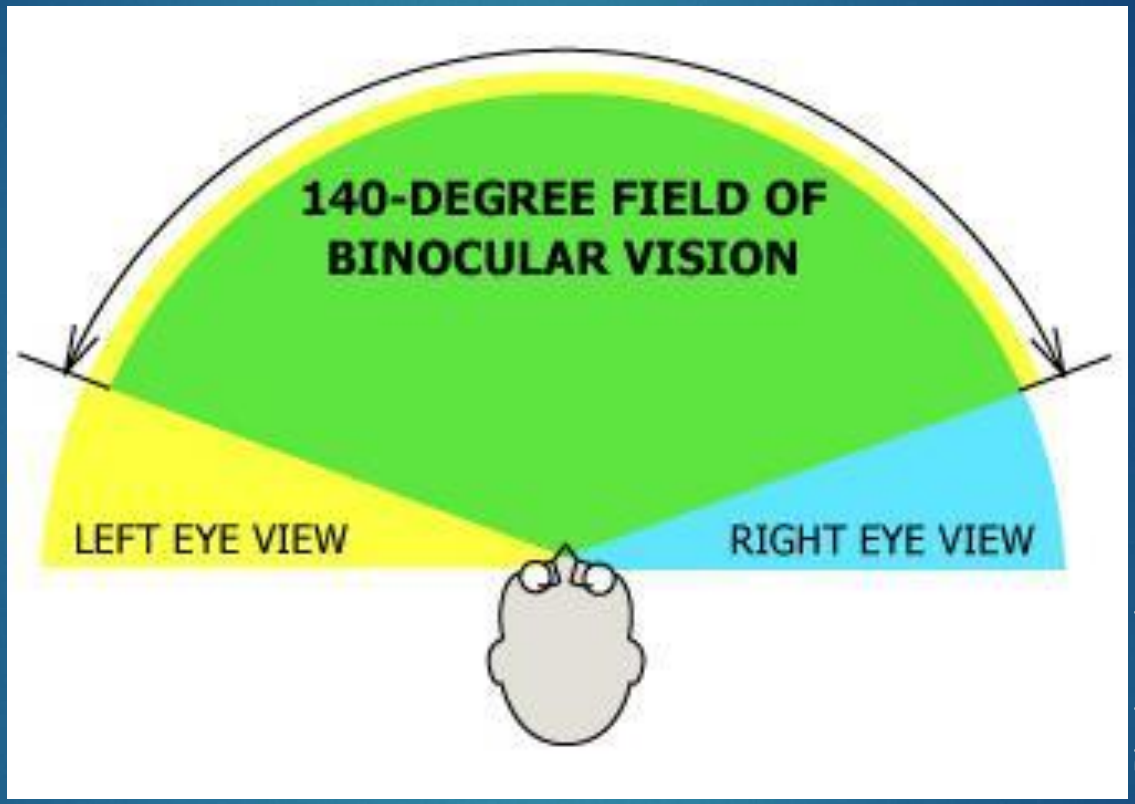
Discipline Yourself to Truly LOOK



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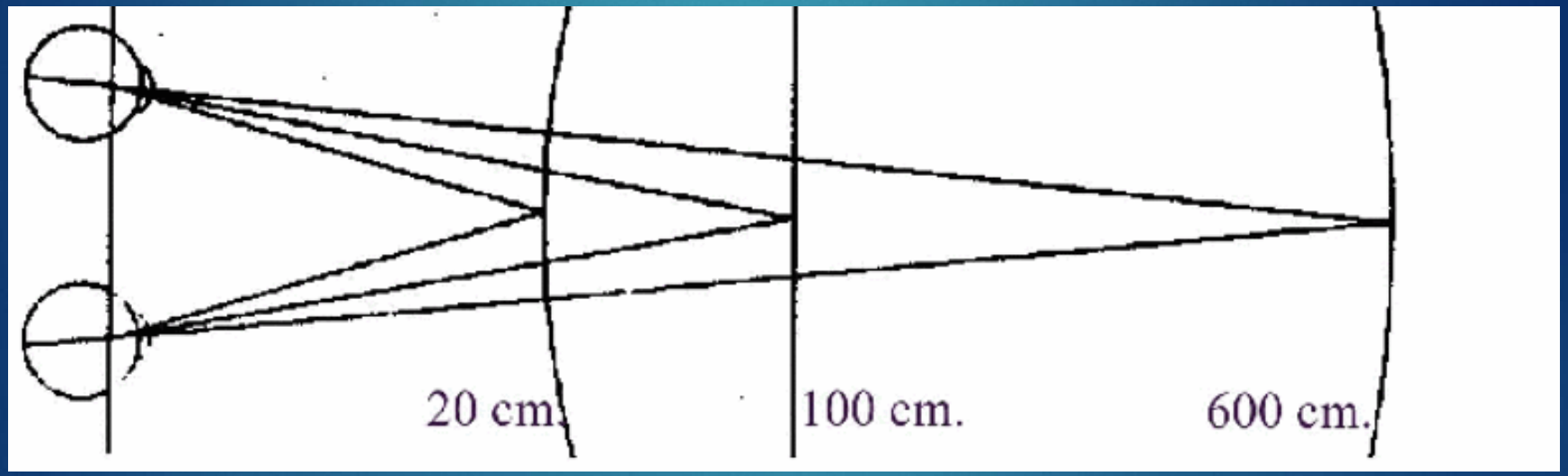
- The Problem

Solution--Focus

- Focus both eyes on ONE spot at a time!!



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What do you see?

Photo: Stephen M. Vantassel

What do you see now?

Photo: Stephen M. Vantassel

Vertebrate: Think Access

Hole sizes for various vertebrates

Rules of Thumb

- Raccoon--Grapefruit
- Squirrel--Tennis ball
- Rat--Golf ball
- Red Squ--Golf ball
- Flying Squ--Golf ball
- Mouse/Bat--Pencil

Photo: Stephen M. Vantassel

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On-Site Inspection Process

Be systematic

- Outside first
- Focus on breaks in the structure
  - Corners
  - Joints
  - Vents
  - Pipes
  - Roof
  - Eaves

Photo: Stephen M. Vantassel

On-Site Inspection Process- Outside

- Look for Holes, Discoloration, and Debris

Photos: Stephen M. Vantassel

Walls & Corners

Holes for nests

Smudge marks on downspout

Gaps for mice

Photos: Stephen M. Vantassel

Birds

Photos: Stephen M. Vantassel

- Positive ID bird before initiating control
- All birds are protected at the federal level except pigeons, house sparrows, and starlings

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Chimneys

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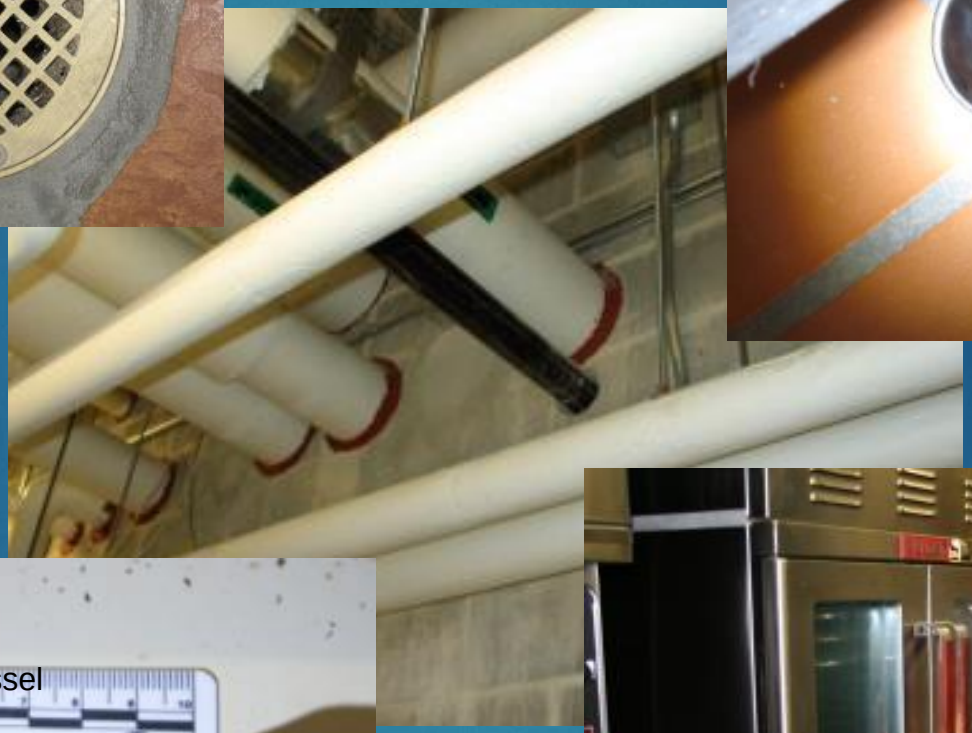
Inside: Heat, Food, Moisture



Photos: Stephen M. Vantassel

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Inspect Inside: Attic

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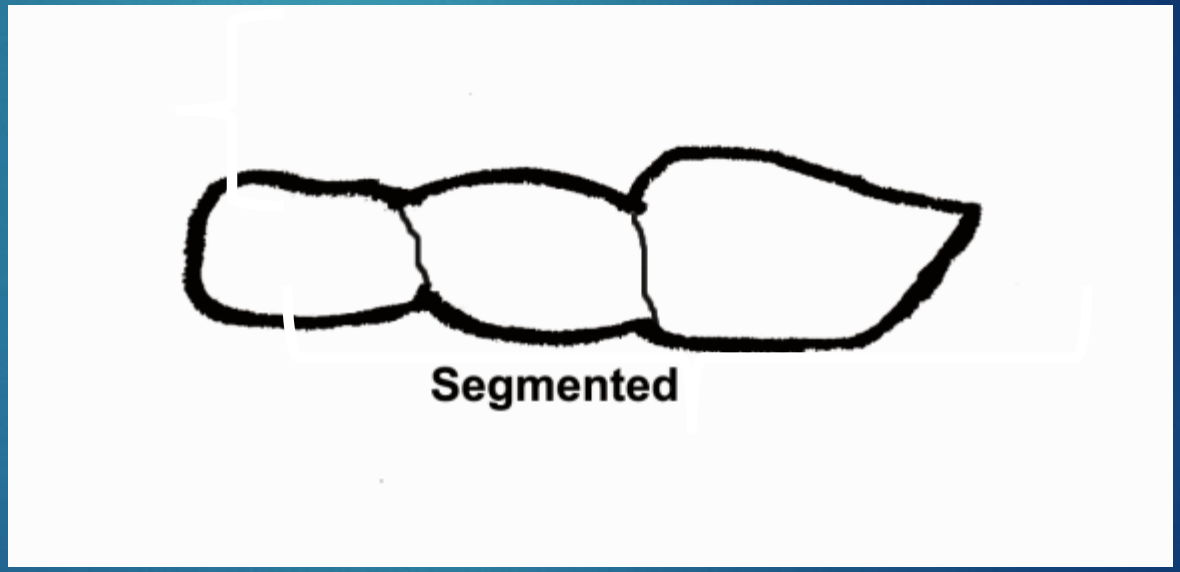
Vertebrate Dropping Identification

Width more important than length

Width is less variable



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Length and color is highly variable

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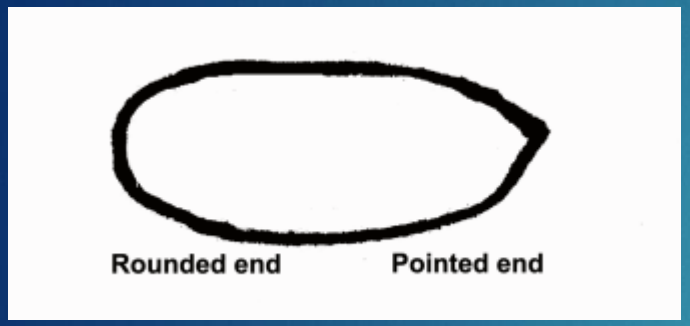
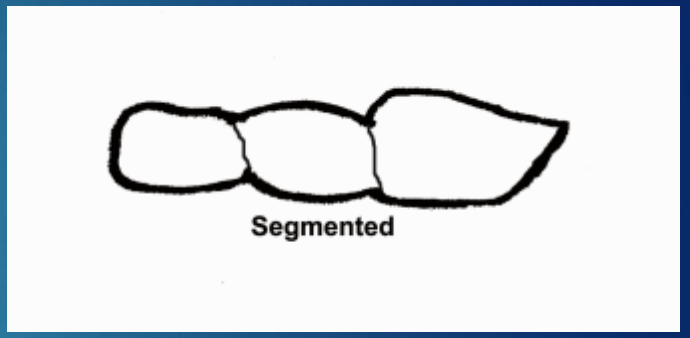
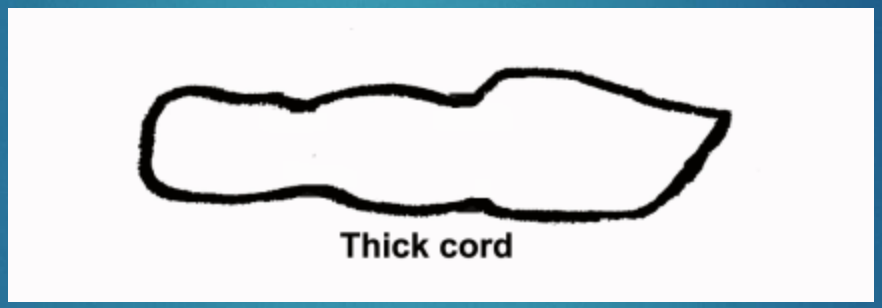
Vertebrate Dropping Identification



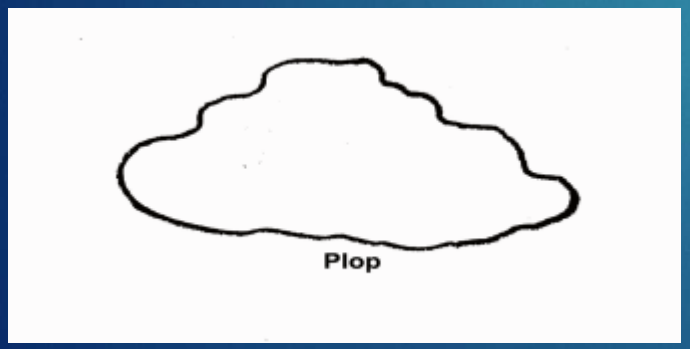
Rodent Family



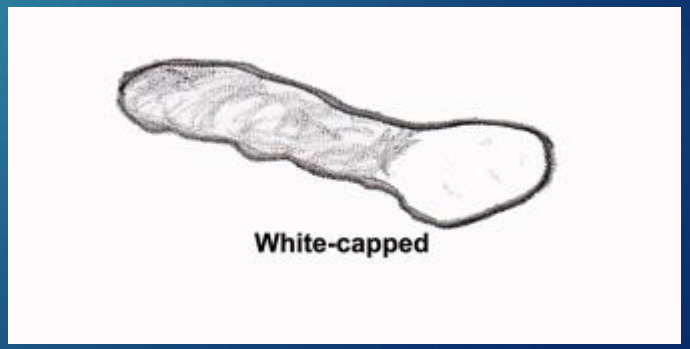
Cat Family



Dog Family



Unknown



Bird/Snake

Photos: Stephen M. Vantassel

Mouse vs. Bat Droppings

Mouse Droppings

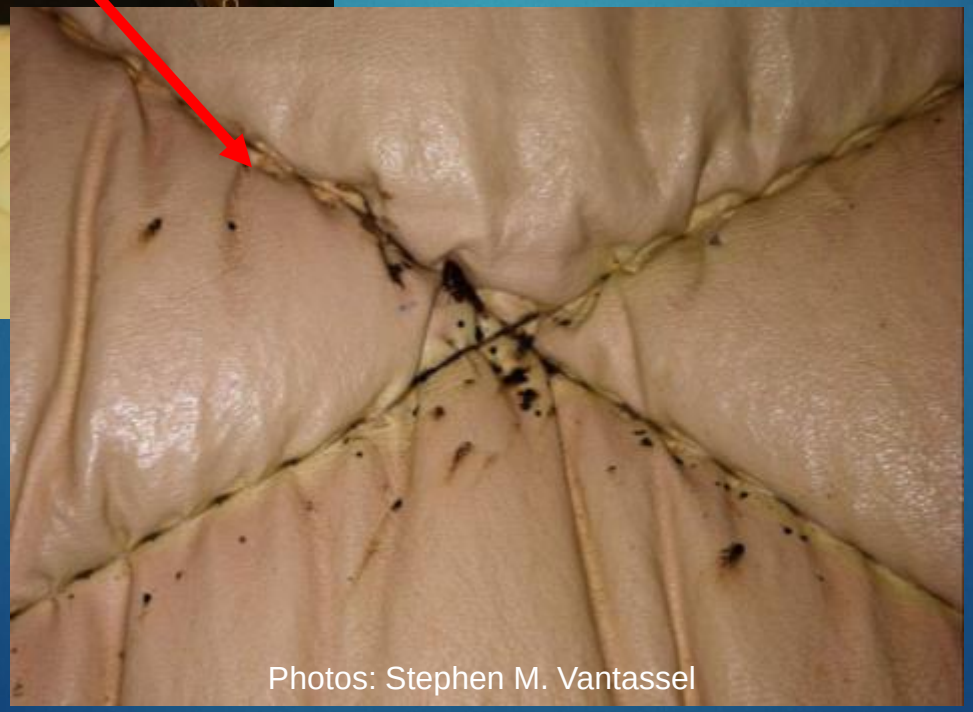
- Scattered
- Hard-when dry
- Pointed end

Bat Droppings

- Piled
- Soft/crumbly-when dry
- Speckled
- Blunt ends

Photos: Stephen M. Vantassel

Insect Scat/Signs



Photos: Stephen M. Vantassel

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When You're at Wit's End

- Track Traps

Photos: Kirk LaPierre

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DON'T DO THIS

- NEVER, NEVER, NEVER Close an Active Hole
- This is brand new, 1/2 inch plywood
- Carpenter "thought" the squirrel left.

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Wit's End Cont.

- "Trip Wires"

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Insects

- Glueboards very helpful for ID and locating trouble spots (if you use them wisely)

Photo: Stephen M. Vantassel

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Contact

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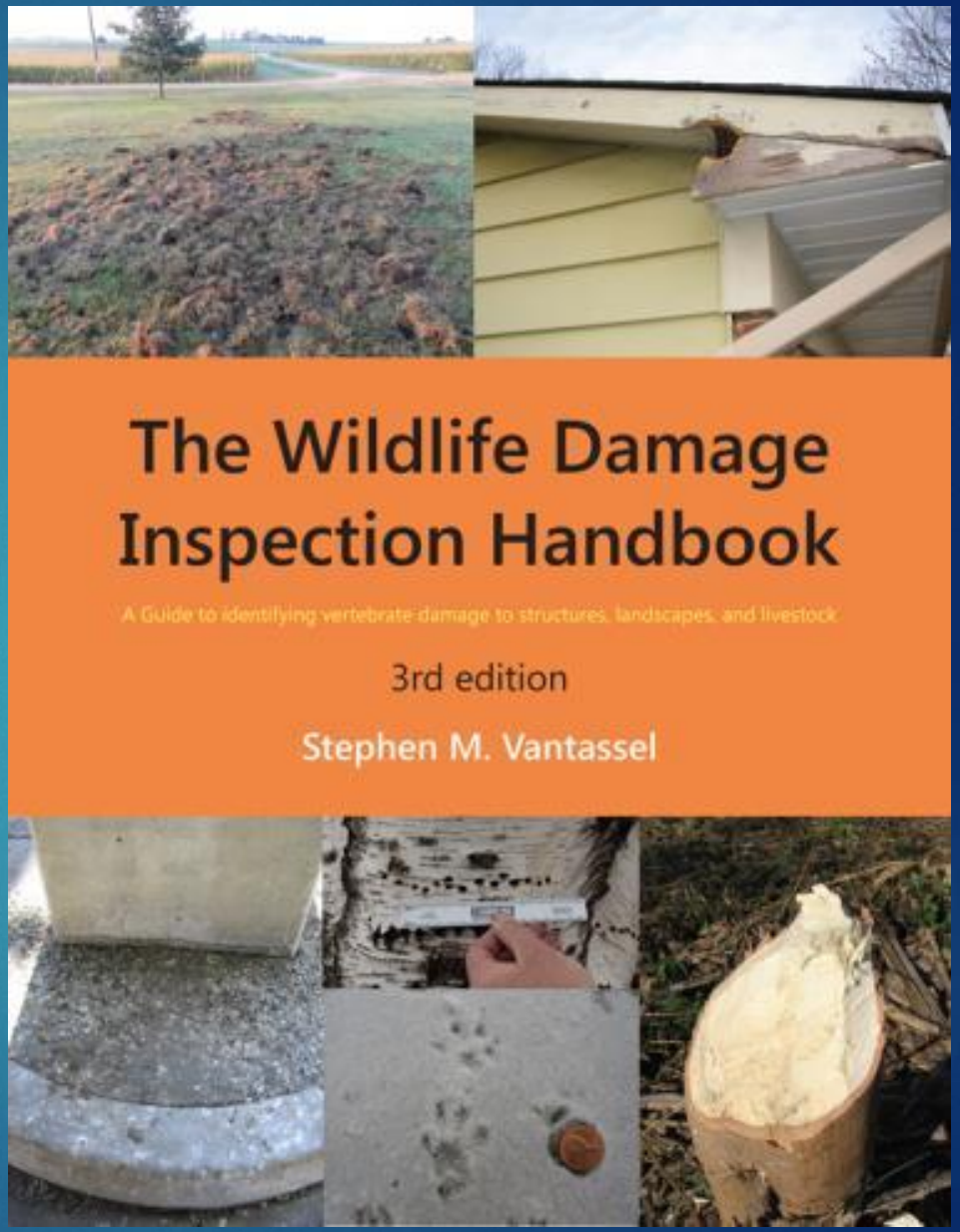

How to conduct a site inspection

Dean Walendzak

Energy/Environmental Specialist

Monroe County Community School Corporation

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Why should we site inspect?

Answer: "In managing pests we must learn what is causing the pest problem (we call that conducive conditions in the bug world), prevent an infestation by changing our behavior (e.g. plan to subvert the pests' life cycle, clean our sinks, store our cereal in airtight containers, and yes, even be tolerant of some pests) and use the safest pesticide in the most effective manner."

A Worm in the Teacher's Apple. Marc Lame

Pest Conducive Conditions

- How do I know what pests I have?
  - Pest sighting logs
  - Monitoring
  - Building assessments
  - Talking with building personnel

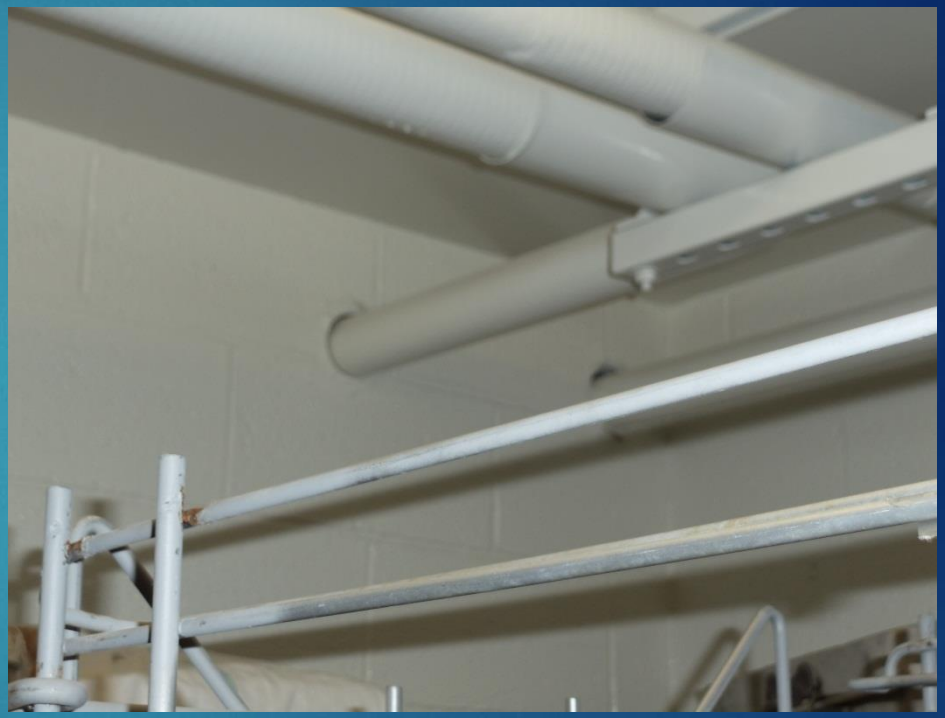
Treat school like your Mother's home

- Pests have the same needs as us!
  - They need food
  - They need water
  - They need shelter

See an area from a pest's perspective

- Floor level (Knee pads and Bump Helmets)

See an area from a pest's perspective



- Ceiling level (Know what is going on above you)

See an area from a pest's perspective

- Access in terms of pests (An Odorous House Ant is 1/8th of inch long)

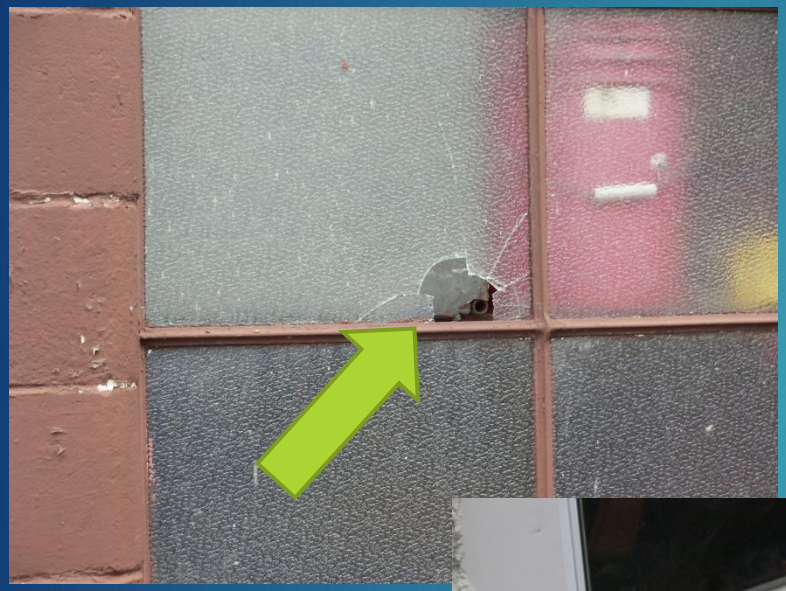
Ants

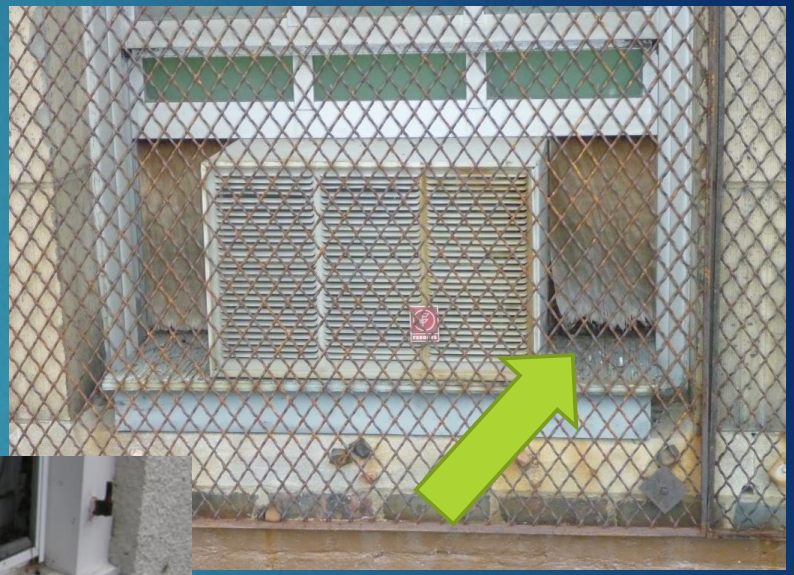
- **Carpenter Ant:** Size ¼ to ½ inch, Black with abdomen covered in yellowish hair. They do not eat wood, they excavate wood. This process leaves a tell tale sign of their infestation due to piles of shavings. Activity indoors is usually indicative of water leakage occurs.

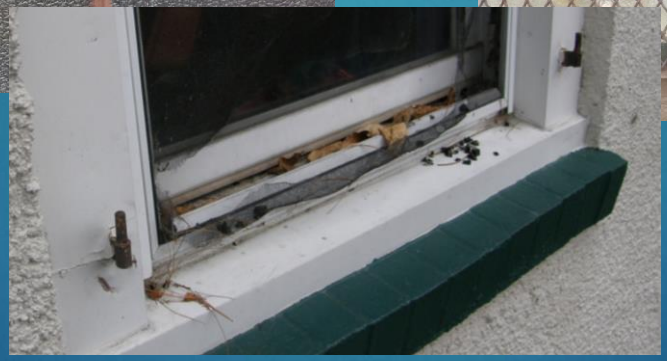
- **Pavement Ant:** Size 1/8th of an inch, Dull reddish brown. Will live where the sill plate meets the foundation, in voids or cracks. Tell tale sign is small granular mounds where the wall meets the floor.

- **Odorous House Ant:** Size 1/12th to 1/8th of an inch, Brownish Black in color. Colonies can be large and contain multiple queens. Found in wall interiors. Workers trail each other searching for honeydew. Can be identified by crushing the ant and smelling to see if it releases a pungent smell.

Exterior Assessment: Windows and Screens







- Are windows closed tightly
- Screens properly set and free from holes or tears

Exterior Assessment: Eaves and Walls

- Check for blocked eaves
- Check for stained walls

Stinging Insects

Yellow Jacket

Paper Wasp

Bald Faced Hornet

Honey Bee

Bumble Bee

Carpenter Bee

- Identify insect correctly

Stinging Insects

- Inspection: Nests may be located in the ground, under eaves, in attics, check sheltered areas in area of problem.
- Ground nests are often found under shrubs, rocks, in retaining walls. They may have a mound of bare soil at entrance
- Keep dumpsters clean and lids closed. Locate 50 feet from entrance. Trash cans need to be clean and have a working door that closes.

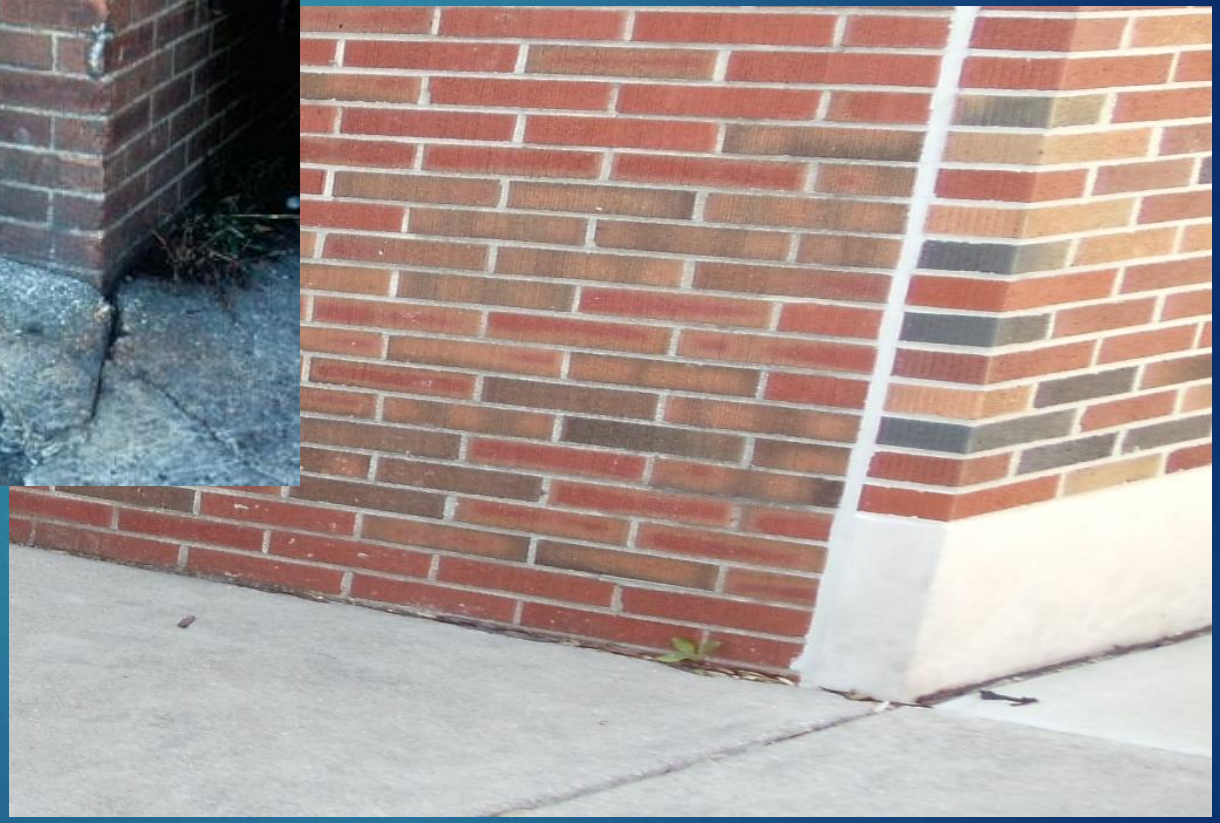
Exterior Assessment: Lights

- Look to see if light lenses have dead insects
- Change light to a different color
- Work with Principal to adjust scheduled times for lighting

Beetles

- Ground Beetles are invaders, that move into the building through open doors, cracks, or under doors
- Attracted to the bright lights at night
- Reduce lighting, or turn off if possible
- Exclusion is the best means to control

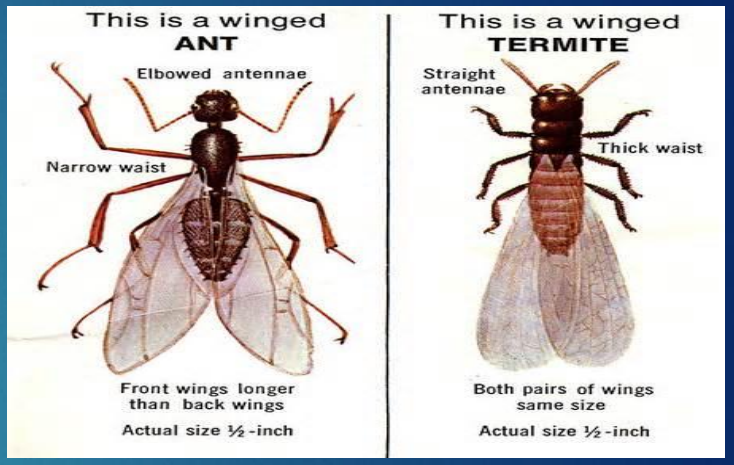
Exterior Assessment: Cold Seams



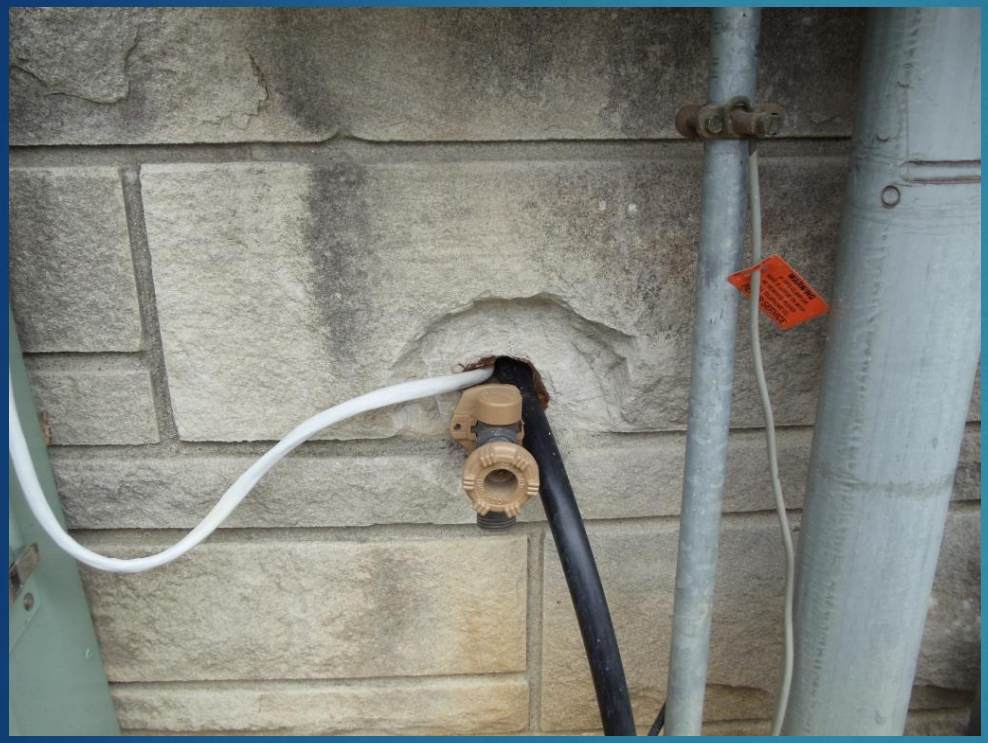
- Check for gaps in Cold Seams along the foundation and expansion joints.

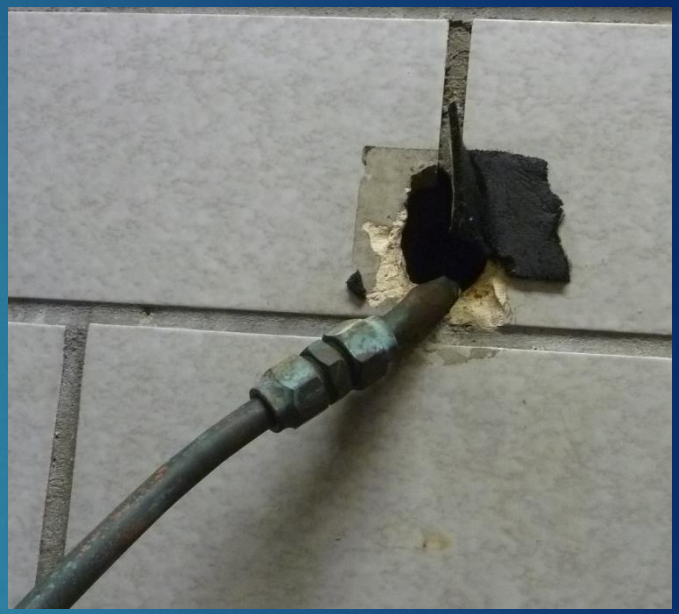
Termites

- Swarmers in the spring indicate it is time to inspect
- When inspecting for termites look for termite tubes or mud that is "out of place"
- Avoid water accumulation near the foundation of building, by diverting water with properly functioning downspouts, gutters and splash blocks.
- Keep mulch at least 15 inches from the foundation
- Indoors reduce humidity through proper ventilation to avoid attracting termite swarms



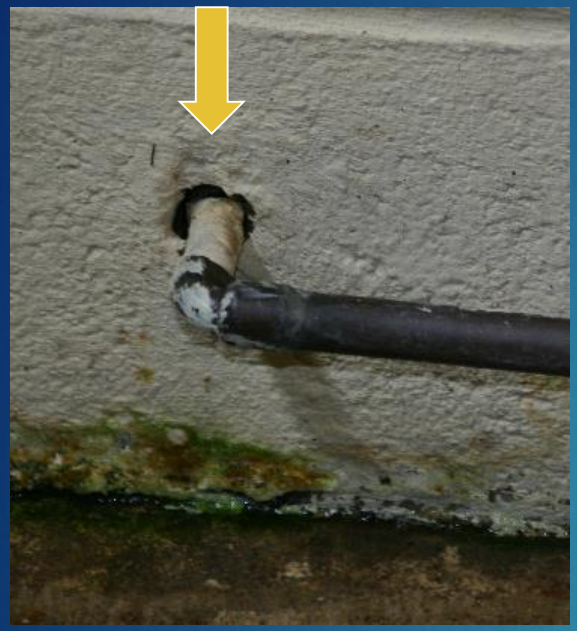
Exterior Assessment: Conduits

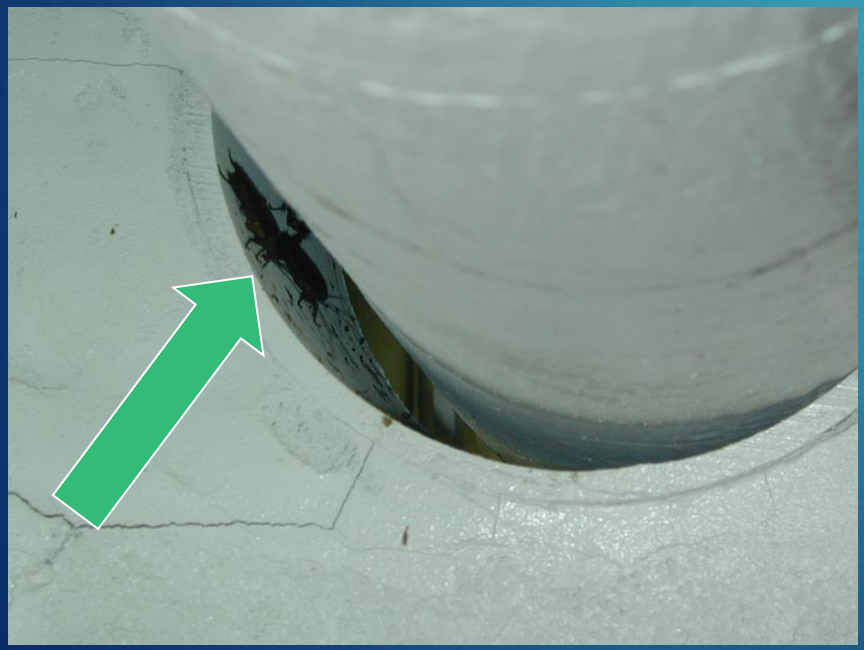




- Check and seal all penetrations into the building

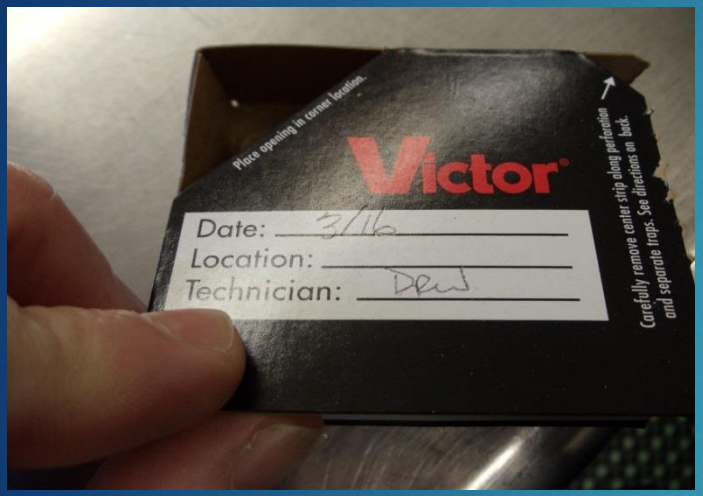
Chasing pipes





Drain Issues

See an area from a pest's perspective



- Monitors should be re-locatable
- Should be out of the way
- Numbered and dated
- Located in hot spots (Based of sighting logs, assessments and talking with building personnel)
- Pest vulnerable areas (Based on human habits)
- Pest conducive areas (Based on Micro-climates)

Interior Inspections: Kitchen and Cafeteria

- Drains (Make sure they are clean and functioning)
- Food Storage (Stock rotated, air tight storage, minimize card board, storage off the ground)
- Fryers clean and grease pits serviced
- Wash machines clean (Micro-Environment)
- Mixers clean
- MONITOR HEAVILY

Interior Inspections: Drains

- Micro-Environment (Food and water source)
- Conducive to: Ants, German Cockroaches, Filth Flies

Flies
(House Flies, Fruit Flies, Drain Flies)

- **House Flies:** Dull grey, ¼ of an inch long with four dark stripes on its thorax. Reproduce in a variety of filth
- **Fruit Flies:** Attracted to sweet or fermented liquids and rotting fruit. They are typically 1/8th of an inch with tan bodies and red eyes
- **Drain Flies:** Approximately 1/8th of an inch long, adults have broad hairy wings. The larvae survive in the muck of drains by extending breathing tubes to the surface for air

Interior Inspections: Food Storage

- Air Tight Storage helps reduce pest pressure
- Rotate Stock
- This area is conducive to: Ants, German Cockroaches, Stored Product Pests
- Monitor in corners, on shelves and look for evidence of spiders (Predators)

Roaches

- **German:**
- Adults are brown with two dark vertical stripes.
- Nymphs are dark with a pale central marking.
- Adult size is 1/2 to 5/8 inches.
- Egg cases are yellow and deposited in sheltered areas.
- They like heat (>70F) and humidity.

- **American:**
- Reddish brown in color with an irregular light colored ring around their pronotum.
- Males have wings that extend beyond their abdomen the females' do not.
- Length is up to 1½ inches.
- Egg cases are brown and deposited near food source.
- Found in moist areas.

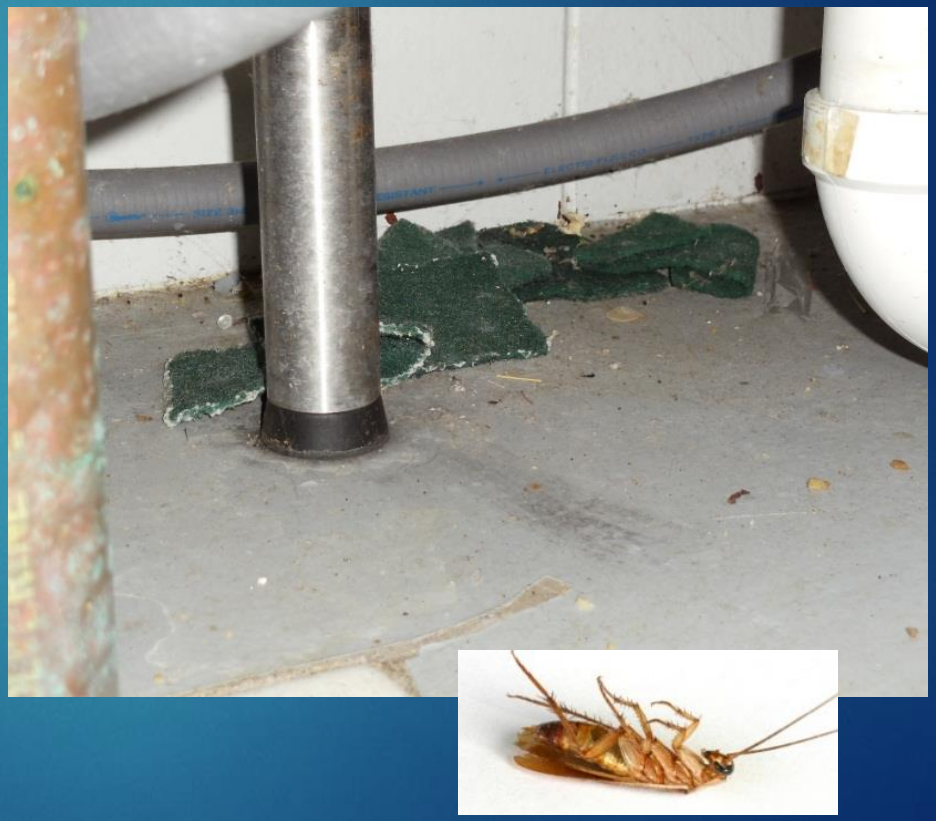
Interior Inspections: Grease

- Fryers and Grease are a favorite of German Cockroaches
- Monitor these areas

Moldings and flooring edges

Interior Inspections: Wash Areas

- This area is like the tropics (Heat and rain)
- Food is readily available, clean to baseboards
- Garbage Disposals
- Drains
- Conducive for: Ants, German Cockroaches, Filth Flies



Restrooms

- Plumbing should be in good repair
- Sink area should be clean and dry
- Ensure all holes are sealed around pipes
- Check that Escutcheon plates are tight
- Fixtures are sealed – no gaps

Interior Inspections: Classrooms

- Pest Vulnerable Areas (PVA's): Pre-School, Kindergarten and Special Education, Home Economics (Monitor these rooms!)
- Inspect light lenses and window sills (natural monitoring areas)
- Look under sinks and in coat closets
- Examine teacher storage areas (Yes, the desks too)

Spiders

- **Brown Recluse:**
- Pale tan to brown in color.
- Characteristically have a violin-shaped marking on their back.
- For better identification they have three pairs of eyes, arranged in a semicircle.
- Their body is about ¼ of an inch and legs span over an inch

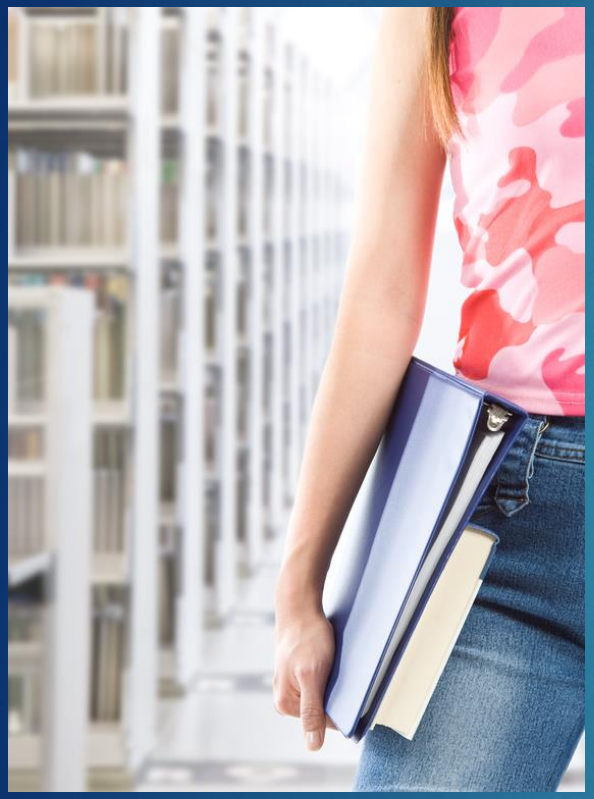
- **Black Widow:**
- Female has a black shiny body with a red hour glass marking on the underside of the abdomen

Look behind cabinets and furniture

Interior Inspections: Classrooms

- Some teachers tend to hoard (clutter)
- Students in these areas are rewarded with snacks
- These areas have running water (sinks and restrooms)
- Conducive to: Ants, German Cockroaches, Spiders, Bed Bugs

Libraries and Book Storage Areas



Make sure that areas under bookcases and behind stored books can be inspected and cleaned on a regular basis.

Interior Inspections: Locker Rooms

- Susceptible because of food left in lockers
- Tropical Environment
- Drains will dry up
- Conducive to: American Roaches, Ants, Beetles, Crickets

Interior Inspections: Custodial Closets

- These areas have all of the needs of home:
  - Water (slop sinks)
  - Food (Garbage, and Mopped up residue)
  - Harborage (Dark and Cluttered)
  - Check for proper storage of mops and brooms
  - The Custodial Closet often times is an indicator of how clean an area is

Interior Inspections: Boiler Rooms

- These areas are out of the publics eye
- They get cluttered and dirty
- Pests in this area include: American Roaches and Termites

Basements

Check for holes!

Interior Inspections: Teacher's Lounge

- This is where staffs congregate to plan and eat
- Dirty dishes in sink
- Refrigerators have out of date food
- Couches and chairs provide harborage
- Conducive to: Ants, German Cockroaches, Bed Bugs

Teacher's Break Rooms

- Upholstered furniture may provide pest harborage
- Dishes should be clean and dry – no pile-ups
- All food stored properly in clear containers with tight-fitting lids
- No food in cardboard boxes

Bed Bugs

- **Adults:**
- Oval shaped about ¼ of an inch long.
- Brown to rusty red in color and nearly flat as a sheet of paper
- **Nymphs:**
- Newly hatched bed bugs are nearly colorless but resemble the adults, only smaller
- **Eggs:**
- The eggs are white, slightly pear shaped and about 1/32nd long

Vending Machines

- Spilled or broken products attract mice and roaches
- Ensure scheduled cleaning which may need to be negotiated contractually with the vendor
- Monitor

MCCSC Inspection Form

- Provides consistency:
  - Inspecting the same areas
  - Reporting is easy and understandable
  - Template allows the form to be filled out as the inspection is being performed
  - When the assessment is finished it can be electronically sent to the Principal, Head Cook, Head Custodian and Reporting Senior

MCCSC Inspection Form

MCCSC IPM CILITIES INSPECTION FORM

Environmental Technician's Office
560 E. Miller Street
Bloomington, Indiana 47401

Date:	Time In:	Time Out:	Report #:

Phone: 812-330-7720 x50462
Cell: 812-929-7693
E-mail: dwalendz@mccsc.edu

Type of Service Visit:
- ☐ Routine Service Assessment
- ☐ Follow-up for previous problem
- ☐ Response to complaint

Inspector (s): _____

Principal: _____

Custodian Supervisor: _____

Kitchen Supervisor: _____

Health Office: _____

Social Worker: _____

School:

Address:

Previous IPM History:

Recommendations:

Interior Audit:

Kitchen

		OK	Problem	N/A	Location	Description/Comments
1.	Pest sighting log in use	☐	☐	☐		
2.	Pest Press displayed	☐	☐	☐		
3.	Monitors in use	☐	☐	☐		
4.	Drains and sink	☐	☐	☐		
5.	Plumbing and electric penetrations sealed	☐	☐	☐		
6.	Floor cleaning	☐	☐	☐		
7.	Doors seal tightly	☐	☐	☐		
8.	Windows seal tightly/Screens in place	☐	☐	☐		
9.	Plumbing in working order	☐	☐	☐		
10.	Prep areas	☐	☐	☐		
11.	Appliances	☐	☐	☐		
12.	Trash Cans	☐	☐	☐		
13.	Garbage Disposal	☐	☐	☐		
14.	Trash Bags	☐	☐	☐		
15.	Service Lines	☐	☐	☐		
16.	Cookware Storage	☐	☐	☐		
17.	Under counters and applicances	☐	☐	☐		
18.	Ceiling Tiles	☐	☐	☐		
19.	Other	☐	☐	☐		
20.	Other	☐	☐	☐		

Pest Evidence

	Type (Species)	Location	Description/Comments
☐ Rodents			
☐ Termites			
☐ Ants			
☐ Cockroaches			

Pantry

		OK	Problem	N/A	Location	Description/Comments
21.	Monitors in use	☐	☐	☐		
22.	Stored Food Bins	☐	☐	☐		
23.	Plumbing and electric penetrations sealed	☐	☐	☐		
24.	Floor cleaning	☐	☐	☐		
25.	Shelving	☐	☐	☐		
26.	Cardboard Boxes	☐	☐	☐		
27.	Stock Rotation	☐	☐	☐		
28.	Canned Goods	☐	☐	☐		
29.	Boxed Goods	☐	☐	☐		
30.	Bagged Goods	☐	☐	☐		
31.	Flour/Mixes	☐	☐	☐		
32.	Ceiling Tiles	☐	☐	☐		
33.	Other	☐	☐	☐		
34.	Other	☐	☐	☐		

Pest Evidence

	Type (Species)	Location	Description/Comments
☐ Rodents			
☐ Termites			
☐ Ants			
☐ Cockroaches			
☐ Crickets			
☐ Spiders			
☐ Other			
☐ Other			
☐ Other			
☐ Other			

Special Thanks

Monroe County Community School Corporation

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- These four are always there to guide me

Information contained in this presentation obtained from Pest Press (Univ. of Arizona, Univ. of Florida, Univ. of Illinois, Washington State Univ., Colorado State Univ., and IKE)

Upcoming School IPM Webinars

Oct. 20	Managing Head Lice in Schools
Nov. 10	Writing an IPM Policy for your School
Dec. 15	Bed Bugs in Schools
Jan. 26	Stop School Pests and iPestManager Tools
Feb. 23	Procuring IPM-Based Pest Mgmt. Services
Mar. 15	IPM for Turf on School Grounds
Apr.19	Vertebrate Turf Pests
May 17	Ants, The #1 Pest in Schools
Jun. 7	Termite Mitigation in Schools

Certificates of Attendance

CERTIFICATE *Of* PARTICIPATION

[Participant's Name]

This is to certify the above participant attended the 90-minute webinar entitled

How to Conduct a Pest Assessment at Your School

PRESENTED BY: **EPA's Center of Expertise for School IPM**

ON THIS DAY: **September 21, 2015**

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