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Pests and Food Establishments

Underlying issues allow for pest problems

Pests represent a health risk: contamination

Product loss, business loss, regulatory action

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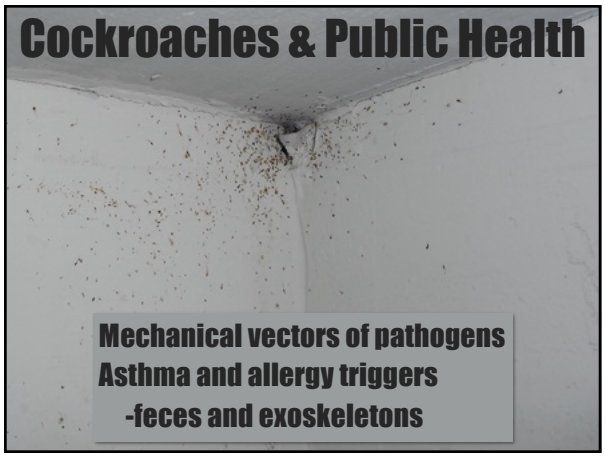

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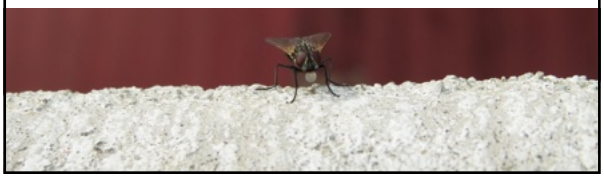
Flies & Public Health

Adult flies may cause contamination/irritation

- mechanical transmission of bacteria
- salivary secretions and regurgitation
- defecate while feeding and resting
- allergic reactions to hairs & exoskeletons
- myiasis: invasion of human tissue by flies



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Rodents & Public Health

	type	how transmitted
Leptospirosis		
Rat-bite fever		
Salmonellosis		viable for 86 days!
Hantavirus *Peromyscus*		
LCMV house mouse		
Vector-borne		

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Common Pests in Food Establishments

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Every Pest Tells a Story

Accurate pest identification offers insights about where pests are feeding, breeding, and how they got in.

A detailed inspection helps identify and address issues.

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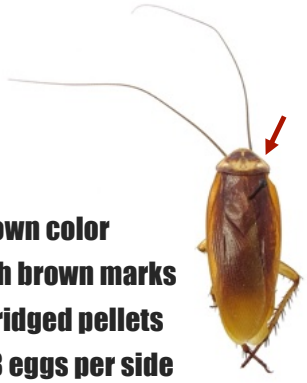
American Cockroach



ID: 1.5 – 2", reddish-brown color
-pronotum yellow with brown marks
Feces: 1/8" blunt end, ridged pellets
Ootheca: 5/16 inch, 7-8 eggs per side

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German Cockroach

ID: 1/2" tan with 2 dark stripes on pronotum
Feces: black specks affixed near harborage
Ootheca: 1/3 inch, tan; 12-24 eggs per side

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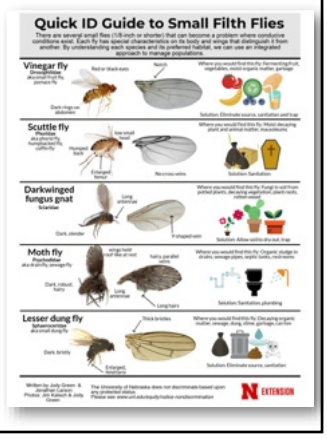
Flies

Pest fly species develop in moist situations.

Species tells you what breeding conditions to look for.

Inspection helps you find the conditions.



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Flies

larvae
(maggots)

pupae

adult

Larvae: eyeless, cream colored, mouth hooks, spiracles
Pupae cylindrical with circling lines from segments
Adults with two flight wings (one pair)

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effective pest management depends on accurate identification of pests

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house mouse
no white fur
year-long residents

***Peromyscus* mice**
white belly
seasonal invader
two common species

Images: Canva Pro

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Norway Rat

https://steamcommunity.com/sharedfiles/filedetails/?id=1418477231

tail length | body size | ear size | snout shape

geography | nest site preference*

Roof Rat

https://nakedsecurity.sophos.com/2020/07/14/raticate-malware-gang-goes-commercial/

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Inspection Tips and Insights

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Inspection Goals

An inspection should answer these questions:

- Are pests present and at what level?
- What factors are attracting pests?
- Where are pests living and hiding?
- How are pests getting in?
- What can be done to eliminate pest attraction, harborage and entry?

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German Cockroach Inspections

"fecal focal points"

crevices near warmth and food

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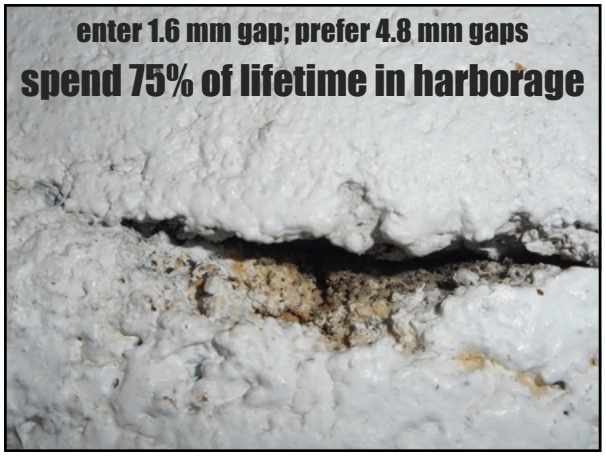

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American Cockroach Inspections

unused, dry plumbing (floor, sink, toilet)
broken sewer pipes / waste lines

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Fly Inspections

breeding and feeding sites can differ

Which is a feeding site?
Which is a breeding site?

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Sanitation Issues and Flies

detailed inspections reveal hidden food items
- -under and behind equipment
- -back leg zones

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Sanitation Issues and Flies

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Sanitation Issues and Flies

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Rodent Inspections

- ❑ droppings
- ❑ runways
- ❑ sebum marks
- ❑ burrows
- ❑ gnaw marks
- ❑ nest material
- ❑ footprints
- ❑ caches

Attractive Elements

- ❑ shadows
- ❑ water
- ❑ warmth
- ❑ food

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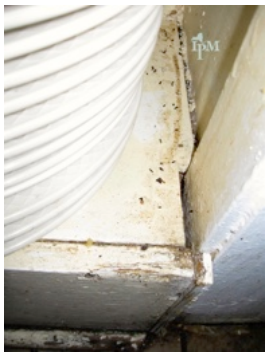
Rodent Evidence: Droppings

"rodent feces can provide the pest professional a roadmap to the high-activity areas such as primary runways, preferred corners, food sources and the rodent's harborages"

-Robert Corrigan
Mallis Handbook of Pest Control



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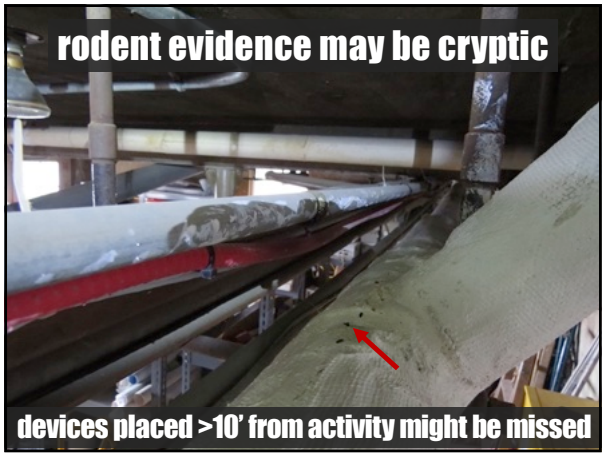

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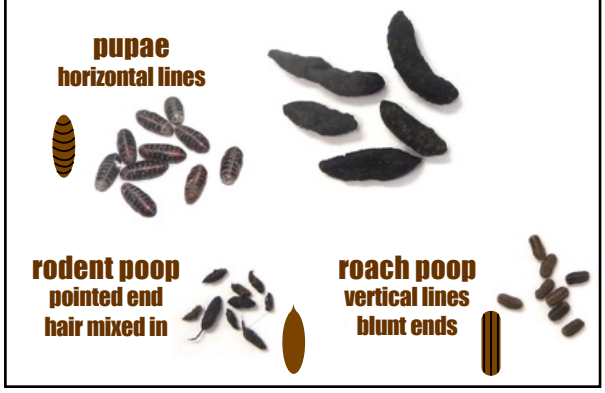
Know Your... Stuff



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Mice	Rats
Up to 100 pellets/day	40-50 pellets/day
Typically 50-60	3/4 inch long
1/8 to 1/4 inch long	1/4 inch wide

It can be difficult to estimate rodent numbers based on only the number of droppings

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droppings should be removed

demonstrates if evidence is new or old
removes potential pathogen source

www.cdc.gov/rodents/cleaning

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Rodent Evidence: Droppings

Environment matters!
fresh vs. old

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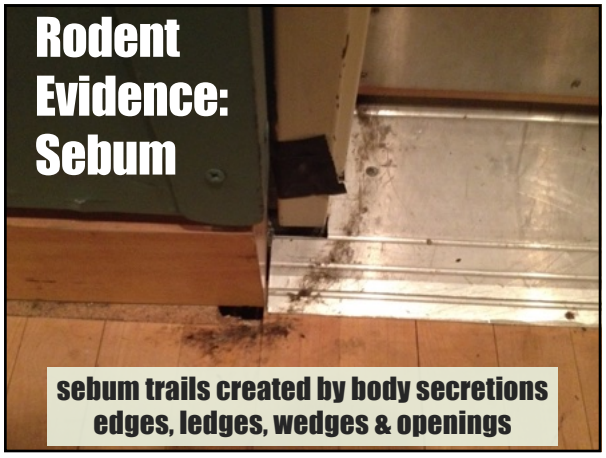
Rodent Evidence: Sebum



sebum trails created by body secretions
edges, ledges, wedges & openings

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Rodent Evidence: Footprints

Norway Rats
¾ to 1¼ inch
footprint

House Mouse
3/8 to ¾ inch
toeprint

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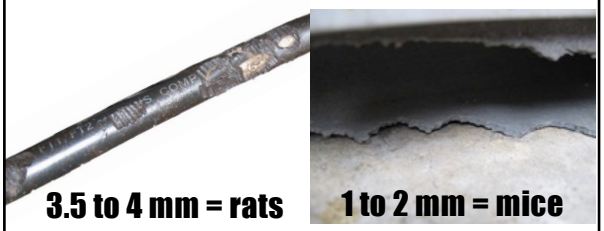
Rodent Evidence: Gnaw Marks



3.5 to 4 mm = rats

1 to 2 mm = mice

measurements are for a pair of teeth

rats can chew through plastic, sheetrock, wood
NOT through stainless steel, brass, dense iron

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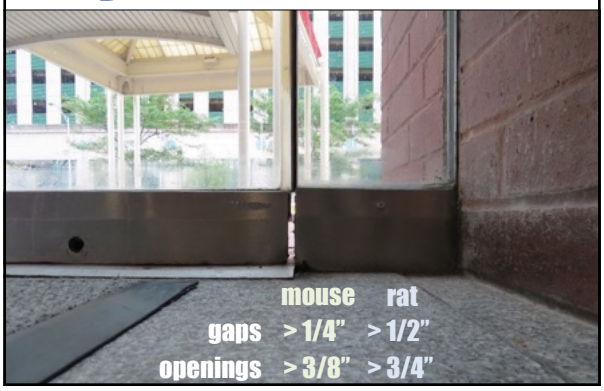
Entry Points based on rodent skull size



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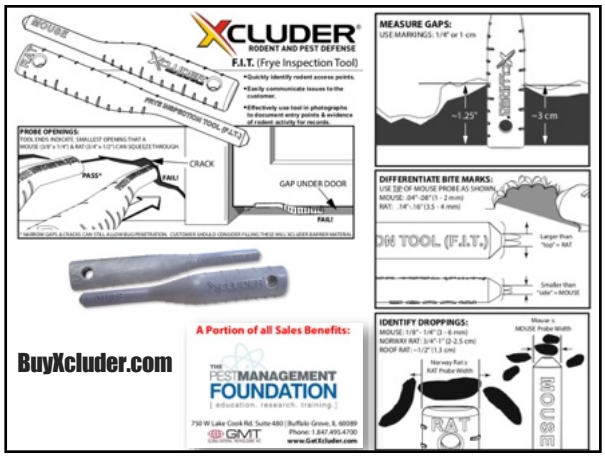

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inspection

moment in time

monitoring

record of time

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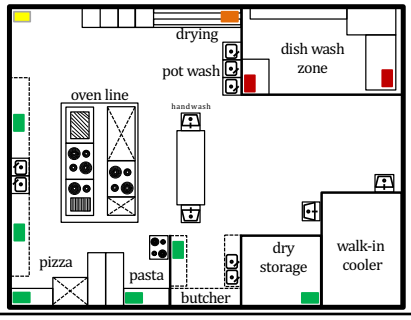
The Value of Monitoring

regularly spaced monitors will reveal the clumped distribution of pest populations



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monitoring outcomes: reveal relative proximity to harborage

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What is the Status?

Introduction 1+ individuals enter a new area
may or may not establish
relatively easy to manage

- deliveries
- staff items
- outdoors
- next door

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What is the Status?

Infestation population established - reproducing
sustained by food, water, & shelter
- ✓ manage pest population numbers
- ✓ prevent spread, new introductions

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introductions will happen infestations should not

introductions result in infestations when:

- lack of monitoring for early detection
- lack of effective management to reduce #'s
- presence of attractive conditions
- presence of entry route (delivery, openings)
- lack of communication: site & pest control

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Whose Job is it Anyway?

Regular inspections: you; pest pro; site

Monitoring for early detection: pest pro

Rapid and planned response: pest pro

- Reduce pest population: pest pro
- Remove conditions conducive to pests: site
- Prevent new introductions (exclusion): site

Communication: you; pest pro; site

Resolution can take weeks to 1+ months

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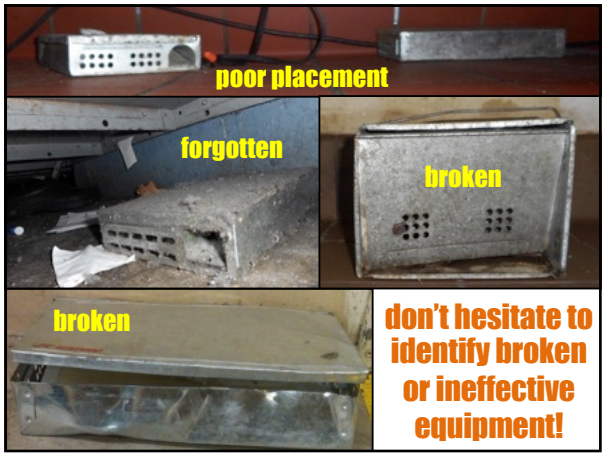

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Whose Job is it Anyway?

Note that the pest pro is hired to do a job.
Site management may ignore their advice.

Also, some pest pros might be new, lacking experience, expertise & communication skills.

You have a better chance of site management listening to observations & recommendations.

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Summary

Pests are a risk for food safety

Detailed inspections and interpretation of evidence will help you identify risks.

Remember that *exclusion is pest prevention*, and *sanitation is pest control*.

Keep in mind that monitors provide useful information about a pest problem or the control program.

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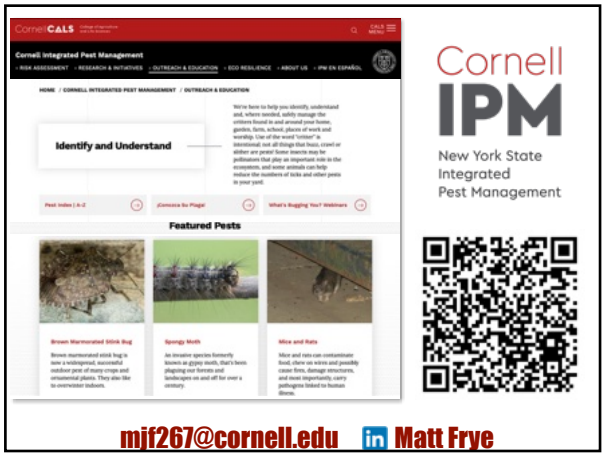

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