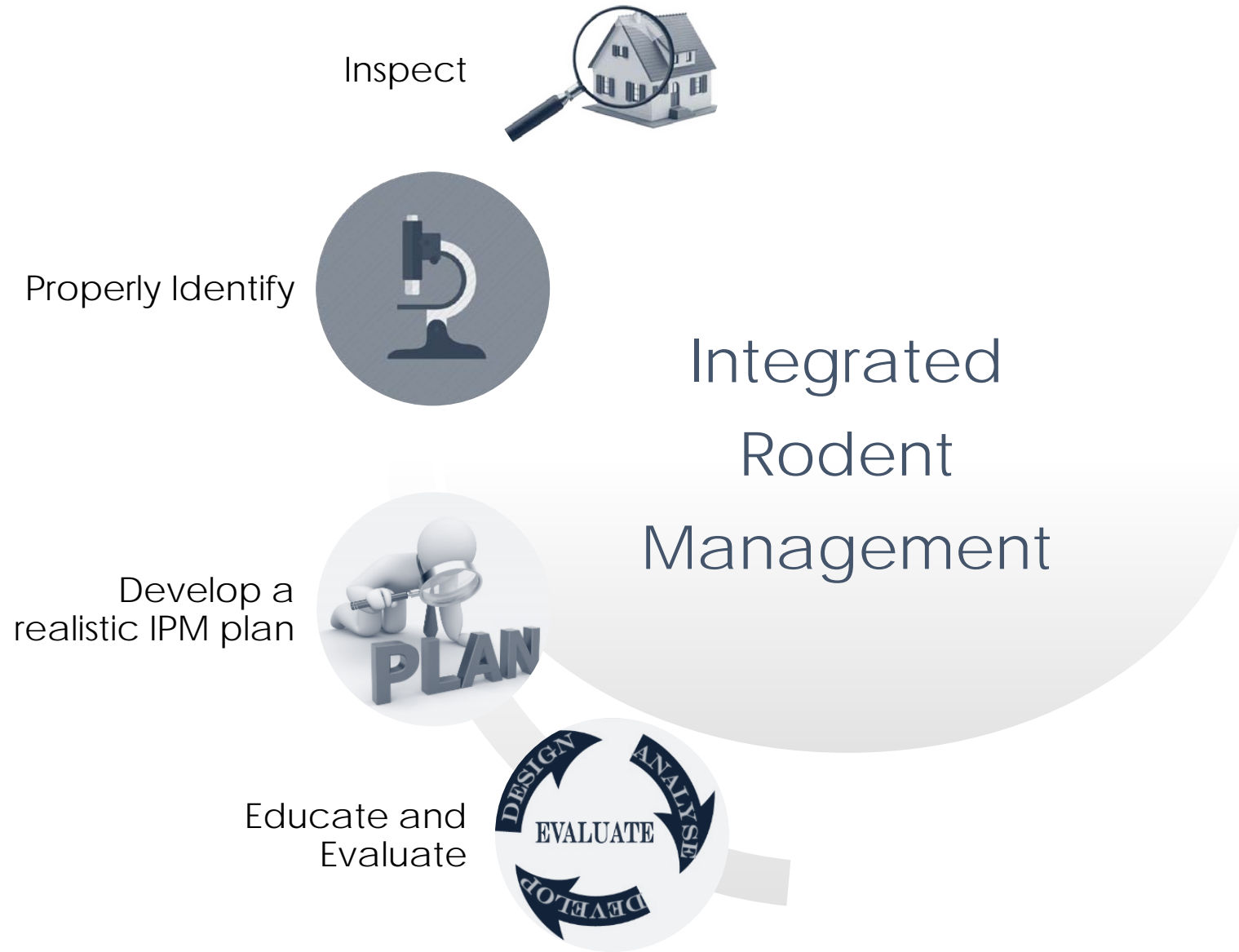





Rodent IPM

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Pest Management is People Management



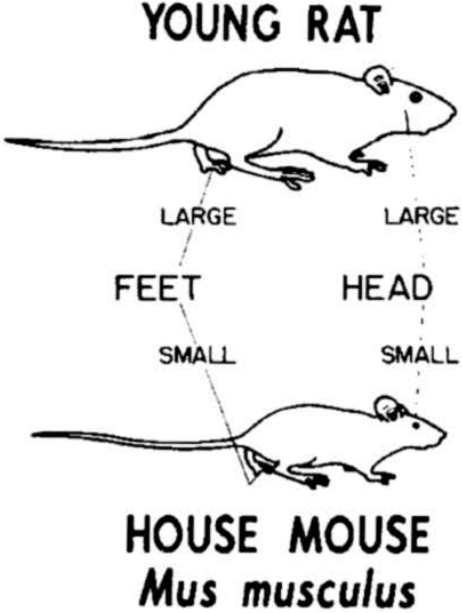
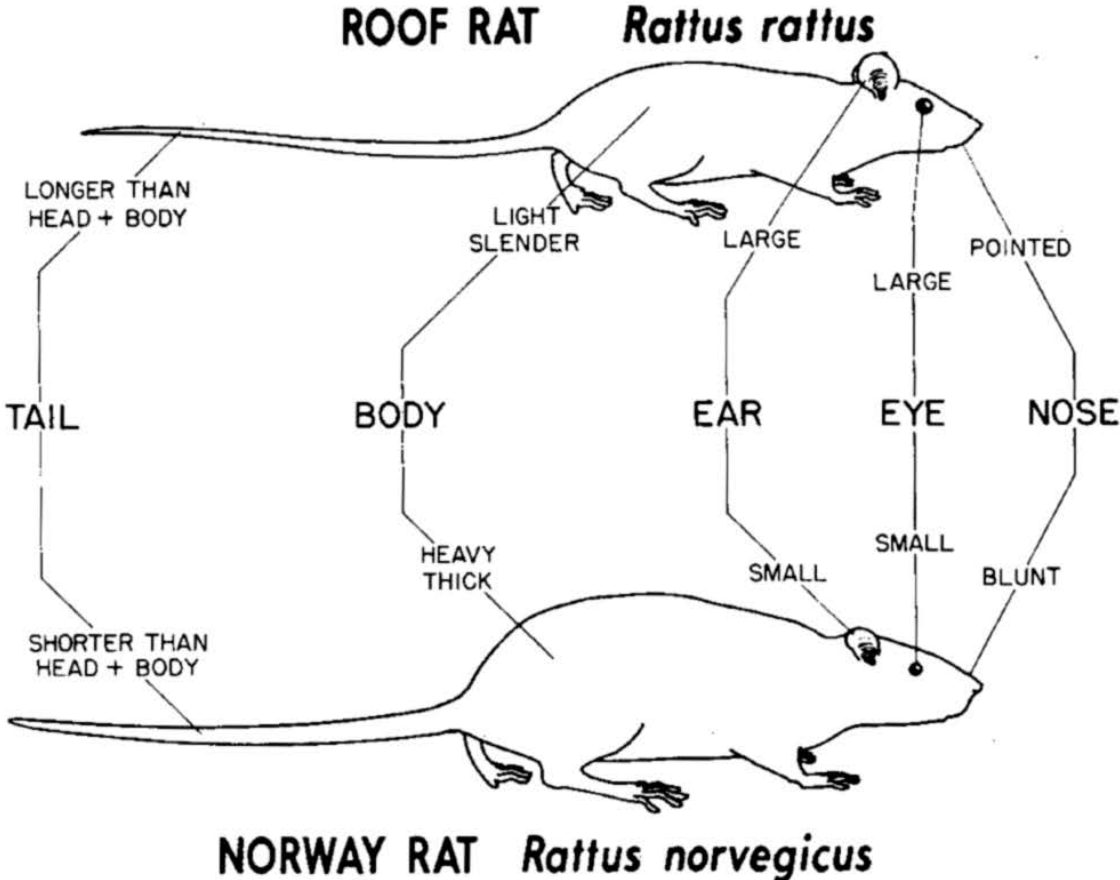


Rodents are health hazards

- Carry infectious diseases
- May cause asthma attacks
- Bite
- Damage food and property
- Can attract other pests
- Are repulsive
- Gnaw constantly to create holes and pathways (can cut wood, plastics, hoses, sheetrock, copper, wires, etc.)
- Are most active during the first two hours after dusk
- Make lots of babies fast
- Travel the same paths nightly, staying close to walls, or any items that give them cover (shadows, ledges, nooks).

Identification

FIELD IDENTIFICATION OF DOMESTIC RODENTS

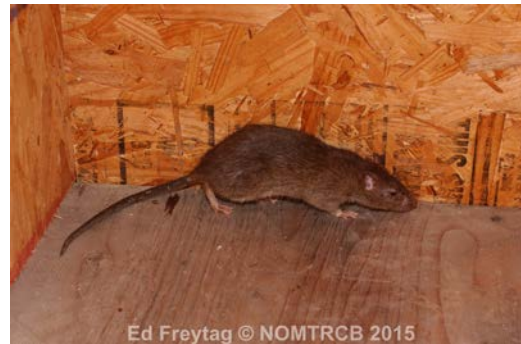


Commensal Rodents – 3 Species of Concern

House Mouse
Mus domesticus



Norway Rat
Rattus norvegicus



Roof Rat
Rattus Rattus



Mice

- Need a hole the size of a dime or a $\frac{1}{4}$ inch crack beneath a door to enter



- Mice are curious
- Require only $\sim 1/10$ ounce of food each day
- Don't need to drink water daily

Rats

- Need a hole the size of a quarter or a ½ inch crack beneath a door to enter



- Are very smart, cautious, and afraid of new things
- Require 0.5–2.5 ounces of food each day
- Need ~1 ounces of 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

They don't travel far

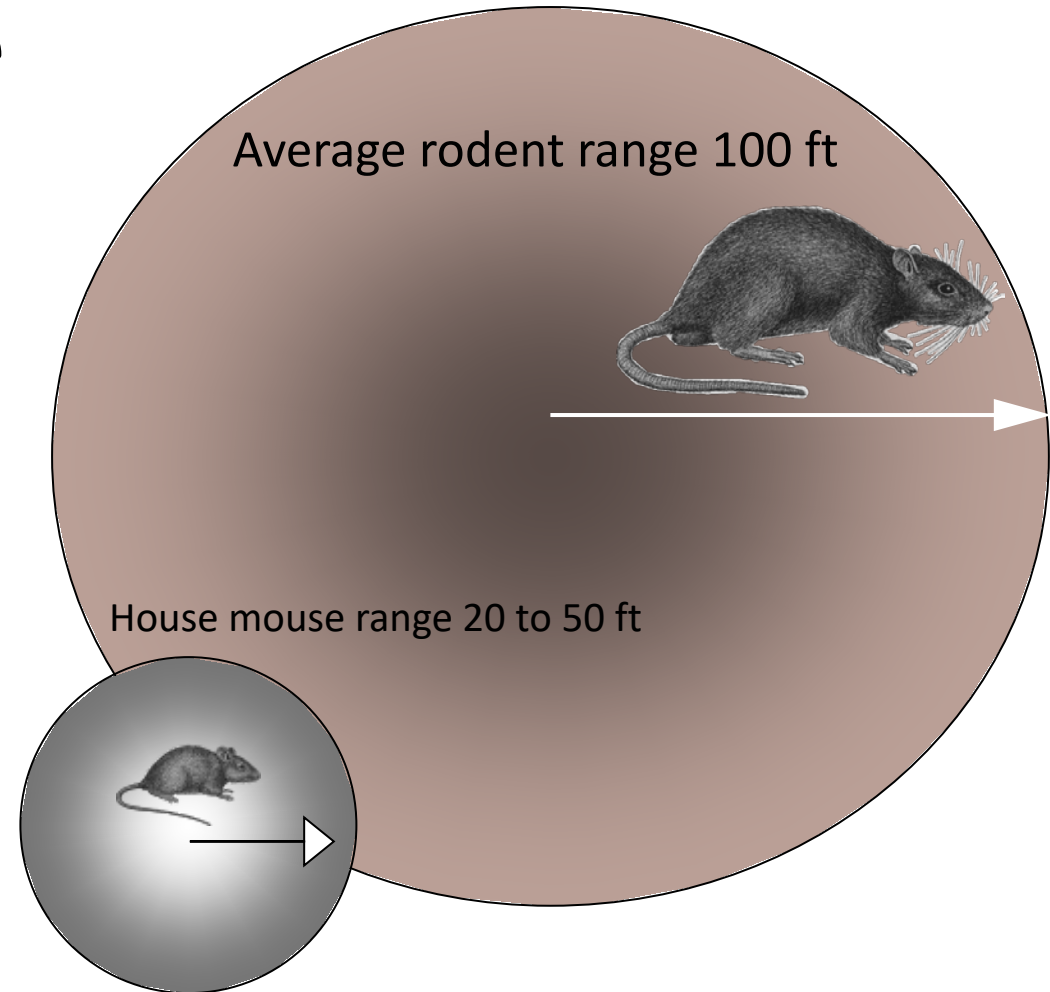
- 10-30 feet from their nest



One day old mouse pups

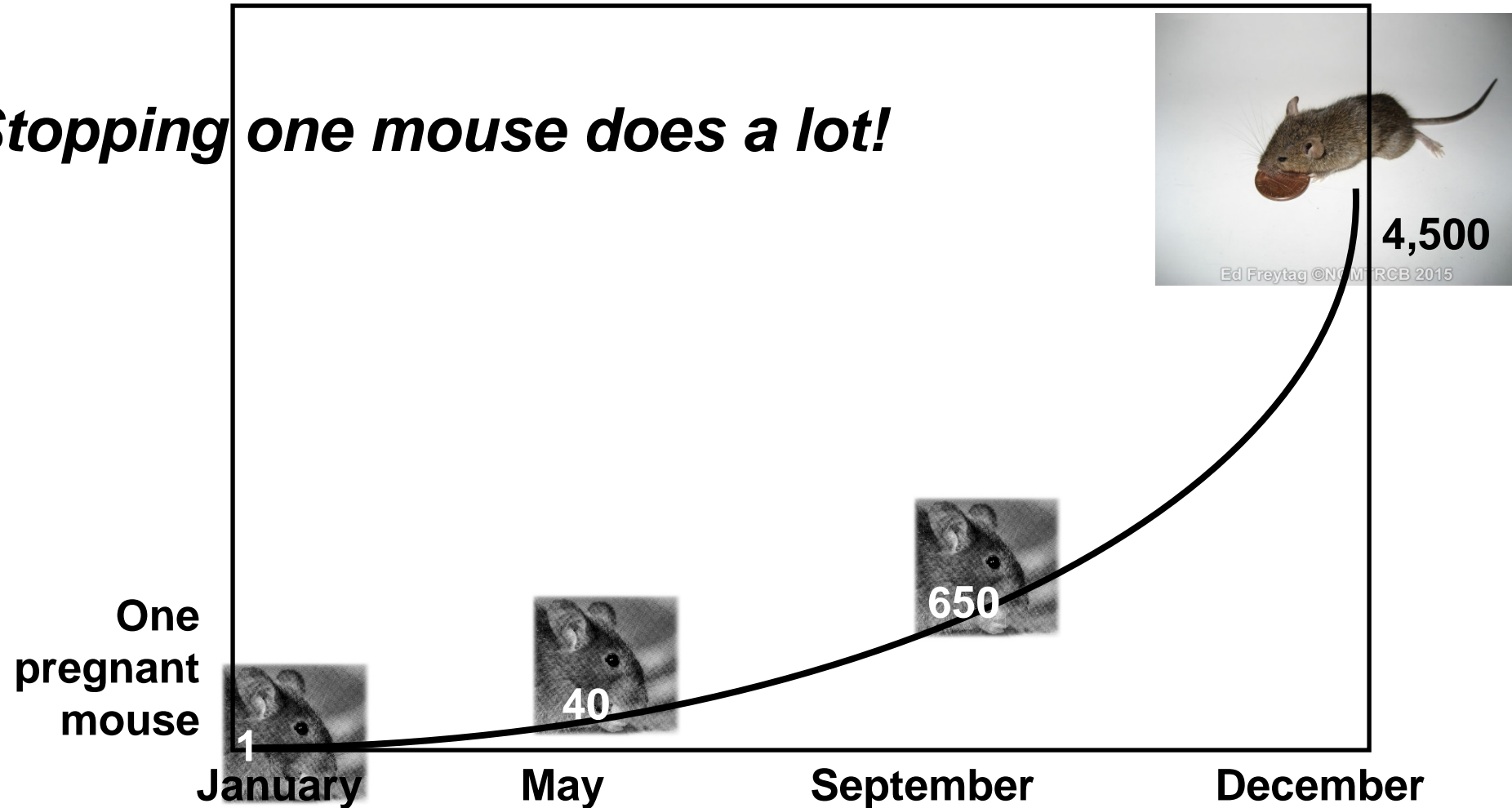
Biology of house mouse

- When crowded, tend to disperse
- Live outside during summer
- Do not hibernate
- Nest in warm areas close to food
- Need very little water
- Active mostly at night (nocturnal)



One mouse, one year...

Stopping one mouse does a lot!



Norway Roof aka sewer rat



[This Photo](#) by Unknown Author is licensed under [CC BY](#)

- Will travel up to 450 feet from their burrow, but prefer to live close to food and water sources
 - Exterior infestations are usually associated with trash
 - In high-rise buildings, rats will infest ceilings if the compactor chute is not kept in clean and in good repair
 - Crawl spaces become infested if food trash collects along the exterior foundation
-
- Omnivorous, opportunistic feeder
 - feed on anything humans eat
 - 0.5-1 oz per day (15-30 gm)
 - Hoards and transports food
 - bait translocation a problem
 - Requires water daily (1-2 oz)

Roof Rat aka black rat, field mouse

- Prefer mature vegetation, vines, trees for harborage
- Most frequently nests above ground
- Opportunistic, self-sufficient
 - seeds, nuts, fruits, berries
 - slugs, snails
 - insects
 - fish, shellfish
 - pet food, bird seed, etc.
- Typical family group of 10 rats



Indicator Pests

Found near
dead animals
or trash



Blow Fly



Hide Beetle

Found near
grain or bait
stored in walls



Indian Meal Moth



Grain Beetle

Signs of rodents – tools for monitoring

- Sightings
- Noise
- Gnaw marks
- Nests
- Rat burrows
- Droppings
- Dog or cat alerts
- Holes and rub marks
- Indicator pests





Rodent urine stain in drop ceiling



Mouse droppings by a power strip

Droppings and urine stains



Holes and rub marks



Now the hard part getting the information

- Find out:
 - Rat or mouse?
 - How many?
 - Where?
 - Food Source?
- Record:
 - Date
 - Detailed observations
 - Action taken

Traps for Prevention and control

- Effective and reusable
- More ARE better
- Check often
- **Placement is key**



Trap bounced away from the wall when it snapped



Trap Management

Observe

- Doors open
- Cleaning practices
- Talk with food service manager
- Conversation with others find out what they are seeing.
- What needs to be sealed up?
 - Start thinking what can I do?
 - What does my client need to do





For a hole, crack, or gap... close it up!



Xcluder® Fill Fabric



- The Starter Kit which includes a 10' roll, scissors and gloves
- We also offer “Xcluder Bulk Pak” with 5 rolls and Xcluder Single Roll which includes one roll.
- 1” wide strips – roof lines etc.
- Benefits of Xcluder fill fabric are: no rust, permanent, a springiness to lock into holes and crevices, and economical and easy to install.





Adhesive caulk.



Kitchen and bath caulk.



Mortar and concrete caulk.



Window and door caulk.



Gutter and flashing sealant.

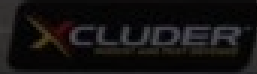


Blacktop and roof sealant.



Solutions

- Inspections
- Monitoring
- Education
- Baiting
- Exclusion

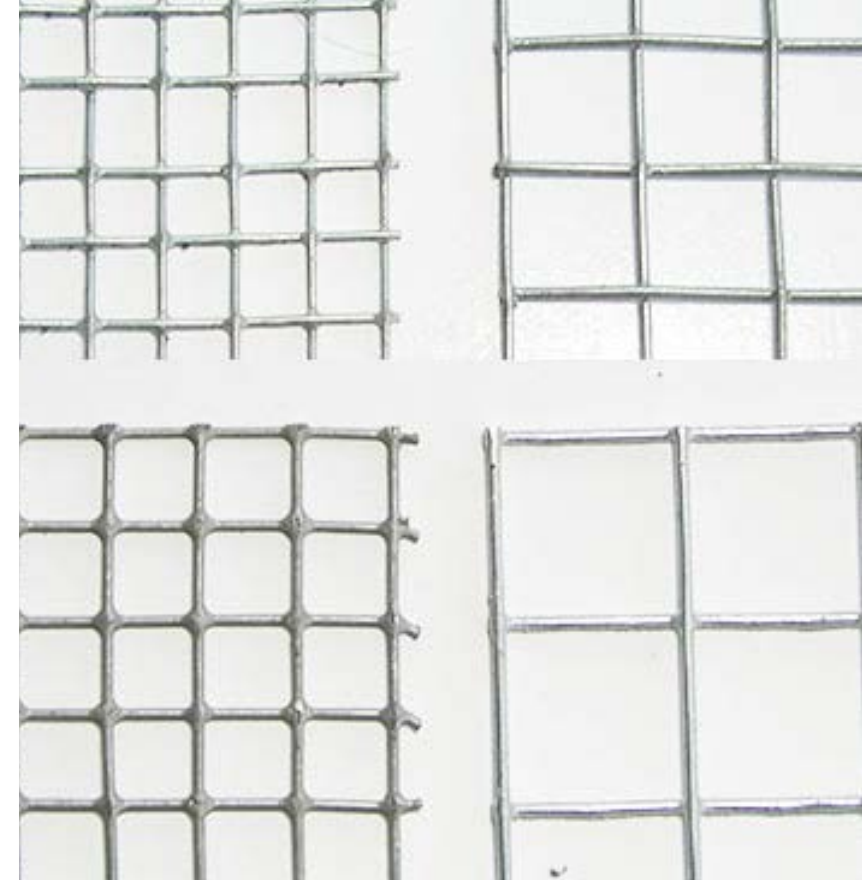
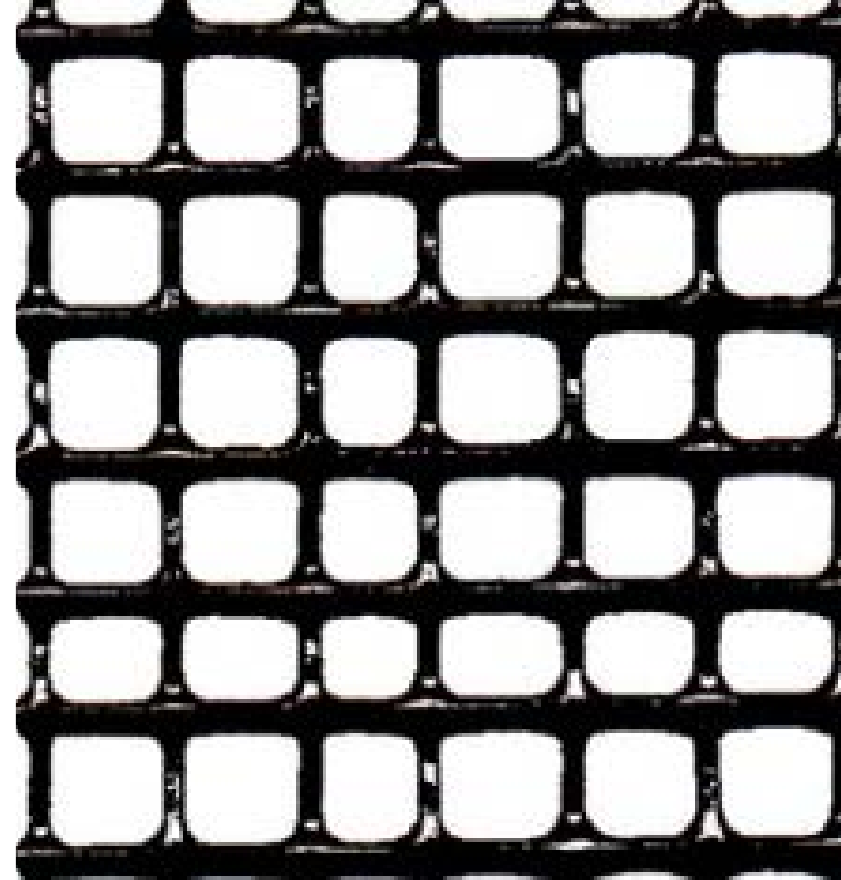






...and a new door is born





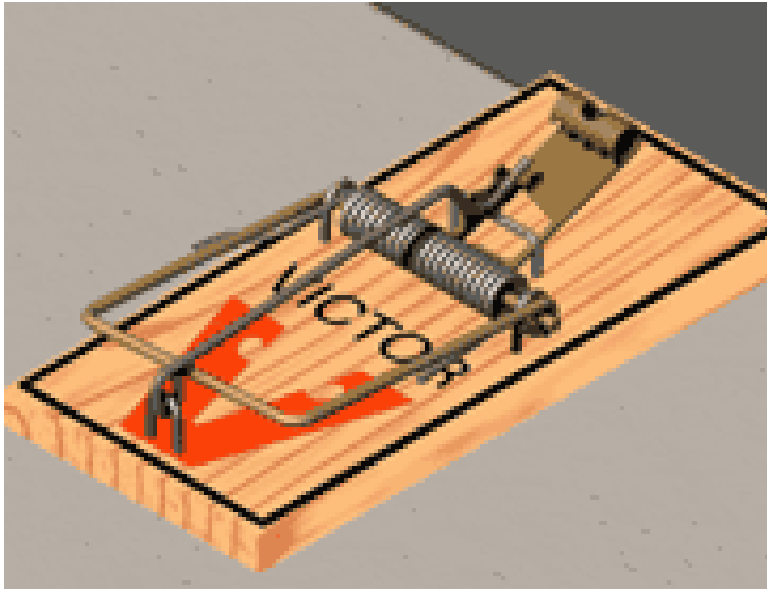
Other Exclusion Tools: Hardware Cloth



Monitoring station for pests



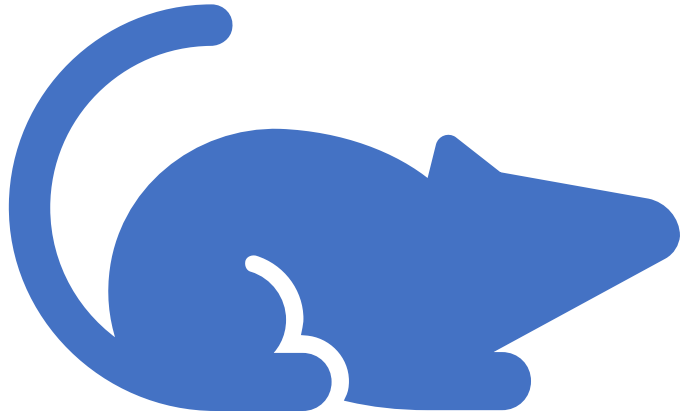
Trash Cans need to be 30 ft. from building with the lids closed.



Trapping

- Relatively fast and effective
 - humane concerns with some
- Eliminates risk of odors from dead rodents
- Best for smaller rodent populations
- Labor intensive
 - requires almost daily maintenance
- As a pest management activity, requires pesticide license





Pre-baiting/Pre-trapping

- Essential for controlling large rodent populations
- Especially helpful for rats
- Leave traps unset for 1-2 weeks with food
- Catch larger percentage of population, along with neophobic rats

Trapping for mice

Bait with what they're eating or using to nest

Bait & set many traps

- 6 traps for **each mouse**
 - At least 3' apart
 - May be set immediately, but will be more effective if left unset and re-baited for a day or two
- Seal All Entry Points
 - Keep using multiple catch all traps until nothing is observed
 - Go over sanitation with staff
 - Keep an eye on drop ceilings, custodial closets.
 - Remember will travel 50 feet, but will start a new colony and keep moving outward

Rodenticides

Two main
types:
anticoagulants
and single-dose
poisons.

- Anticoagulants
 - Slow blood clotting, causing mammals to bleed to death.
 - This effects the nervous and circulatory systems
 - Slow acting
 - Cumulative poisons and require several feedings before they kill the target rodents
 - All anticoagulants are not created equal
- Single-dose
 - Typically kill with one feeding
 - Can be hazardous to non-target species (pets, wildlife, humans)
- Many rodenticide baits can be toxic to wildlife if they are eaten, or if an animal eats a rodent that was recently poisoned. If you suspect an animal may have been poisoned, please contact NPIC at 1-800-858-7378 to talk with a Pesticide Specialist.

Rodenticide: second generation anticoagulants

1. Brodifacoum (Talon, Final, Formus, etc)
2. Bromadiolone (Contrac, Maki, Brigand)
3. Difethialone (Generation, First Strike)
4. Difenacoum (MultiKill, etc.)

- Highly toxic and persist longer in body tissues
- Designed to be toxic in one feeding
- Time-to-death is several days so toxicant levels in carcasses may be many times the lethal dose
- **Predators or scavengers that feed on poisoned rats may consume could be harmed**
- Vitamin K can be an antidote

Rodenticide: non- anticoagulants



Bromethalin
(FastTrac, Fast-Kill)

Nerve toxicant that
causes respiratory
distress



Cholecalciferol
(TeraD3, Selantra.)

Massive dose of
vitamin D3 causes
release of calcium
into the
bloodstream causing
heart failure



Zinc Phosphide (ZP
Bait, etc.)

Liberation of toxic
phosphine gas in the
stomach
Water turns into
toxic gas for humans