

## *In This Issue: Mice and Rats in Schools An IPM Approach*



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### Mice and Rats in Schools

Mice and rats are common problems in and around schools. Rodents cause fires by gnawing on electrical wires and transmit pathogens, and are associated with allergens and asthma triggers and should not be tolerated. Effective, low hazard options are available to eliminate rodents.

The house mouse weighs about one-half ounce and is three to four inches in length with a dark tail of about the same length. Its rod-shaped feces are pointed at each end about ¼" long. Mouse problems can occur at any time of year, but are particularly likely in the fall when outdoor temperatures begin to cool. Open access points as small as ¼" in diameter act like beacons, attracting rodents with warm air and food smells.

House mice can survive without access to water. Rats however, require daily access to water. Norway and roof rats are up to 16" in length including the tail. Norway rats have small ears, tails shorter than head plus body, and capsule-shaped droppings. Roof rat ears are large, tails are longer than head plus body, and droppings are elongated with more sharply pointed ends. Norway rats reach 11 oz. at adulthood; roof rats rarely exceed 7 oz.



**Norway Rat**

### Monitoring and Inspection for Rodents

Rodent problems typically have obvious signs including droppings and pilfered food for mice and rats, and gnaw and grease marks for rats. Grease marks are dark oil stains from rats rubbing against surfaces along travel ways, entry points, corners, etc. These signs are most likely to be found along linear pathways including corners between walls and floors, along the base of foundations, along pipes or electrical conduits, etc. Rats and mice are more likely to be sighted from dusk through dawn.

Mice typically travel 30 feet or less from nesting sites so an intensive search near droppings or other signs will often uncover the nest in wall voids, cardboard boxes, wooden or plastic pallets, heating units, vending machines, appliances or kitchen equipment.

Norway rat burrows are typically found in existing cavities, softer soil, eroded areas adjacent to masonry or rocks, and where hard surfaces such as sidewalks or foundations meet soil. Entry holes are clean and smooth and may have grease marks on any hard edge. Inactive burrows may be obscured by plant growth, spider webs or debris. Emergency bolt-holes may be covered with debris or vegetation.

Roof rats prefer elevated nesting sites including attics, walls, roofs, the tops of palms and other trees, and particularly like vine-covered fences and walls.

Rats often become active at dusk and can be seen traveling to food or water sources. Rats are active climbers and excellent swimmers.

### Cultural and Physical Options for Rodent Management

Outdoors in rural and many suburban environments, rodents face many natural enemies including very effective predators such as raptors, coyotes, dogs and cats. In urban environments, biological control is typically insufficient to suppress outdoor populations which readily move into and adjacent to unprotected structures.

Non-chemical measures including habitat modification, exclusion and sanitation are very effective in eliminating rodent problems. A young mouse can squeeze through a hole the size of a pencil

diameter. The first line of defense against mouse problems should include sealing up entry holes, cleaning up clutter inside classrooms, storage and other areas, and storing items off the floor to allow proper cleaning and inspection. A young rat can enter through a 1/2" gap. For rats, exclusion, maintaining clean exterior trash handling areas and removing or trimming any vegetation that obscures the ground should be primary strategies.

Glue boards and live traps can result in prolonged suffering and so not recommended. Snap traps are preferred which typically, but not always, result in a swift death. Snap traps can be baited with various attractants including food items and cotton string. Peanut butter can be a problem around students who have peanut allergies. Snap traps can also be placed in cardboard or plastic boxes designed to hold snap traps. Snap traps set in classrooms should be placed in tamper-resistant containers or placed in areas inaccessible to students. Alternatively, snap traps may be set at night and removed in the morning before students arrive. These should be labeled with a number and marked on a diagram to ensure all are recovered. Check traps often, and take care when removing trapped mice. Use gloves and don't assume the mice are dead, they bite!

Cultural and physical strategies for rodents:

- Seal any openings greater than 1/4" diameter in foundations, walls, fascia, roof; screen vents; install door sweeps to prevent access.
- Install heavy-gauge kick plates at the base of any doors with evidence of rodent gnawing.
- Remove or trim ground cover and other landscape plants to expose ground and discourage rodent travel ways and rat burrowing.
- Avoid landscaping that creates ideal habitat for burrows including stone walls with unsealed gaps.
- Place exterior trash cans and dumpsters away from building entrances to avoid attracting rodents to buildings.
- Use exterior trash receptacles with tight-fitting or spring-loaded lids. Use self-contained, leak-proof compactors instead of dumpsters, or at least use dumpsters with tight-fitting lids.
- Empty exterior trash receptacles daily at the end of each day.
- Fix plumbing leaks, improve drainage to prevent water accumulation near the building.
- Clean gutters to prevent water retention.
- Remove mulch from building foundations to reduce harborage.
- Do not allow grass clippings or leaf litter to accumulate adjacent to school buildings.
- Remove debris, clutter or stored materials from building exterior and adjacent areas to reduce harborage and permit proper cleaning and inspection.
- Remove clutter and items stored on the floor in interior entryways, storage, and other areas to reduce harborage and permit proper cleaning and inspection.
- Place non-toxic monitoring bait blocks in tamper-resistant stations in non-visible, inaccessible areas and check regularly for feeding.
- Visually inspect vulnerable areas (e.g., food service, custodial closets, laundry rooms, vending areas, garages, under sinks, sill plates, crawlspace, computer rooms, etc.) for droppings or grease marks.

- Place snap traps, and/or live traps in non-visible, inaccessible areas to trap rodents. Place traps in dark places, along foraging paths marked by rodent poop.
- Clean up droppings, grease marks and urine promptly using water, detergent and disinfectant or an enzyme based cleaner and wearing proper personal protective equipment (See Harrison 1999 below).
- Fill in inactive burrows with appropriate filler, e.g., mortar for burrows in or under concrete, soil.
- If rats are entering through floor drains, seal these with hardware cloth with mesh smaller than 1/2 ".

## Pesticide Options for Rodent Management



Where non-chemical measures are inadequate, the pest management professional may use rodenticides in a manner that may greatly reduce the potential for non-target exposure. Place bait-block formulations on rods in tamper-resistant bait stations that are secured so that they cannot be easily moved, e.g., attached to permanent masonry or 40 lb. concrete blocks.

Pesticide options that increase potential for exposure for students, staff and other facility users include pelleted formulations used outside of burrows, place packs, granular, dust or liquid formulations.

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