

RATS

PREVENTION AND CONTROL



PROTECTING PUBLIC HEALTH SINCE 1915



OUR RODENT PROGRAM

The District provides the public with rodent control information and encourages residents to adopt an integrated approach that results in better long term management of the rodent population. This approach includes:

- Recognizing an infestation and identifying the pest that is present.
- Adopting practices that reduce the harborage, food and water sources available to rodents.
- Excluding or “rodent-proofing” buildings (interior and exterior).
- Trapping rodents (when necessary).
- Cleaning up messes associated with rodents.

The District provides free rodent inspections to residents of Marin and Sonoma counties. During these inspections, District staff attempt to locate rodent entry points to structures, identify sources of harborage, identify the rodent species that are present, and provide recommendations to residents about how to make their property less attractive to rodents. The District does not bait, set traps, remove dead rodents, or do exclusion work.

WHAT CAN YOU DO?

You can host a block party in your neighborhood. An effective way to get rid of rats on your block is to work together with your neighbors. If your neighbors have rats, so do you! As a group, you can make a commitment to make your neighborhood a place where rats cannot flourish. Cooperation works!

Upon request, District personnel are available to provide rodent prevention and control presentations. We provide visual aids, brochures and other helpful materials free of charge. Call 707-285-2200 to schedule a presentation.

GENERAL INFORMATION

ROOF RAT *Rattus rattus* (also known as black, fruit, or ship rat)

- Tail** Longer than head and body combined
- Body** Slender
- Ears** Large
- Eyes** Large
- Nose** Pointed

Roof rat droppings (actual size):



Roof Rat**

NORWAY RAT *Rattus norvegicus* (also known as wharf, sewer, or brown rat)

- Tail** Shorter than head and body combined
- Body** Heavy, thick
- Ears** Small
- Eyes** Small
- Nose** Blunt

Norway rat droppings (actual size):



Norway Rat**

HOUSE MOUSE *Mus musculus*

- Feet** Small
- Head** Small
- Can enter through a hole 1/4" in diameter

Mouse droppings (actual size):



House Mouse***

DISEASES

Rodents can be extremely destructive. They are capable of causing extensive damage to buildings, electrical wiring in homes and vehicles, heater ducts, insulation and many other areas around your property. More importantly, rodents can contaminate food and preparation areas with their urine and droppings, making their presence a public health hazard.

Rodent	Disease			
	Salmonellosis A bacterial "food poisoning" that may be transmitted when rodents contaminate food by contact with their feces or urine.	Leptospirosis A bacterial disease that may be contracted through contact with water or ingestion of food contaminated with urine of infected rodents.	Hantavirus A viral disease that may be contracted through direct contact with or inhalation of aerosolized infected mouse urine, saliva, or droppings.	Arenavirus A viral disease that may be contracted through direct contact with or inhalation of aerosolized infected rodent urine, saliva, or droppings.
House Mouse	✓	✓		
Roof Rat	✓	✓		
Norway Rat	✓	✓		
Deer Mouse	✓		✓	
Wood Rat	✓			✓
✓ indicates vector is known to carry disease. Rodents are not known to carry rabies.				

According to the Centers for Disease Control, rats and mice spread over 35 diseases worldwide. These diseases can be spread directly to humans through contact with rodent feces, urine, saliva, or through rodent bites. Some of the diseases can also be spread indirectly to humans through bites from ticks, mites or fleas that have fed on an infected rodent.

RECOGNIZING RAT ACTIVITY

The homeowner should be alert for these signs of rat activity:

- Damaged, partially eaten walnuts, acorns, oranges, avocados, or other fruits and nuts.
- Broken snail shells under bushes, on fences, or near nesting sites.
- Signs of gnawing on plastic, wood, or rubber materials.
- Greasy rub marks caused by the rat's oily fur coming in contact with painted surfaces or wooden beams.
- Rat droppings (feces) are usually signs of significant rat activity. The droppings are randomly scattered and will normally be found close to a rat runway, feeding location, or near shelter. They are dark in color, spindle shaped, and are about ½ inch long.
- Visual sighting on utility cables, tops of fences, or in trees.
- Sounds (gnawing, etc.) from attics, sub-floor areas, and walls.



*Rats often use the same trails repeatedly**



*Gnawing on wires with droppings**



Droppings on fenceline rails

WHERE RATS AND MICE COMMONLY ENTER HOMES

- Broken or missing foundation vent screens.
- Vent screens on new structure where foundations are faced with brick (screens may have space at bottom or sides).
- Holes in foundation vents or screens where new piping or wiring was installed.
- Outside crawl hole with poorly fitted lid or no tight covering.
- Openings where two different roof planes meet (called a “birdsnest” by carpenters).
- Spaces between heavy roof shakes (especially along ridge of roof).
- Attic vent screens broken or left off.
- Space between roof jack and vent pipe from stove fan (and sometimes along side vent pipe).
- Under or on sides of large garage door, under side door to garage where threshold is left off, and through doors constantly left open.
- Between roof boards on shingle roofs, in holes where piping enters walls or through foundation, along rafters, gnawing through common wall sheet rock.
- Holes in exterior walls of house made by residents.
- Holes from new construction – “add ons” around areas where new construction meets old.
- Poorly fitting outside doors, leading to garage, patio, etc.
- Open wooden meter boxes (in older homes).
- Brick chimneys which have settled away from house.
- Tile roof missing end caps.



Check to make sure house foundation vent mesh is securely in place

RAT CONTROL

ENVIRONMENTAL MANAGEMENT

Rat survival depends upon the existence of three basic environmental factors

FOOD, WATER AND HARBORAGE

Good environmental management practices are the most effective approach to rat control. Environmental sanitation and good housekeeping are the first steps in a successful rat control program. You can help control rat populations by practicing the following:

- Harvest fruit and nuts as they ripen.
- Pick up fallen fruit and nuts on a daily basis.
- Never leave uneaten pet food outside overnight.
- Keep palm trees and yucca plants well trimmed. Algerian ivy and other thickly matted plants should be removed or trimmed well away from the roof, walls, fences, utility poles, and trees.
- Repair leaky faucets and eliminate any other unnecessary standing water.
- When renovating the yard or planning new landscaping, ground cover unsuitable for roof rat harborage should be considered.
- Store wood and lumber piles at least 18 inches above the ground and 12 inches away from any structure. Storage boxes should be stacked close together and in an orderly fashion. Clean up debris piles.

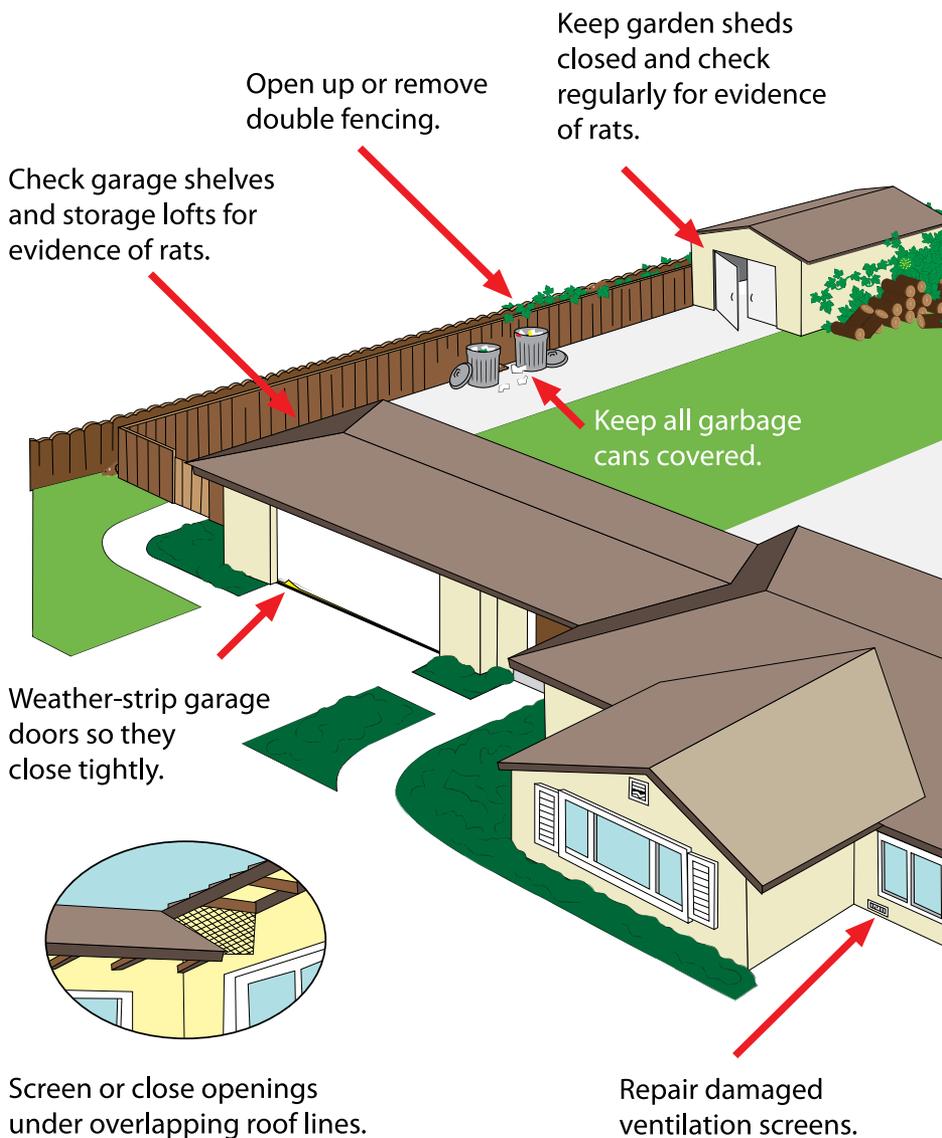


Hollowed-out oranges



Firewood stands are practical and easy to use

Prevent rats from becoming



a problem on your property

Stack firewood off ground and away from buildings and fences.

Thin or remove dense vegetation such as ivy.

Pick up all dropped fruits/nuts.

Use compost bins with secure covers.

Only feed birds in a cleanable area.

Pick up pet droppings.

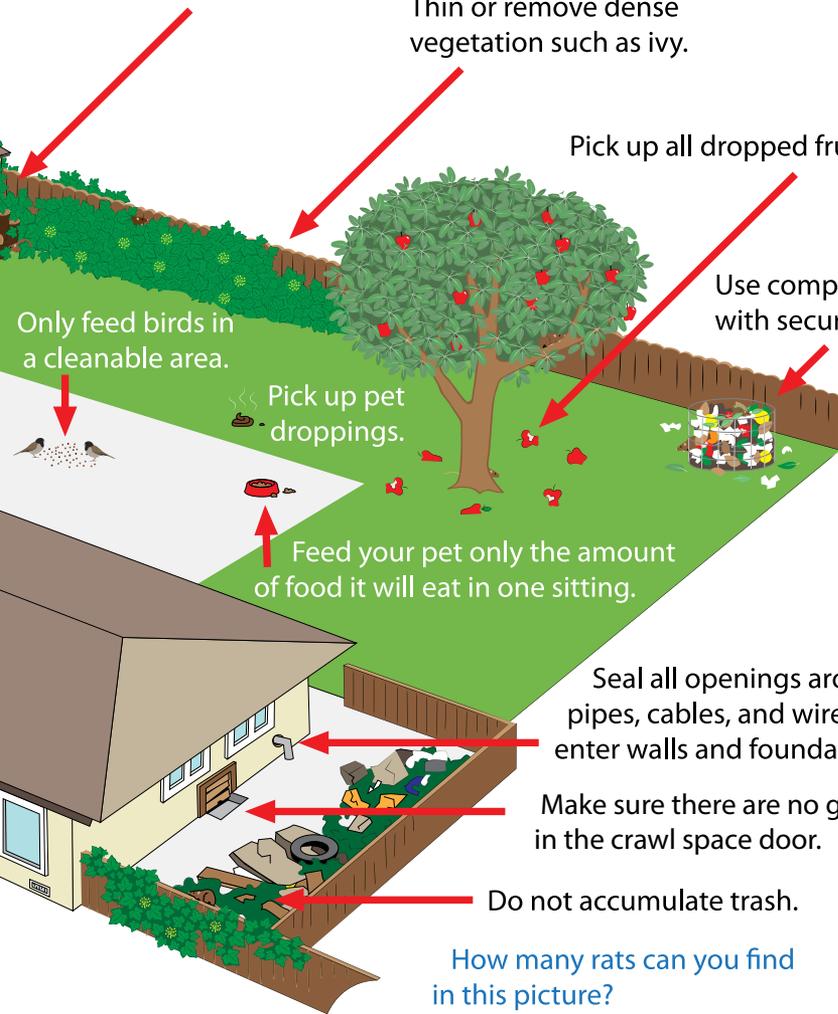
Feed your pet only the amount of food it will eat in one sitting.

Seal all openings around pipes, cables, and wires that enter walls and foundations.

Make sure there are no gaps in the crawl space door.

Do not accumulate trash.

How many rats can you find in this picture?



RAT CONTROL

BUILDING MAINTENANCE

Rats can enter very small exterior openings of a home. Openings such as those listed below should be screened with ¼ inch galvanized hardware cloth and inspected at least twice a year.

- Basement windows and ventilation ports.
- Attic vents and louvers.
- Vent pipes and shafts.

RAT PROOF YOUR BUILDING TO PREVENT RAT ENTRY

- Close all openings larger than ¼ inch to exclude rats and mice. Inspect twice a year.
- Repair or replace damaged vent screens.
- Screen vents, holes and overlapping roof with 16 or 20 gauge ¼ inch hardware cloth.
- Use sheet metal collars around pipe entrances on wooden walls.
- Use cement fill around pipe in brick, stone, or stucco walls.
- Use sheet metal edging along door bottoms to prevent entry.
- Tree limbs should be trimmed at least four feet from the roof and walls of the house.
- Gaps around pipes and electrical conduit should be sealed.



*Power supply hole sealed with metal flashing**



*Soffit vent hole covered with screen**

METHODS OF CONTROL

The Marin/Sonoma Mosquito and Vector Control District recommends the use of non-toxic methods (such as snap or electronic traps) to reduce rodents in and around your property.

TYPES OF TRAPS

Rodent “snap traps” are inexpensive and are available in two sizes. The smaller trap is designed for mice and the larger is designed for rats. It is very important to choose the proper size trap. Several rat traps should be set to maximize trapping effectiveness.



Wooden snap trap



Power spring trap



Easy/quick set trap



Electronic trap

BAIT SELECTION

Bait selection is important for trapping success. Peanut butter, nutmeats, bacon, pieces of apple, candy and moistened oatmeal are effective baits. For best results, try several different baits to see which ones the rodents prefer.

TRAP PLACEMENT

Placement of snap traps is crucial to their effectiveness. Place traps in areas frequented by rats. To identify these areas look for the presence of rat droppings and rub marks. Rats establish runways along fence tops and next to walls. Place the narrow end of the trap containing the trigger against a wall or known runway. Snap traps can also be attached to pipes or studs with wire, nails, or screws.

SETTING A SNAP TRAP

To set a snap trap, apply the recommended bait to the trigger. Pull back the bail with your thumbs. Hold the bait in place with one thumb while attaching the bar to the trigger tab. Better results are usually obtained if two traps are set side by side. It is also a good idea to pre-bait, which means using a baited but unset trap so that the rodent can become familiar with the baited trap. When the bait is taken, re-bait and set the trigger.

It is important to check the traps daily to remove dead rats and refresh bait. Ectoparasites, such as mites and fleas, may move from the dead animal and its nesting material to people or pets. It's important to remove the traps daily and to properly clean the area. Please see the Clean Up section on page 13 of this booklet.



Proper trap placement on beams and rafters (note rub marks on beams indicating rat trails)



Properly placed trap at floor level vs. improperly placed traps

DISPOSING OF DEAD RODENTS OR NESTS

Wear rubber, latex, or vinyl gloves when cleaning up dead rodents or nests.

- Spray the dead rodent or nest with a disinfectant or a mixture of bleach and water.
- Soak rodent, nesting materials or droppings in solution for 5 minutes before wiping up with a paper towel or rag.
- Place the dead rodent or nesting materials in a plastic bag and seal tightly.
- Throw the bag into a covered trash can that is regularly emptied.

CLEAN UP RODENT FECES AND URINE

Never sweep or vacuum rodent evidence, including feces, urine and nesting material. When these substances are swept or vacuumed they can break up, forcing virus particles into the air where they can easily be inhaled, possibly infecting the person doing the cleaning. Hantavirus and arenavirus are transmitted in this manner.

Steps for cleaning:

- a. Make a solution of one-part bleach and nine-parts water in a spray bottle or use a general purpose household disinfectant such as Lysol®.
- b. Wearing rubber or plastic gloves, spray the solution or disinfectant on the dried urine, feces and nesting material.
- c. After five minutes, use a damp paper towel to wipe up urine, droppings and nesting material.
- d. Using the same solution or disinfectant, clean the area where the rodent evidence was located.
- e. Place the paper towels and other waste in a plastic bag.
- f. Wash gloved hands with soap and warm water or spray with disinfectant or solution before removing them. Place them in the plastic bag as well and discard in an outside garbage can.
- g. Wash the now un-gloved hands with soap and water.

Once the newly cleaned area is dry (in approximately 30 minutes) it is ready for reuse.



Always wear protective gloves when handling or cleaning rodent evidence

RECOMMENDATIONS FOR RODENT CONTROL

EXCLUSION (Exterior)

1. Repair foundation, attic, and gable vent screens with ¼ inch hardware cloth, or replace vent screens.
2. Repair gaps and breaks in exterior walls.
3. Repair voids where roof lines overlap, with ¼ inch hardware cloth or suitable materials to prevent rodents from entering attic.
4. Seal gaps around pipes and wiring that enter through exterior walls.
5. Install, repair, or replace door or rodent proof screen in foundation crawl space opening.
6. Seal gaps at corners, on sides and under garage doors and side doors.
7. Keep pet doors closed at night and whenever possible during the day.
8. Install “rat guards” on utility lines that allow rodents access to building.
9. Screen all openings around perimeter of decks or spas.
10. Keep sheds closed and screen base of shed.
11. Install spark arrester on chimney.
12. Repair voids where fireplace/ chimney has separated from walls.

13. Repair lateral sewer lines to prevent rodents from entering the structure.
14. Install barriers between home and fence lines, patio covers, or sheds that allow rodents to jump, climb, or travel to roof.
15. Seal all holes, gaps and openings in roof.
16. Fill holes in and under foundation walls with pea gravel.

EXCLUSION (Interior)

17. Seal all holes and gaps around pipes located under sinks in kitchen, bathrooms, and utility rooms.
18. Seal off all voids/gaps in water heater closet, furnace/AC closet, or any other area where pipes and wiring enter walls, floors, or ceilings.
19. Repair heater and air conditioning vents and duct work.
20. Seal all gaps and holes between interior garage walls and main house.
21. Repair holes in interior walls, floors, or ceiling.
22. Seal off voids/gaps behind cabinets, shelves, bookcases, or any other built-ins that create “dead space” where rodents could nest or travel.

FOOD

23. Keep all garbage cans, recycle bins and dumpsters secured and tightly covered.
24. Feed pets only amounts of food that will be totally consumed each feeding.
25. Harvest all ripe food from trees and gardens. Pick up fallen food from the ground.
26. Eliminate snail population.
27. Store pet foods in metal containers.
28. Remove bird feeders and bird food. Discontinue wildlife feeding.
29. Prevent pet food from falling under decks.
30. Use proper composting techniques to eliminate food source for rodents.
31. Repair leaky faucets and eliminate any other unnecessary standing water.

HARBORAGE & VEGETATION

32. Remove any trash that has accumulated. Clean up debris.
33. Cut back all trees, vines and shrubs four feet from roof.
34. Store all firewood or lumber 18 inches above the ground and 12 inches away from any structure.
35. Thin out or remove ivy or any other ground cover that could harbor rodents. Keep ground cover away from fences, utility poles, walls, and trees.
36. Remove any old, unused furniture, appliances, containers, abandoned vehicles, or any other items that could harbor rodents.
37. Trim palm trees and/or install rodent barriers to prevent rodents from crawling up tree trunks.

OUR SERVICES

The Marin/Sonoma Mosquito & Vector Control District is committed to protecting the health and welfare of the communities in which we serve. Our programs and services are supported by property taxes and are provided free of charge to all residents in Marin and Sonoma counties.

Our services include:

- Mosquito Control & Mosquitofish
- Ground-Nesting Yellowjacket Control
- Rodent Control Advice

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The Marin/Sonoma Mosquito and Vector Control District, founded in 1915, protects the health and welfare of the communities it serves from mosquitoes and vector-borne diseases by utilizing cost-effective, environmentally responsible integrated vector management practices.



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www.msмосquito.org