Rat Management In Parks

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BMPs for rodent control

- Accurate identification of pest to species level
- Identification of rodent activity hotspots
- Sanitation
- Exclusion
- Lethal Control
 - Non-toxic
 - Toxic
- Birth Control



What is a commensal rodent?

- Live close to humans
- Rely on humans for resources
- Food, water, shelter
- Control of these is key to successful management



You can't manage what you can't measure





It is important to check the label

• Labels can be confusing sometimes

- House mouse
 (*Mus musculus*)
- Norway rat (*Rattus norvegicus*)
- Roof rat

(Rattus rattus)







Deer mice—native rodents

- Larger eyes
- White underside
- Bicolored and well furred tail

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Deer mice—native rodents

- Larger eyes
- White underside
- Bicolored and well furred tail

House Mouse

- Light brownish to grey
- Almost hairless tail
- An adult is ~ 5-7 inches long (including tail)

UC Statewide (PM Project © 2000 Recents University of Califor

Dusky-footed Woodrat

- Native species
- Also known as a packrat
- Hairy tail
- Big ears
- Builds large dome-shaped dens out of vegetation





Norway rat vs roof rat



Roof Rats



- Sleek and agile
- 5-10 ounces
- Very large ears
- Small black eyes
- Light brownish to grey



• Uniformly dark tail with fine scales

- An adult is ~ 6-8 inches long
- Tail is 7.5-8.5 inches long
- Tail as long, or longer than head and body

Roof Rats



Roof Rats-Behavior

- Can travel considerable distances for food
 - 100-300 ft
- Live in one area and feed in another
- Neophobic

Norway Rats

- Large and robust
- 7-18 ounces
- Small ears
- Small eyes



Norway Rats



- Brownish or reddish gray above
- Whitish gray on the belly
- Adult is ~ 8-10 inches long
- Tail-7-10 inches long
- Shorter than body, dark above and pale below, scaly

Norway rats

- Home range is between 25-100ft
- When resources are plentiful, home range is closer to 25ft
- This can differ with season, sex, and population density
- Eat large amounts from small number of food sources
- Neophobic





If the tail of a rat is longer than its body and when you fold down the ears they cover the eyes, then the species in question is a roof rat.





What aspects of rodent biology make them so successful and difficult to control?

- Adaptability
- Diet
- Size
- Behavior
- Reproduction



• One rat

- Breeds 4 times in a year having about 8 pups per litter
 - 4 x 8= 32
 - 50% are female and breed only once a year
 - 8 pups by four females/litter
 - 8 x 4 x 4
 - Plus the original 32 rats

160 rats!



Overcoming neophobia





Why do we need to control commensal rodents?

Public Health Threats

Carriers of Diseases- salmonellosis, plague, leptospirosis, murine typhus, hantavirus etc



Rat Bites



Identifying rodent signs

- Scats
- Tracks and runs
- Urine stains
- Gnawing
- Rub marks

Rodent Scat—can sometimes be confused with lizard scat



NORWAY RAT DROPPINGS Average length 3/4" (19 mm)



ROOF RAT DROPPINGS Average length 1/2" (13 mm)



HOUSE MOUSE DROPPINGS Average length 1/4" (6 mm)



AMERICAN COCKROACH DROPPINGS Average length 1/25" (1 mm)

44





hind feet: 5 toes





Mouse prints

Tracks and runs

Tracks and runs



Photographs courtesy of Rex Baker







Gnawing



Rub marks







Sanitation

- Successful method of rodent control due to removal of
 - Food
 - Harborage
 - Water
- Environmentally friendly with no risks to nontargets
- Cost effective
- Continual loss of other tools



Sanitation

- You can still make adjustments
 - Cover trash
 - Daily trash pickup before nighttime?
 - No leaf piles
 - Minimize harborage
 - Compost






Exclusion

- Take time to find entry points
- Especially for roof rats
- No hole larger than 1/4 inch should be left unsealed, in order to exclude both rats and house mice
- Coarse steel wool, wire screen, and lightweight sheet metal are excellent materials for plugging gaps and holes.
- Norway and roof rats are likely to gnaw away plastic sheeting, wood, caulking, and other less sturdy materials.

Lethal control









Selecting the correct trap







Setting your traps

• Always in twos









Easy to set







Be mindful of nontargets

Electric Trap



- Be careful
 - Outside
 - Areas with high fire risk
- Still need to prebait

Choose the right attractant



Rats can learn from their mothers' milk what foods are safe to eat.

This is important to consider when choosing rodenticides and attractants for traps



Choose locally available food resources

- Prefer foods that are high
 - Fat
 - Protein
 - Sugar



Locally available resources





Doesn't always have to be food!





Use multiple traps in the right places

- Roof rats-mostly arboreal
- Norway rats-terrestrial
- Mice-mostly terrestrial
- All species can and will climb



Cluster!





Prebait

• This is the most important thing you can do to ensure you are successful in managing your rat population and your rodent problem!





Catching the right rat



For best success-catch the adults first!



Nontarget trap casualties

Be mindful of nontarget wildlife



Can place trap in box

- Place nontoxic bait (like Census Bait Block) within bait box to monitor for rat usage
- Then place snap traps within bait box





Modify trapping time to avoid killing song birds

Catch and Release?

- §465.5. Use of Traps
- Immediate Dispatch or Release. All furbearing and nongame mammals that are legal to trap must be immediately killed or released. Unless released, trapped animals shall be killed by shooting where local ordinances, landowners, and safety permit.





Be safe when disposing of dead rodents



- The carcass should be placed in a plastic body bag and sealed as soon as possible. If a zoonotic disease is suspected (i.e., rabies, tularemia), it is recommended to double bag the carcass
- Avoid direct contact with the dead animal's body fluids (i.e., blood, urine, feces). If contact does occur, wash the skin area contacted with soap and water as soon as possible.







FLEA



Fish and Game Code **5652**



 It is unlawful to deposit, permit to pass into, or place where it can pass into the waters of the state, or to abandon, dispose of, or throw away, within 150 feet of the high water mark of the waters of the state, any cans, bottles, garbage, motor vehicle or parts thereof, rubbish, litter, refuse, waste, debris, or the viscera or carcass of any dead mammal, or the carcass of any dead bird.

Rodenticides registered In California



Туре	Active ingredient
First generation anticoagulant rodenticide	Chlorophacinone
	Diphacinone
	Warfarin
Second generation anticoagulant rodenticide	Brodifacoum
	Bromodiolone
	Difenacoum**
	Difethialone
Non anticoagulant rodenticide	Bromethalin
	Cholecalciferol
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Bait boxes

• Good rule of thumb is that you need a tool to move bait box

Burrowing

- House Mouse Usually shallow but prefer walls and other safe areas for nesting
- Norway Rat Commonly burrows, finding harborage under sidewalks, streets, structures and often burrow into openings in sewers and drains
- Roof Rat typically only burrows only when competition is high and a few resources; generally where no competition with Norway rats

Burrows

- Active burrows have entrances with very smooth edges that have a well-worn appearance
- Inactive burrows can be covered in vegetation and have cobwebs covering them





Fumigation options

- Aluminum Phosphide
- Carbon dioxide
- Carbon monoxide

Treating burrows with fumigants



Check if you need a Fumigation Management plan



Some are heavily restricted



NO aluminum phosphide on school ground unless on athletic field



Be cautious with colorless or ordorless gasses



Check efficacy of products



Contra pest

- In female rats
 - Interferes with ovarian function so that there are few to no ovulations
- In male rats
 - Inhibits the production and maturation of sperm.

Don't give up!

- If you stop
 - Don't store traps with strong smelling chemicals, pesticide
 - Be ready to start again



Check your traps





Repellents, ultrasonice devices



• There is little scientific evidence to support the success of many products

Resources

- http://ipm.ucanr.edu/PDF/PUBS/Winter 20 19 Retail Newsletter.pdf
- http://ipm.ucanr.edu/RETAIL/retailnewsletter.html
- https://ucanr.edu/survey/survey.cfm?surve • vnumber=11686



Snap Traps for Controlling Rats and Mice

Trapping is the safest and most effec-tive method for controlling rats and mice in and around homes, garages, and other structures. Rodents that live in close association with humans are called commensal rodents. Rats and mice (Figure 1) are the most frequently encountered commensal rodents in California.

Selecting the correct trap

Before trapping, make sure you know what rodent pest you have. It is a very common mistake to select the wrong size trap when you have not yet determined whether you have mice or rats (and the correctly identified rat species).

You will not catch a rat with a mouse trap, and you will not catch a mouse with a rat trap. To determine the difference between signs left behind by rats and mice, use the links to the UC IPM Pest Notes on rats and mice provided at the end of this article.

Select traps that you can easily set. Older designs of rat and mouse traps can be difficult to operate, so if you are having trouble setting these traps, consider buying a newer design (Figure 2).

Choose the right attractant

Food attractant is a very important part of successful snap trapping. Select an attractant the rodent would likely find locally available and that you know they are already feeding on. The amount to use is also critical. Select a pea-sized amount of the food attractant and

Retail Training on Vegetable Pests Not a Creature Was Stirring ... Newly Revised Pest Notes

carefully place it on the trigger or in the trap recess before you set the trap. Food is not the only thing that can be used to lure rodents to your snap traps. When trapping mice, you can try to use small bits of cotton or dental floss, as the mice will try and collect these for

Be cautious about using peanut butter in areas where you are unsure who will access the traps. Many people have pea nut allergies.

good practice to prebait your traps. This involves putting the traps in areas where you find rat evidence, including a food or other lure, while leaving them unset for a couple of days until this attractant has been removed multiple times. Because rats are neophobic (afraid of

nesting material.

When using snap traps for rats, it is

new things), you want to make sure the adults as well as the juveniles become comfortable with the traps. Failure to





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Figure 1. Roof rat on a kitchen sink.

ebait may result in the capture of juve niles only. The breeding adults are the most important targets.

Use multiple traps in the right places

Rodents are very prolific breeders, and there is never just one or two of them; there are many. Therefore, it is important to ensure that you set multiple traps

Good trap placement is essential. Set traps along a wall or fence line or another linear surface like the edge of a planter to maximize the success of trapping. Be sure to trap with the triggers either facing the linear surface or with the traps along the side of the wall with the triggers facing away from each other (Figure 3). Rats and mice are smart and resourceful animals, so set your traps in ... continued on page 2



Thank you!

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