

CONTROLLING VERTEBRATE DAMAGE

house mice (*Mus musculus*)

Extension Bulletin E-861

April 1977

See also the first in this series: Extension Bulletin E-860 on "General Considerations."

BY GLENN DUDDERAR, Extension Wildlife Specialist

HOUSE MICE can consume and contaminate food, destroy property and spread disease. They are dependent upon man for food shelter. **Therefore, population reduction techniques cannot be effective unless food and shelter are eliminated first by good sanitation and rodent-proofing.**

Mice leave greasy smears along their travel routes, small oblong droppings about 1/8 inch long, gnaw marks on surfaces, and spilled or partially eaten food. House mice may be identified by grayish brown color, grayish belly, and uniformly gray, naked tail.

HABITAT ALTERATION

Sanitation

Eliminate all accumulations of trash, debris, etc., inside and out. Remove all spilled food and litter as soon as possible, but at least once daily.

Store all materials, lumber, boxes, pipe, etc. on stands at least 18 in. above the ground or floor and 1 ft. away from the walls.

Store food and feed in metal, rodent-proof containers, if possible. Otherwise store on stands at least 18 in. above the floor. Keep all food containers tightly closed.

Set equipment, appliances, cabinets, etc. flush against the wall or out far enough to allow cleaning behind them.

Use metal garbage cans with tight-fitting lids.

EXCLUSION

Rodent Proofing

Close all openings 1/4 in. in diameter or larger with cement, sheet metal or screening.

Cover all edges of doors, window sashes, etc. with sheet metal or hardware cloth to prevent gnawing and entry.

To prevent climbing, tightly fasten a 12-in. square of sheet metal in all corners at least 12 in. above the floor. The

square should lay flat against both walls.

Where utilities enter concrete, stuff steel wool or hardwood cloth in the hole and fill with concrete. Where utilities enter wood, fit sheet metal tightly around utility.

To rodent-proof an isolated structure, such as feed storage sheds and corn cribs, attach a skirt of 1/4 in. wire mesh at least 3 ft. wide to the structure. Bury the bottom edge 12 in. in the ground and cover the top edge with an 8-in. strip of sheet metal fastened to the structure. Treat doors and windows as suggested above. Attached structures, such as feed storage rooms, will have to be completely lined with hardware cloth.

HOME TECHNIQUES

Trapping

The most effective, versatile and inexpensive traps are the mouse-size snap traps available in many stores. Always use several traps; but if mice are numerous, many traps are necessary. Some excellent baits are cheese, raisins, nut meats, fresh crisp fried bacon, and a peanut butter-oatmeal mixture. Snap traps can be made more effective by enlarging the trigger, or bait holder, with a square of thin, stiff cardboard cut slightly smaller than the snapwire. Bait the cardboard with peanut butter.

Place traps where mice are seen or heard, and are most likely to run: along walls, under appliances and cabinets, and along rafters and pipes. Set traps perpendicular to mouse travel routes.

Use obstacles to force mice over the enlarged triggers of traps. If many traps are used at once, the mice can usually be eliminated before they become trap-shy. If mice become trap-shy, hide the trap, except for the baited trigger, with a layer of flour, soil, or sawdust, and use several different kinds of bait.

Poisons

Multiple dose poisons—Mice must consume several doses over several days before dying. Thus, these poisons are comparatively safe because accidental single doses, unless large, are not likely to kill. These poisons are warfarin, diphacinone, pival, PMP, prolin, fumarin and chlorophacinone.

Food baits for use with multiple dose poison—Commercial poison baits are available in many stores, or may be homemade. Any bait, commercial or homemade, should be fresh, not readily perishable, and more attractive than the food already available to the mice. Some excellent baits are corn meal, grits, bread crumbs and rolled oats. Mixtures of these materials, plus sugar, increase attractiveness. Kitchen grease, peanut oil and fish oil also help, but may cause the bait to spoil faster. Formulations for homemade poison baits are shown in the table below.

Water baits and multiple dose poisons—Water containing a multiple dose poison may be an effective poison bait if no other water sources are available to mice. Such baits must be exposed in nonmetal containers or water fonts

Poison	Concentration	Amount in bait
warfarin	0.1%	.05% by weight
diphacinone	0.1%	.05% by weight
pival	0.5%	.05% by weight
fumarin	0.5%	.05% by weight
chlorophacinone	0.28% (solution)	1 pint with 50 lbs.
prolin	0.1%	.05% by weight
PMP	1.1%	.05% by weight

such as those used for chicks. Formulations are given in the table (right).

Use of poison baits—Place poison baits at 8 to 12-ft. intervals in areas where evidence of mice is seen but where children and domestic animals cannot reach them and where there is no danger of contaminating food or feed. If necessary, use bait stations.

A bait station is a box with entrance holes large enough for mice and a tamper-proof lid secured by latch. Fasten box securely so that it cannot be moved. Label box **POISON**. Use $\frac{1}{4}$ to $\frac{1}{2}$ oz. of food bait per bait site.

All poisoned baits should be checked daily and replenished or replaced if cloudy, moldy, or rancid. Baiting should continue for at least 15 days or until bait consumption ceases. Try alternate locations if no bait is consumed. Dispose of all dead mice. Confine pets and feed them especially well during poisoning operations.

Odors—Putrification odors can be prevented only by removing the dead mice. Special deodorants available from pest control firms or industrial and chemical supply firms will reduce odors.

Cats—Cats may reduce a mouse population if sanitation is good enough so that the cats can easily pursue and catch the mice. Further, the cats must be fed enough to keep them from starving but little enough to keep them hungry for mice.

OTHER BUILDINGS AND AREAS

Methods suitable for home use are also suitable in other situations, but the following techniques can also be used anywhere but in home, food and feed areas.

Poisons

Strychnine—This fast acting poison is deadly to all warm-blooded animals. Treated baits are available from the U.S. Fish and Wildlife Service for use under government supervision (see

Poison	Concentration	Amount used
sodium salt of warfarin	0.127-0.14 % 0.54 %	1.5 oz. per qt. water 1.33 oz. per gal. water
sodium salt of diphacinone	0.106 %	1 $\frac{1}{4}$ level Ts. per qt. water
pivalyn	0.14 % 0.3 % 1.5 %	1.5 oz. per qt. water 1 lb. per 4 gal. water 4 gram packet per qt. water
fumasol	0.14 % 0.5 % 1.2 %	1.5 oz. per qt. water 1 Ts. per qt. water $\frac{1}{2}$ Ts. per qt. water
PMP	1.1 %	1 $\frac{3}{8}$ oz. per gal. water

“Sources of Supply,” U.S. Fish and Wildlife Service). Poison baits must be placed in areas accessible only to mice or in bait stations. See Home Techniques for bait placement and bait stations. Do not use this poison if pets or livestock may consume dead mice. Dispose of all dead mice.

Zinc phosphide—This fast acting poison is available in concentrate and treated bait forms (see “Sources of Supply,” U.S. Fish and Wildlife Service and Commercial). To prepare bait from the 94% concentrate form, add 2 oz. of vegetable oil to 1 oz. of the concentrate powder, stir thoroughly, and mix with 8 lb. of cracked corn or rolled oats until all grains are evenly coated. If not used immediately, store in container marked “ZINC PHOSPHIDE—POISON.”

Wash hands, face and utensils. Do not inhale dust. See HOME TECHNIQUES for bait placement and bait stations. Dispose of all dead mice.

RH-787 is a new slow-acting single dose poison for rats and mice. It is available commercially in a 2.0% bait. Pre-baiting should precede the actual baiting. RH-787 has little secondary hazard, and is more toxic to rats and mice than to most other vertebrates.

Tracking powders—The following rodenticides can be applied as a dust so that when mice walk through the pow-

der repeatedly, they pick up enough poison to kill them:

- chlorophacinone - 0.2% dust
- PMP - 2.18% dust
- warfarin - 1.0% dust

Dust the tracking powders into holes and travel routes of mice. Use obstacles to force mice through treated areas. Keep powder in treated areas for at least 20 days. Keep powders away from children, domestic animals or wildlife, or where the wind may disperse it. Use only where there is no possibility that it will contaminate food or feed. After completing control program, clean up powder and dispose of dead mice.

Poison gases—Certain gases are effective fumigants for mice. One of the less hazardous fumigants is chloropicrin, available in 15, 85 and 99% liquid concentrations. The type of area to be fumigated and its size determine the concentrations and amounts required. Specific directions are on the label. In general, the area to be fumigated must be made airtight. The liquid concentrate can be piped into the area or poured onto crumpled absorbent material that serves as a wick.

Wear safety masks. After fumigation, the area must be well aired for several hours before use. Persons unfamiliar with fumigants, especially the more hazardous ones, should obtain professional assistance.