Controlling Meadow Mice in Residential Areas, Parks, Orchards, Forests, and Christmas Tree Plantations
Michigan State University Extension Service
Charles Shick, Wildlife Specialist
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CONTROLLING MEADOW MICE

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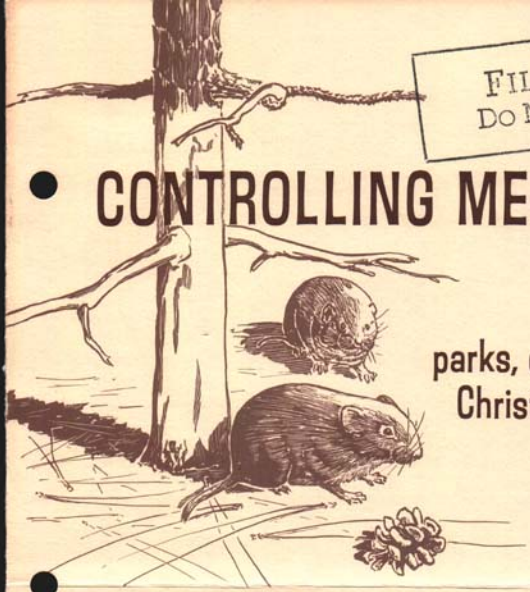

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

Charles Shick
Extension Wildlife Specialist

MEADOW MICE, one of several kinds of mice found in Michigan, sometimes become problems in orchards, Christmas tree plantations, parks, nurseries and landscaped residential areas. The animals, more accurately called Microtus or meadow voles, cause damage by feeding on bark of trees and shrubs. There can be great fluctuations in their numbers from year to year and, as expected, this damage is usually greatest in years when the animals are abundant.

DESCRIPTION

The meadow mouse is small when compared to a chipmunk. However, it is the largest mouse living in Michigan, weighing about 1¼ ounces when full grown.

The upper parts of a meadow mouse are slate gray to dark brown in color. The sides are covered with lighter colored fur and hairs on the under parts are silver-tipped. The ears are usually concealed by dense fur. The tail is twice the length of its hind foot. The animals eat mostly seeds, insects, and succulent parts of a variety of plants.

*This publication is based on information from several sources, much of it from the U. S. Fish and Wildlife Service.

Meadow mice are sometimes incorrectly identified as pine voles. The latter are smaller animals, weighing about one ounce when full grown. A reddish brown fur covers the back of a pine vole. It has a tail equal to half the length of one of its hind feet.

THE NEED FOR CONTROL

Meadow mouse damage to trees and shrubs generally occurs in winter under snow cover. However, in many instances the damage is not noted until spring after snow has melted. Thus, the need for mouse control programs should be determined by periodic inspections from late summer through winter. Their runways (travel lanes) can be identified as narrow, shallow lanes in the sod. They are generally covered with grass. Number of runways, abundance of small mouse holes, mouse droppings, grass clippings and girdling on trees or shrubs indicate the presence and relative abundance of mice.

If there is evidence of a mouse infestation, control measures should be started after the fall fruit harvest in orchards and as soon as possible in other areas.

CONTROL METHODS

There is no simple and easy method for controlling meadow mice. All known control measures require

MEADOW MOUSE. *Microtus pennsylvanicus.* Length, including tail, ranges from about 4 4/5 inches to 7 3/5 inches.

PINE VOLE. *Pitymys pinetorum.* Length, including tail, ranges from about 3 1/2 inches to 5 1/5 inches. Note the short tail.

time, patience, and some expense. Sincere consideration for pets, domestic animals, and wildlife can complicate control problems. Additional precautions to protect desirable animal life could involve more time and possibly added expense.

Generally, one well planned mouse control program in late fall will give protection to Christmas trees, fruit trees, and shrubs for the duration of the winter. A mid-winter or spring control program might be necessary if inspection indicates that mice are still abundant.

Habitat destruction

Mouse numbers in orchards, residential areas and some Christmas tree and forest plantings can be reduced by destroying good mouse habitat (living conditions). This can be accomplished by eliminating high grass cover through repeated mowing or use of grass killing chemicals in and around tree and shrub plantings. Hay resulting from mowing operations should be removed as soon as possible since it will provide good cover for mice.

"Mouse guards" protect fruit trees

Wire netting "mouse guards" have been popular and effective in reducing damage in orchards, tree nurseries and residential areas. The netting, consisting of ¼-inch mesh hardware cloth, should encircle the base of fruit or ornamental trees and should be set 3-4 inches in the ground at the base of the tree-trunks. When extended 3-4 feet from ground level, the netting will prevent rabbit damage.

Wire mouse guards have several important advantages. Protection is provided for several years. After initial labor and material costs, there is little, if any, maintenance expense involved. Minimum number of inspections are needed.

Trapping

Trapping is a safe and practical way for the property owners to eliminate meadow mice from residential lots of 3 acres or less. Depending on size of the area, ½ dozen to 2 dozen wooden-based snap traps can do a good job in reducing mice. The traps should be set 5 to 10 feet apart in places where runways indicate mouse concentrations. They should be placed in empty milk cartons, tin cans or similar discarded containers set at right angles next to runways. The containers will protect the bait from rain and snow and at the same time keep birds from getting into the traps. (Milk cartons can be obtained from schools, restaurants or dairies.)

Peanut butter, oatmeal, or small slices of apple, sweet potato, or carrot make good baits. (Cheese is a highly over-rated bait.) The traps should be reset twice daily in the same general location until trapping success is nil. Then they should be moved to another part of the property where evidence indicates a mouse concentration.

Strips of white cloth attached to twigs or small sticks stuck into the ground will make it easy to locate traps set in brush and weed areas.

Repellents

Animal repellents are recommended for areas having from a few to large numbers of trees and/or shrubs. Several types have been tested recently by the U. S. Fish and Wildlife Service and are now available commercially. One chemical formulation, named *TMTD* or *thiram*, is recommended for protecting woody plants from meadow mice and rabbits. The bitter taste of the chemical is responsible for its repellency. When applied as a spray, it is especially useful on trees and shrubs in residential areas and large areas where trapping is impractical or where poisons present hazards to livestock, wildlife, and humans. A fall application will be effective through winter. The repellent can be used safely and effectively on trees or shrubs growing in nurseries, forest and Christmas tree plantations, orchards, parks, and small residential lots. Results from limited experiments indicate that TMTD can also reduce damage by hares, deer, beaver, and livestock. One disadvantage is that the chemical is relatively expensive.

When formulated with certain latex or resin adhesives and suitable additives, TMTD will protect woody plants from fall to spring. Used as a spray, the repellent must be applied when temperatures are above freezing. For good protection against mouse and rabbit damage, tree-trunks and shrubs must be adequately covered from ground level to at least 2 feet above the expected snow level. *Animal repellents containing TMTD should be used as directed by the manufacturers. Such directions are included on container labels.*

Several companies manufacture animal repellents containing TMTD, each being listed under their own trade name. Among the different trade names are "Arasan 42-S," "Tatgo," "Selco TMTD Rhoplex," and "Penco Thiran Animal Repellent". Other brands may also be available. See your local garden or farm supply store or grain elevator.

Poisons

Using Poison is a practical mouse control measure for areas having few to large numbers of trees and shrubs. A rodenticide containing 1 to 2 per cent zinc phosphide is available commercially. It is a mixture of zinc phosphide and magnesium carbonate or similar material. Small amounts of the rodenticide on bait will control meadow mice in orchards and Christmas tree or forest plantations. Since it is *poisonous to all forms of animal life*, the rodenticide should not be used in areas where humans, pets, domestic animals and desirable wildlife might be affected. *The material should always be handled and stored with care.*

Zinc phosphide rodenticide can be applied to the following baits: rolled oats*, cracked corn, ½ to 1-inch "cubes" of cull apples, slices or "cubes" of carrots and sweet potatoes. When dusted on apple, carrot or sweet potato cubes, the chemical is very effective but it begins to break down in 3-4 days, gradually losing its power to destroy mice. Apparently acid on these baits speeds up chemical decomposition. Cereal baits such as cracked corn or rolled oats, are effective for one or more weeks, depending on exposure to rain and other forms of moisture. During dry weather the treated grain should remain effective for 3 or more weeks.

Bait Stations

Zinc phosphide-treated baits should be placed under cover (bait stations). Where sod is thick, the treated bait can be dropped into openings in the grass canopy covering the runways. The openings should be covered with handfuls of grass or other mulch. In areas of sparce vegetation, a mulch bait station can be made with one or two forkfuls of hay or straw. Empty milk cartons or discarded tin cans (½ quart to 1-quart size) make excellent bait stations. They provide some protection against weather and reduce the opportunity for domestic animals and beneficial wildlife to take poison-treated bait. Oil cans (quart size) have ready-made "mouse holes" and can be used for several years as permanent bait stations. However, any oil film must be removed from the cans. This can be done by placing cans in a back-yard trash burner and burning the oil with the aid of old newspapers. Discarded vegetable and fruit cans or plastic cups also make ideal permanent bait stations. The open end of can or cup should be compressed so that only a small oblong opening remains, just large enough to allow a mouse to enter. (A mouse can get through a hole measuring 1½ inches in diameter).

Bait stations (mulch or containers) should be spaced 10-20 feet apart along drainage ditches, field borders, fence rows, or border plantings where evidence indicates the presence of mice. Mulch material should be

*Oats subjected to steam and then cracked between rollers.

distributed one week to 10 days before treated bait is used. When possible the hay or straw stations should be placed over runways. Mice already in the area will be attracted to the cover.

When empty milk cartons or tin cans are used for bait stations, they should be placed at right angles to mouse runways with open ends facing runways. Rain and snow can be kept from the bait by tilting containers so that the open ends are slightly lower than the closed ends. They should be placed so mice can enter with ease and so that the containers won't roll.

Depending on the abundance of mice in an orchard, 1 to 3 bait stations (mulch or containers) should be placed over or next to runways under each fruit tree. Stations should be spaced at 10-20 foot intervals in portions of Christmas tree plantations having many mice. Areas of light infestations may only require about 30 bait stations per acre or one about every 40 feet. Experience gained through repeated control programs will help a person determine the number of bait stations needed.

One or two level tablespoons of zinc phosphide-treated oats or cracked corn or three to five "cubes" of poisoned apple, carrot or sweet potato should be placed at each station. Generally, one application of zinc phosphide-treated bait after the fall harvest will keep an orchard or tree plantation relatively mouse-free from fall to spring. However, an inspection about 10 days after initial treatment will determine the need for continuing the control program. Fresh mouse droppings, active mouse runways, fresh grass clippings, and possible tree or shrub damage will indicate presence of mice and need for additional treatment. Place fresh apple, carrot or sweet potato bait under mulch or in containers at 4-5 day intervals until there is little or no evidence of mice. Rolled oat or cracked corn baits need not be replaced as often since the poison will not decompose as readily as on other baits.

Sources of Rodenticide

It is advisable to purchase ready-mixed rolled oats or cracked corn baits. They are usually properly prepared and there is no substantial savings in home-made mixtures. Some Michigan gain elevators, farm and garden supply centers and dealers in agricultural chemicals carry the ready-mixed baits.

If local outlets cannot supply ready-mixed baits containing zinc phosphide rodenticide, it can be purchased from:

U. S. Fish and Wildlife Service
Agricultural Experiment Station
Purdue University
West Lafayette, Indiana

Upon request, the U. S. Fish and Wildlife Service will provide directions for preparing and storing large quantities of grain bait. It also makes rodenticide, containing two per cent zinc phosphide, available in one-ounce cans to persons who wish to mix their own bait materials. Five-can lots of the rodenticide sell for about $3.00 or 60 cents per ounce can.

Mixing Your Own Baits

The following formula is recommended for preparing small quantities of zinc phosphide-treated bait for immediate use. Cut cull apples, sweet potatoes or carrots into ½ to 1-inch "cubes" or slices for bait. Apples, 2-3 inches in diameter, should be cut into about 16 pieces. Place the bait material in a discarded metal container (pail) and sift rodenticide containing two per cent zinc phosphide over the bait while stirring with a flat stick. This will result in a uniform coating of poison on all pieces of bait. Use the following proportion of poison to bait material:

One quart of apple, sweet potato, or carrot "cubes".

One level teaspoonful (1.5 grams) of rodenticide containing two percent zinc phosphide.

When a large quantity of treated bait is needed, mix a one-ounce can of zinc phosphide rodenticide with 20 quarts of "cubed" apple, sweet potatoes, or carrots. A discarded metal container (pail) can be used for this purpose. Twenty quarts of treated bait is sufficient to protect approximately 1,000 fruit trees. The treated bait should be used immediately. It cannot be stored for future use.

CAUTION

Keep in mind that zinc phosphide rodenticide is a poison and can be harmful to all forms of animal life, including humans. Use rubber gloves to mix and distribute the bait. Don't smoke while mixing poison with bait. This safety measure will prevent the toxic chemical from being carried to the mouth. Wash hands, gloves, and utensils thoroughly after mixing bait. Store zinc phosphide and rodenticide treated baits in a safe place.

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