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Michigan State University Extension-  
Oakland County

# Moles



Star-Nosed Mole

## Biology and Behavior

The two species of moles found in Michigan are the eastern mole (*Scalopus aquaticus*) and the star-nosed mole (*Condylurea cristata*). Correct identification is vital to mole damage control.

Both species of Michigan moles have large shovel-like front feet with long claws. The eastern mole has a naked red nose and a short tail. The star-nosed mole has a large red nose with 22 finger-like projections and a long tail. The eastern mole makes many shallow tunnels that raise the soil into long winding 2-inch high ridges. The few mounds it makes are low, rounded and often have bits of turf on them. It prefers well-drained soils. The star-nosed mole makes many deep tunnels not evident on the surface, but it pushes up soil from these tunnels into many conical mounds of raw earth. Some mounds may be more than 6 inches high and 12 inches wide. It prefers moist soils.

Moles are not rodents, but insectivores. They lack the rodents' longer incisor teeth for

gnawing. Thus, their main diet consists of earthworms, insect larvae and other invertebrates living in the soil. Occasionally they eat plant seeds, roots, and bulbs, but most of the damage to landscapes and lawns is done by uprooting plants and grass as they burrow for insects.

Moles are active day and night throughout the year but they are most active in spring and fall, on damp days or following rain showers. When the ground becomes frozen in the winter or very dry during the summer months, moles use only the deeper burrows. Daily peak activity periods are during the morning hours, although they may be seen working off and on throughout the day and night. They have a very extensive underground tunnel system, including travel tunnels (which are used daily) and foraging tunnels (rarely reused).

Mating occurs during February and March, with a single litter of three to five young born later in the spring following a 6-week gestation period. Young moles grow rapidly and leave the nest to fend for themselves at about one month of age.

The number of mounds or surface ridges seen in a yard is no indication of how moles may be present. Generally, one acre of land will support no more than two or three moles at one time. However, yards surrounded by or adjacent to large tracts of forested areas or weedy fields may be subject to continual invasions by moles because such areas may support many moles.



Eastern Mole

**Eastern Mole Damage**



Despite the damage done by moles around yards and gardens, there are aspects of this creature which are very beneficial. Moles make soils healthier because their tunnels permit air and water to penetrate deeper soil levels. Moles feed voraciously on all types of insects found in the soil, some of which are serious pests of lawns, gardens, and horticultural plants. They are also part of the food chain in the wildlife community, providing food for hawks, owls, and snakes.

However, when moles become obnoxious or destructive, landowners often feel that the disadvantages outweigh the advantages. At this point control is often desired. The following methods can be used to control the damage.

## **Mole Control**

**Direct Killing** - Although eastern moles may burrow at any time, they are usually most active at certain times, depending on the season. Most activity occurs when flattened ridges or mounds are repaired. Once you have determined when the eastern moles are most active, look during those times to see the long winding ridges being pushed up by the eastern mole tunneling just below the surface of the ground.

With practice you can quickly and quietly approach the tunneling mole and kill it by smashing the ground down with a shovel or similar instrument just behind where the earth is being lifted up. Repeat application

of this method can rapidly remove eastern moles from an area. This method rarely works for the star-nosed mole because it usually burrows too deeply.

**Trapping** - Trapping is the MOST reliable method of mole control. The key to success is patience, practice and persistence. Eastern moles are easy to trap provided that the trap is placed on a tunnel that is actively being used every day and that problems with function of the trap are noted and resolved. Moles have an uncanny ability to detect and spring improperly set traps. So place carefully and keep trying until experience leads to success. Locate active tunnels of eastern moles by gently mashing a short section of every ridge that you can find with your foot and marking it in some way. Any ridge that has been pushed back up within 12 to 24 hours is over an active tunnel. Traps on these ridges should catch a mole every 24 to 48 hours until all using the tunnel beneath are caught. If a trap hasn't caught a mole in three days, it is in the wrong location or it has caught all the moles in that particular tunnel and should be moved to a new location.

There are three types of traps, the harpoon type trap, the choker type trap, and the scissor type trap. Of these three types, the choker type seems to be the easiest for most people to use successfully on the eastern mole. In heavy clay soils, the frame of the harpoon trap will sometimes rise up out of the ground rather than impale the moles. If this happens, use coat hangers and small pieces of wood or metal to stake the trap to the ground. With all types of traps, work the harpoons or jaws of the trap back and forth or up and down through the soil to insure smooth penetration of the soil. If any trap is sprung prematurely so that the mole is not caught, remove a small piece of sod from under the trigger pan so as to delay the action of the trap. If moles burrow around a trap, then either the soil has been flattened too tightly, or part of the trap is projecting into the tunnel and alarming the mole.

To trap star-nosed moles, locate active tunnels by scattering the soil of each mound un-

til it is flat. Mounds that are pushed back up in 24-48 hours are over the active tunnels. To set the trap, it is necessary to dig a hole beneath one of the mounds of earth. The hole should extend to the bottom of the mole's tunnel, usually 4 to 6 inches below the surface of the ground. Refill the hole with enough earth to cover the top of the mole's tunnel with approximately 2 inches of earth. Set the harpoon-type trap in the hole.

**Poison Baits containing Talpirid®** - Actual research on moles tends to support this poison bait as being effective. Talpirid looks just like an earthworm, one of the moles favorite food. Unfortunately it's now also available in a grub looking form reinforcing that suburban legend of grubs equals moles. Professionals and homeowners alike continue to report good results with this product. Care must be taken with baits to protect non-target animals such as dogs, cats, birds, squirrels and chipmunks.

**Repellants** - There are several products that are available to "discourage" moles. Castor oil based products are widely available and some success stories have emerged from these products, but results can be inconsistent.

## Ineffective Methods of Mole Control

- smoke cartridges
- mothballs or mothflakes
- planting a barrier of plants that are toxic such as castor beans, marigold, or Fritillaria (no research to support claims)
- home remedies such as chewing gum, razor blades, glass, hair etc.
- poison peanuts
- vibration devices

**Insecticide Use** - A suburban legend that often comes forward when considering mole control is that the lawn must have grubs. Moles do not equal grubs and grubs do not equal moles. Just because you have moles doesn't mean you have grubs and eliminat-



ing grubs will not eliminate moles! Moles are insectivores. They eat insects, worms, and other invertebrates. Grubs are just a portion of their diet. If you have grubs and they are slowly decimating your turf, you probably want to control them, but don't apply insecticides simply thinking you'll get rid of the moles.

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## References

"Controlling Vertebrate Damage - Moles" by Glen Dudderar, Extension Wildlife Specialist, MSU Extension Bulletin E0863.

"Animal Damage Control - Moles" by Robert Corrigan, Animal Damage Control Specialist, Cooperative Extension Service, Purdue University ADC-10.

"A Report from the Mole Patrol" by Greg Lyman, Crop and Soil Sciences MSU Extension, Landscape CAT Alert June, 1997.

"Moles in the Lawn" by Kevin Frank, Michigan State University Extension, Department of Crop and Soil Sciences

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