

## Moles<sup>1</sup>

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### Description

The eastern mole, *Scalopus aquaticus*, occurs throughout Florida. Moles are not rodents but belong to the mammalian Order Insectivora. Insectivora means insect eater, and this group includes moles, shrews, and hedgehogs. The most notable aspect of the mole is its large, powerful front feet, designed for pushing soil out of its way (Figure 1). The eastern mole has an average total length of 5 1/2-6 in (14-15 cm) and a short, sparsely haired tail 1-1 1/2 in (2.5-3.8 cm) long. The fur is very soft and differs from that of most mammals because it does not project toward the tail. With their fur pointing up, moles can move forward or backward within their tunnels without rubbing their fur the wrong way and trapping soil in their coats. The coat is so fine and dense that it keeps out water and dirt. The fur is slate gray with a velvety sheen. Moles living in red clay soils sometimes appear rusty in color. Their bellies may be slightly lighter in color, and some individuals may have tan or orange blotches on their bellies.

The star-nosed mole, *Condylura cristata*, has been collected in the Okefenokee Swamp in Georgia and has been reported in Florida. It is identified by numerous fleshy, fingerlike projections around the tip



**Figure 1.** Eastern mole, *Scalopus aquaticus*

of its nose. This mole is normally found in wet soils, in marshes, and along streams, so it rarely causes problems in yards and turf. Because of its rarity in Florida, the star-nosed mole will not be discussed further.

### Habitat and Food

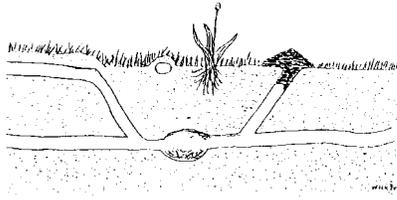
The eastern mole prefers loose, well-drained soils. It has been found in dune sand and rich forest humus. The characteristic mole ridges that lie just below the surface are foraging tunnels (Figure 2). These tunnels are created as the mole searches among the plant roots for the earthworms and insects on which it feeds. Moles are beneficial because they eat mole crickets; beetle larvae (white grubs, wire worms, etc.); ants and ant brood; moth larvae and pupae (cutworms and armyworms); and slugs. They also help to loosen and aerate the soil. In loose soil, moles can tunnel up to 18 ft (5.4 m) per hour. Their living space is in tunnels and chambers 6-12 in

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1. This document is WEC-66 (UW080), one of a series of the Department of Wildlife Ecology and Conservation, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication: May 1994. Revised: August 2009. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>.

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(15-30cm) below the surface. Soil from these deep burrows is pushed to the surface in small mounds.



**Figure 2.** Diagram of both deep nesting tunnels and shallow foraging tunnels of the Eastern mole.

### Reproduction

The mole's nest chamber is 4-6 in (10-15 cm) in diameter and lined with fine grass and leaves. Moles have one litter of 2-5 young per year. The young are born in March after a 45-day gestation period. They are large at birth relative to the size of their mother and are able to fend for themselves in about four weeks.

### Damage and Control

The damage caused by moles is almost entirely cosmetic. Although moles are often falsely accused of eating the roots of grass and other plants, they actually feed on the insects causing the damage. The tunneling of moles may cause some physical damage to the root systems of ornamental or garden plants and may kill grass by drying out the roots, but this damage is usually minor.

When mole tunnels become an intolerable nuisance, moles may be captured and removed without a permit by homeowners, renters, or employees of the property owner. If a lawn service or pest control technician is hired to trap nuisance animals, that person must have a certified pest control operator's license in Lawn and Ornamental pest control or some special certification may be required for commercial mole control. No poison (bait or fumigant) may be used on native wildlife in Florida, with the following exception effective July 1, 2008.

Title 68A -9.010 (2) of the Florida Administrative Code

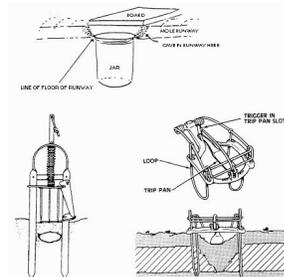
(2) Methods that may not be used to take nuisance wildlife:

(c) Poison, other than those pesticides that are registered by the Florida Department of Agriculture and Consumer Services without additional authorizations and are only used in a manner consistent with the product labeling.

This means that registered mole and pocket gopher products available in stores in Florida are now legal to use on these two native mammals. Some products purchased from outside of Florida on the Internet may still not be legal to use if they do not have a Florida registration.

Flooding the tunnels with water may force moles to the surface, but this method rarely works in deep, sandy soils like those common in Florida.

Moles can be live trapped using a simple pitfall (Figure 3). Find an active surface tunnel. Collapse a tunnel with your foot, then come back in an hour or two to see whether the tunnel has been reopened. If the tunnel has been pushed back up, it is an active tunnel. Dig a hole through the tunnel large enough to insert a large coffee can, wide-mouth quart jar, or similar container. Sink the can into the ground so the top of the container lies just below the bottom edge of the tunnel. Cover the area with a piece of cardboard or a board and the soil from the hole to keep light and air currents from alerting the mole to the trap. When the mole falls into the trap, the whole container can be pulled out of the ground and the mole carried to a forested area and released. Check your live trap often (several times a day). If this is not done, trapped moles may die from starvation or thirst.



**Figure 3.** Pitfall, harpoon and choker-loop traps.

Commercial mole traps are available in two main types: the choker-loop and the harpoon. The harpoon trap impales the mole with steel spikes when the animal pushes up on the trigger. To improve soil penetration, the spikes should be worked into the soil

prior to setting the trap. Step on the tunnel to partially collapse it and set the trap so the trigger is over the collapsed section of tunnel. A plastic bucket can be placed upside down over the trap to keep children and pets from disturbing the trap.

The choker-loop trap kills the mole by squeezing it between the loop and the trap body. Lay the trap next to the mole tunnel. Make two slits across the tunnel with a spade. Step on the tunnel between the slits to partially collapse it. The choker loops are inserted into the slits, and the trigger is positioned over the collapsed tunnel. Read and follow the instructions that come with the trap you purchase. Set traps in active tunnels. If the trap is not sprung within three days, move it to a new, more active location.

Small, sensitive areas can be fenced to keep out moles, gophers, and pine voles (Figure 4). The barrier should be made with small-mesh galvanized hardware cloth, brick, or concrete. The barrier should extend at least 6 in (15 cm) above the ground and 2 ft (0.6 m) below the ground, with an outward projection extending 3-6 in (7.6-15 cm).

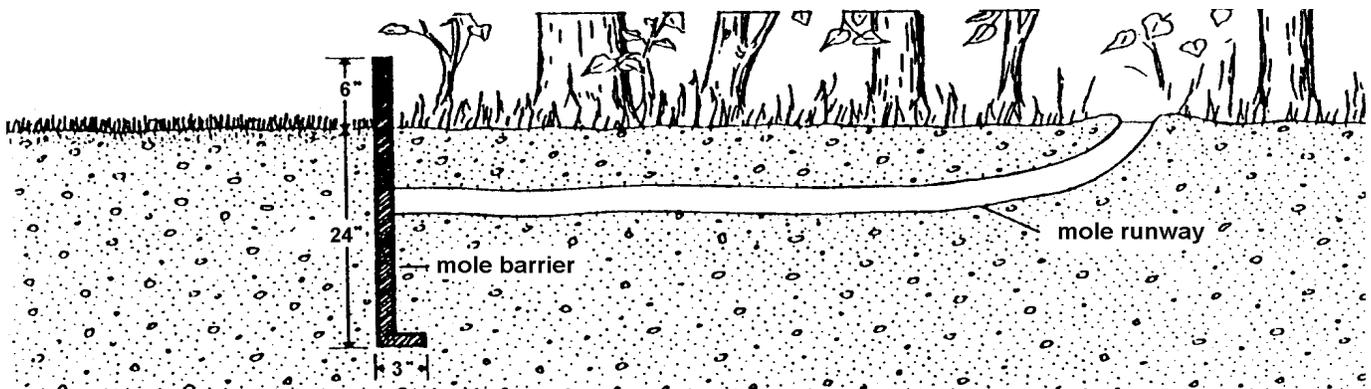


Figure 4. Underground exclusion fence.

Moles can be discouraged from digging foraging tunnels in turf by controlling the populations of insects on which they feed. Elimination of white grubs, mole crickets, and other soil insects will make an area less attractive to moles. Identify the insect pests so the appropriate control method can be used. Ask your local county horticultural extension agent to recommend insecticides for your particular insect problem. Always follow label directions when using any pesticide. Nematodes or bacteria that parasitize insects can be used instead of chemical pesticides to control turf insects. If your soil is rich in organic

material and supports a large earthworm population, insecticide treatments will not necessarily discourage moles. Also, be aware that insecticide treatment of an area may cause moles to tunnel more to seek out a diminishing food supply.

Several mole repellents are available that use emulsified castor oil to repel moles from treated areas. The duration of effectiveness of these products is related to soil type and the amount of rainfall. They remain effective longer in clay and loam soils than in sandy soils. During rainy periods, these products may need to be applied more often. Always read and follow label instructions.

The use of vibrating devices to drive away moles has not been proven effective in scientific trials. In fact, the presence of mole tunnels next to highways would seem to be evidence against the effectiveness of these devices. The same is true for the use of mothballs to repel moles. The mole just blocks off the treated tunnels and moves to a different part of the yard. Many people claim that putting sticks of Wrigley's Juicy Fruit gum into moles' tunnels will

eliminate the moles. This is another method not proven in scientific tests.

## References

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