Mole Biology and Control

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The following contains information on what professionals and researchers say concerning mole biology, habits and control. Most of the following information comes from University web sites.

I. Biology

General Information

- "Moles are insectivores (they eat insects), and they may control some insect outbreaks" (Ohio State University Extension Fact Sheet).
- "Moles are from the family Talpidae which includes moles, desmans, and shrew-moles. The North American moles or New World moles are divided into the Subfamily Talpinae and of this group there are six moles on the continent, seven if you count the shrew-mole. All are insectivores and related on this continent only to the shrew. . . All moles can be damaging but Scalopus aquaticus or Eastern mole is by far the most widespread of the six. It is better described as the common or grey mole. It is the strongest of the group and is most often associated with tunnels and or mole mounds by residential homeowners" (The Mole Man).

Types of Moles

- "There are six species of moles in North America, and three of these may occur in your yard (Eastern Mole, Hairy-tailed Mole, and Star-nosed Mole). Of these, the Eastern Mole (Scalopus aquaticus) is most common in Ohio." (Ohio State University Extension Fact Sheet).

Appearance

- "Moles are characterized by beak-like noses, tiny rudimentary eyes, no visible ears, paddle-like front feet with large claws, velvety fur, and stubby, hairless tails" (University of Michigan Extension Service).
- "Moles have short, velvet-like fur that varies in color from gray to brown. A fully grown mole is 4 to 6 1/2 inches long, not including its short tail. Adults weigh 3 to 5 ounces. The eastern mole has a long naked snout with nostrils that open upward" (Nebguide - University of Nebraska-Lincoln, *Moles and Their Control*)

- "A mole's fur is soft and brownish to grayish with silver highlights. When brushed, the fur offers no resistance in either direction" (*Controlling Nuisance Moles*, Cooperative Extension Service, Kansas State University).
- "Moles are about the size of chipmunks (6-8 inches in length) and can weigh three to six ounces" (Ohio State University Extension Fact Sheet).
- "[Moles] are similar in appearance and size to shrews and meadow mice and may occupy the same habitat. They are seldom seen by humans; when seen, they are frequently mistaken for mice or shrews. . . The most conspicuous features of the mole are the greatly enlarged paddle-like forefeet and prominent toenails, which enable the mole to literally swim through the soil. The legs are strong, the neck short, and the head elongated. Moles lack external ears and their eyes are so small that at first glance they appear to be missing." (*Controlling Nuisance Moles*, Cooperative Extension Service, Kansas State University).

Reproduction, Gestation

- "Each year a mole can have one litter of two to six young, depending on the health of the female. Gestation lasts about five to six weeks, which means that you can expect litters anywhere from mid-April through May. Believe it or not, young moles have less than a 50% chance of surviving long enough to reproduce." (Ohio State University Extension Fact Sheet).
- In April, after a 45-day gestation period, two to five large, hairless, helpless young are born in the underground nest chamber. They are about half grown at five weeks and leave the nest week to fend for themselves. They become sexually mature in one year" (University of Kentucky College of Agriculture, *Managing Mole Problems in Kentucky*).

Other Characteristics

- "Moles contain twice as much blood and twice as much hemoglobin as other mammals of similar size. This allows moles to breathe more easily in underground environments with low oxygen." (Ohio State University Extension Fact Sheet).
- "The mole seems to possess a natural shrewdness and ability to sense danger and can be somewhat challenging to trap" (*Controlling Nuisance Moles*, Cooperative Extension Service, Kansas State University).

II. Feeding and Colonization Habits

Diet

- "Typically a mole diet includes earthworms, beetles, grubs, and other insect larvae. Moles seldom feed extensively on plant material" (University of Michigan Extension Service).
- "A 5 ounce mole will consume 45-50 lbs of worms and insects each year" (Ohio State University

Extension Fact Sheet).

- "Moles have a voracious appetite and can eat 70 to 100 percent of their weight daily. They feed while burrowing just below the ground surface where their preferred foods, including insect grubs, adult insects and earthworms, are abundant. Plant parts are eaten only occasionally" (Nebguide - University of Nebraska-Lincoln, *Moles and Their Control*).

Tunneling

- "Moles can dig surface tunnels at approximately 18 feet/hour" and "Moles travel through existing tunnels at about 80 feet/minute." (Ohio State University Extension Fact Sheet).
- "moles create shallow and deep tunnels. It is the only animal that creates a surface tunnel. These tunnels are usually temporary feeding burrows. Some may be used as travel lanes, while others may be traveled infrequently or abandoned immediately after being dug" (University of Kentucky College of Agriculture, *Managing Mole Problems in Kentucky*).
- "Moles live alone, but burrow systems of several moles may connect. Burrowing occurs year round, peaking during warm wet months. When making feeding tunnels near the ground surface, moles may burrow as fast as one foot per minute. A single mole can create an extensive network of burrows. Therefore, one animal can be responsible for considerable damage to a lawn or garden" (Nebguide - University of Nebraska-Lincoln, *Moles and Their Control*).

Colonization

- "Moles can quickly colonize and spread through adjacent residential properties if not handled properly. Because they need a well-established tunnel network to survive, control will be more difficult the longer they are allowed to tunnel and become habituated. Moles will respond to changes in food supply as different insects become available in different places and at different times throughout the year. If disturbed, moles may temporarily leave an area but will usually return when you least expect it. Even without disturbance mole activity may last only a week or two in a particular area" (Ohio State University Extension Fact Sheet).

Lawn Damage

- "Lawn damage from mole activity and tunneling may take several forms. The surface tunneling separates the grass roots from the soil. Besides leaving a mushy or soft feeling when stepped on, the separated roots cause yellowing and dieing patterns in the lawn. Exposed soil along the tunnel ridges allow blowing weed seeds to propagate. (Crab grass and nimble weed often grow along mole tunnels. Deep tunneling, represented by mounding and bulging of soil also will cultivate weed growth" (The Mole Man).

III. Control

Trapping: The Most Effective method of control

- "Trapping is probably the homeowner's most cost-effective method of control. Successful trapping requires time, patience, and knowledge of mole habits" (University of Michigan Extension Service).
- "Trapping is the most effective and practical method of mole control. In general, trapping success is greatest in the spring and fall, especially after rain. In the summer and winter, moles are active in deep soil and more difficult to locate." (Ohio State University Extension Fact Sheet).
- "Animal damage control specialists at Purdue University consider trapping to be one of the most effective means of controlling moles" (Plant and Pest Diagnostic Library, *Moles in Lawn*, Purdue University).
- "Because of the mole's unique biological attributes, the most effective way to control moles is trapping. (University of Kentucky College of Agriculture, *Managing Mole Problems in Kentucky*).
- "*Trapping is the only effective method of control.* It is literally a war of attrition" (The Mole Man).

Inadequate Control Methods

- "If you are like most homeowners, you are probably confused by all of the conflicting "advice" on mole control. You may believe that every rumor, home remedy, or control method is worth trying. A common example is when homeowners try to control lawn grubs and insects to reduce mole activity. However, this is often unsuccessful because the mole's primary food source is earthworms." (Ohio State University Extension Fact Sheet).
- . . . many chemicals and home remedies (including castor oil derivatives and grub controls) are not only ineffective when dealing with moles, but they allow the animals time to establish and become real problems." (Ohio State University Extension Fact Sheet).
- "Numerous home remedies have been used, but results are inconsistent and generally ineffective. Remedies such as pickle juice, broken glass, red pepper, razor blades, bleach, moth balls, rose branches, human hair balls, vibrators, ultrasonic devices, castor bean derivatives (Castor Oil), and explosives may relieve frustrations, but they have little value in controlling moles and may harm you or the environment. Furthermore, certain chemicals or explosives are illegal to use" (Ohio State University Extension Fact Sheet).
- "There are a number of difficulties poisoning moles" (*Controlling Nuisance Moles*, Cooperative Extension Service, Kansas State University).
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