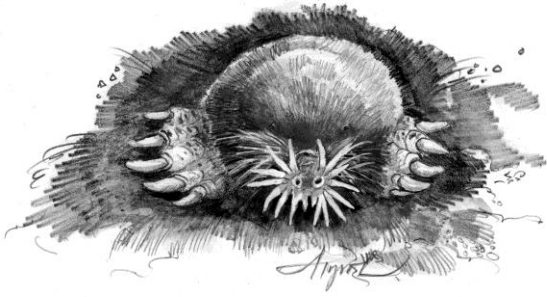


The Outside Story



The Dirt on Moles

By: Susan Shea

My dog watched intently as an area of soil in our backyard vibrated and formed a slight ridge. Suddenly he began digging, revealing a mole below ground. Before Cody could pounce, I grabbed his collar and pulled him away. This was not the first time I'd rescued a mole. When I lived on a country estate years ago, my landlord disliked the mounds and ridges on his lawn and set traps — the kind that spear moles. I would sneak outside at night and spring the traps.

Moles are fascinating creatures specialized for underground living. Though they resemble rodents, they are insectivores, and are more closely related to shrews. Shaped like an Idaho potato, moles have a reduced pelvis and hind legs, enabling them to turn easily in narrow tunnels. Powerful shoulders and front legs and shovel-like feet with heavy claws and a sixth digit aid in digging.

Nearly blind, moles find their way in the darkness using their keen senses of smell, hearing and touch. As moles dig, their tiny eyes

are protected from dirt by thin membranes. Nostrils are located on the sides of their pointed snouts to prevent clogging, and ear openings are hidden beneath short velvety fur. Whiskers and hairs on the forefeet likely assist navigation. (As with other tunneling animals, the tension from whiskers bending as they encounter surfaces sends messages to the brain, helping moles interpret the space around them). Several glands that emit a strong odor may function in scent-marking, enabling communication with other moles.

Two species of moles are found in our region: the hairy-tailed mole and the star-nosed mole. The hairy-tailed mole inhabits forests, fields, and roadsides with well-drained soils, up to about 3000 feet in elevation. It feeds voraciously on earthworms, insects, insect larvae, millipedes, snails, and slugs, consuming more than its own body weight each day. Active both day and night, these moles are sometimes seen above ground at night foraging.

Hairy-tailed moles excavate a complex system of subsurface tunnels, deeper in winter (10 to 20 inches below ground). A mole digs at a rate of 10 to 20 feet per hour, alternately bringing its forepaws towards its snout, then thrusting them out and backward, pushing dirt aside or beneath the body, where it is kicked behind. The mole's body rotates 45 degrees to each side, forcing loose soil upward and creating ridges. Molehills are the result of a mole turning around and pushing accumulated dirt out of its burrow. A mole's home range averages only about one-fifth of an acre, and in good habitat, as many as 12 moles can be found in an acre.

The star-nosed mole, our other local species, is a strange-looking creature. It is named for the

star-shaped, fleshy, pink nasal disk on the end of its snout which has 22 tentacles or rays. The star functions as a tactile eye, according to neuroscientist Kenneth Catania of Vanderbilt University, who has studied these moles extensively.

As the star-nosed mole explores its environment, the rays of the star are in constant motion, and over 100,000 nerve fibers send information to the brain. Catania has found that a giant star pattern mirroring the mole's unusual nose is visible in the brain's anatomy. Like its hairy-tailed cousin, the star-nosed mole is voracious, and it holds the record for the fastest mammalian forager. It can identify and eat food in less than two tenths of a second.

Star-nosed moles live in deep, mucky soils in wet meadows, marshes and swamps and near ponds and streams. They feed on aquatic insects and worms, crayfish, snails, and occasionally minnows or plant material. These moles are good swimmers and divers. Catania has discovered that star-nosed moles smell underwater by exhaling air bubbles onto objects or scent trails and then re-inhaling the bubbles to carry the smell back to the nose.

Both the hairy-tailed and star-nosed moles are species of concern in Vermont, according to University of Vermont zoology professor Bill Kilpatrick. He said we don't have enough information about moles, and invasive species of worms may impact populations of their prey.

Moles play a valuable role as habitat creators. Other animals such as mice, shrews, weasels, salamanders and snakes use their tunnel systems. Moles also provide food for foxes, weasels, owls, hawks, and other predators.

Closer to home, although you may not care for the ridges and hills they create in your lawn, it's worth noting that they can help keep grass healthy, both by consuming large quantities of grubs, and by aerating the soil. So the next time you see a mound of soil on your lawn, you may not want to make a mountain out of a molehill.

Susan Shea is a naturalist, writer and conservation consultant who lives in Brookfield, Vermont. The illustration for this column was drawn by Adelaide Tyrol. The Outside Story is assigned and edited by Northern Woodlands magazine, and sponsored by the Wellborn Ecology Fund of New Hampshire Charitable Foundation: wellborn@nhcf.org.

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Woodlands**

PO Box 471, Corinth, Vermont 05039
Tel. 802.439.6292 Fax 802.439.6296
www.northernwoodlands.org

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