

Super Star

2018 has come in with deep cold, the kind that engenders awe for the many creatures that survive outside our warm homes. Ice and cold are among the forces that have shaped these creatures, and each is a superbly adapted gem. On this particular winter day, I invite you to consider the most peculiar among our local mammals, the star-nosed mole. These little beasts plow their way through winter guided entirely by one of the planet's most wondrous noses.

While most noses specialize in olfaction, the star-nosed moles' also serve as hands that feel their way through a dark world. The rays of fingers around their nostrils are equipped with 25,000 Eimer's organs, sophisticated touch receptors, making this nose the most sensitive tactile structure yet devised by any mammal. As the moles hustle through their tunnels, these little fingers flutter, and when they detect possible food, they press their ultra-keen shortest tentacles onto it. These generate a highly detailed "image" that allows the mole to identify even tiny invertebrate prey. These moles hold the mammalian record for speed eating— finding and devouring prey in a just over a tenth of a second. Like their cousins the shrews, moles have a high metabolic rate and need to feed continuously. They can eat their own weight in prey in one day.

With their spade-like front paws, short velvety fur (there is no "wrong direction" to pet a mole), and finger faces, these little guys are well-equipped for subterranean

existence, so here's a star-nosed surprise: they are also semi-aquatic and do much of their hunting along the bottoms of ponds and streams, especially in the winter. Here, their digging paws function as paddles and their snouts are used to search for prey. Scientists observing this phenomenon in aquariums discovered yet another star-nosed innovation—these moles can use their sense of smell underwater, the first mammal found to do so. They do this by beginning to release air bubbles from their nostrils, and then re-inhaling them, along with scent molecules that came in contact with the outside of the bubbles.

Moles are difficult to observe in their native places, at least by animals with our evolutionary handicaps. I admit that I once found it hard to imagine star-nosed moles as full participants in the joys and trials of mammalian life. Then I discovered video footage that shows them foraging in tunnels and beneath the ice in streams. In the videos, they exhibit the talents of their species with zest and skill, but more compelling were the universal mammal behaviors of scratching their itches, yawning, and snuggling with their siblings.

While you enjoy the visual wonders of the wintery world, snowshoeing, skiing, or skating along rivers and over ponds, consider that below, a star-nosed mole may be exploring the tactile wonders of the wintery world, paddling along beneath the ice. —Patti Smith

