



Shrews

Although most people never see one, shrews are plentiful animals that play an important role in nature. Shrews belong to order Insectivora, a diverse group considered the most primitive of true placental mammals. As their name suggests, Insectivores feed mainly on insects. Shrews do most of their feeding above ground or in tunnels in the leaf litter and other debris at the ground's surface. They are related to moles, insect-eaters that live deeper in the soil.

Shrews range in size from the pygmy shrew (a little over three inches long, weighing 0.08 to 0.13 ounces) to the short-tailed shrew (four to five inches long, 0.44 to 0.82 ounces). In each of the seven shrew species inhabiting Pennsylvania, the sexes are equal in size and weight.

Shrews have long, pointed noses, beady eyes and slender skulls. Their small ears are covered (or nearly so) by short, velvety fur. Here's how to tell one from a mouse: shrews have five toes on each foot (most mice have four toes on their front feet); shrews' teeth are sharp and pointed, and often stained dark (mice have chisel-like cutting incisors typical of rodents, without the dark staining); and shrews' eyes are beadier and their noses more pointed than those of mice. Most Pennsylvania shrews look fairly similar, and it often takes an expert to tell them apart.

Active year-round, shrews have terrific metabolic rates and must eat almost continuously. They are quick and aggressive and may attack animals larger than themselves. At least one species of shrew has poisonous saliva, a rare example of toxicity in mammals. Delivered with a bite, the toxin slows down or kills prey, and can cause soreness and swelling in humans.

Shrews are short-lived. They die from floods, starvation, rapid temperature changes, accidents, fights with other shrews and even from shock due to fright. Many predators catch and kill them, perhaps in mistake for mice, but since shrews secrete a repelling musky odor, predators often do not eat them.

Shrews raise several litters each year. Gestation is about three weeks. Newborn young are helpless and unfurred, but grow rapidly and reach adult size when 4 to 6 weeks old. For more specific life history information, see listings under each species.



masked
shrew

Masked Shrew (*Sorex cinereus*)

The masked shrew is the most widely distributed shrew in North America, ranging over almost all of the continent's northern half. It occurs throughout Pennsylvania. Overall length, 3.3 to 4.3 inches; tail, 1.4 to 1.8 inches; weight, 0.12 to 0.2 ounces (less than a dime).

Masked shrews molt twice a year. In winter, they are dark brown to almost black on their upperparts, lighter brown or grayish on their underparts. Summer coloration is lighter and

browner. *Sorex cinereus* closely resembles the slightly smaller pygmy shrew.

Masked shrews inhabit wooded areas, living under rocks logs and in the leaf litter, often in swamps or along stream banks or spring runs. Rarely found in dry fields, they occasionally inhabit hedgerows and stone walls in open country. Masked shrews spend most of their lives in underground runways they construct, or in the tunnels of mice or other small mammals.

Masked shrews sometimes climb into low bushes or fallen trees. They are good swimmers but rarely enter the water. Their ability to see and smell are poor, but their sense of touch is well-developed.

Masked shrews eat insects, worms, centipedes, slugs, snails, mollusks and spiders, vegetable matter such as moss and seeds, and carrion. They probably do not store food. One observer reported that a captive ate more than three times its body weight daily.

The species nests under logs, stumps, or rocks, in fist-size nests of leaves, grass and fine rootlets. Breeding runs from March to September. After an 18-day gestation, 2 to 10 (usually about 7) young are born. They are blind and helpless but grow quickly and are on their own after about a month. They mature sexually at 20 to 26 weeks of age. An adult female may raise three litters; the male remains with the family during the early life of the young.

Masked shrews are active day and night, but especially at dusk. An individual's heart beats 1,200 times per minute, evidencing its rapid metabolism. Owls, hawks, herons, shrikes, weasels, foxes, cats and the larger shrews kill masked shrews, few of which reach their maximum lifespan is about 18 months.

Smoky Shrew (*Sorex fumeus*)

The smoky shrew occurs throughout the Northeast from Nova Scotia to North Carolina. It inhabits most of Pennsylvania but is scarce in southwestern and southeastern counties.

Coloration is a uniform dull brown, except for the bicolored tail, brown above and yellowish below, and pale buffy feet. In summer, the fur is slightly darker and browner. The smoky shrew resembles the masked shrew but is larger, stouter and darker. Overall length, 3.7 to 5 inches; tail, 1.4 to 2 inches; weight, 0.21 to 0.35 ounces, about one-third the weight of a house mouse.

The smoky shrew prefers cool, damp woods with deep leaf litter. Prime habitats include deep, shaded hemlock ravines, northern hardwood forests, spruce and sphagnum bogs, and stream borders with moss-covered boulders and loess.

Smoky shrews may be active at all hours. They burrow through the leaf mold or travel in other animals' tunnels. They eat insects, salamanders, snails, worms, spiders and small birds either alive or as carrion.

These shrews build baseball-sized nests of dry vegetation deep within rocky crevices or stone piles, or under rotting logs,

stumps or boards. They breed from late March into August. Females bear up to three litters annually, of 2 to 8 (usually 5 to 6) young. Offspring are independent by one month of age.

Smoky shrews appear to be social animals, with populations fluctuating from year to year. They fall prey to short-tailed shrews, weasels, foxes, bobcats, hawks and owls. Maximum lifespan is about 17 months.

Long-tailed Shrew (*Sorex dispar*)

The long-tailed shrew inhabits the Appalachian Mountains from Maine to North Carolina. It occurs throughout Pennsylvania, except in the extreme southeast and west.

Sorex dispar likes cool, damp forests, deciduous or mixed. It is also called the rock shrew, since its preferred habitat is rock-slides, where it lives in natural tunnels among the jumbled boulders. In Pennsylvania, the species prefers mountain slopes.

Long-tailed shrews are dark gray with slightly paler underparts in summer, and are overall slate gray in winter. Total length, 3.9 to 5.3 inches: tail, 2 to 2.3 inches: weight, 0.14 to 0.21 ounces.

Foods include small invertebrates and plant materials. Little is known of the life history of this shy species, but it is probably similar to those of the masked shrew and smoky shrew, which often share the same habitat.

Pygmy Shrew (*Sorex hoyi*)

The pygmy shrew ranges across much of northern North America. It occurs in northern and western Pennsylvania, but records are sparse.



This is the smallest mammal in Pennsylvania and one of the smallest in the world. Overall length, 3.2 to 3.8 inches; tail, 1.1 to 1.3 inches; weight, 0.08 to 0.13 ounces—about half that of a large earthworm. In the field, the pygmy shrew is almost impossible to distinguish from a small masked shrew.

Pygmy shrews often live in wet or closely mingled wet and dry habitats. They live under old stumps and rotting logs, among the litter in sedges, ferns, aspen clumps, and hardwood forests, and in heavy conifer stands bordering water.

We know almost nothing about the species' life history, but it is probably similar to those of other long-tailed shrews (long-tailed, smoky and masked shrews).

Short-tailed Shrew (*Blarina brevicauda*)

The short-tail is one of the commonest shrews and most abundant small mammals in its range. It inhabits the eastern United States from southern Canada to Florida, and occurs statewide in Pennsylvania.

This shrew is dark slate above and paler below, slightly lighter in summer than in winter. It is the largest and most robust of Pennsylvania shrews. Overall length, 4.1 to 5.2 inches; tail 0.7 to 1.2 inches; weight 0.44 to 0.82 ounces.

Short-tailed shrews live in almost all habitats: woods, banks of small streams, tall grass and brush. They frequent the top few inches of soil and leaf litter, digging their own tunnels or using those of mice, voles and other small mammals. They burrow through the snow in winter. Home range is a half-acre to an acre. Active day and night, short-tailed shrews eat insects, worms, snails, salamanders, small snakes, songbirds, mice, voles, other shrews, carrion and vegetable matter. Individuals cache food in small chambers in their burrows.

The short-tailed shrew has poor eyesight, a fair sense of smell and keen hearing and touch. It possesses poisonous saliva but lacks an efficient injection system, so the toxin must get into a prey animal through cuts caused by the shrew's sharp teeth. The toxin slows down or kills warm-blooded prey.

Blarina brevicauda weaves dry plant materials and hairs into two types of nests, a resting nest and a larger mating structure, beneath logs, stumps, rocks and debris. Breeding may begin as early as January; 3 to 10 young (usually 5 to 7) are born 21 days later and are on their own at 25 days of age. Two or three litters may be raised per year.

Foxes, dogs, bobcats, cats, skunks, weasels, hawks, owls, shrikes and snakes kill short-tailed shrews. The average lifespan is 18 to 20 months.

Least Shrew (*Cryptotis parva*)

The least shrew lives in the southeastern and central United States, north and east into New York. It's found statewide in Pennsylvania. Coloration is cinnamon to brown above, ashy gray below, darker in winter than in summer. Overall length, 2.7 to 3.5 inches; tail, 0.47 to 0.78 inches; weight, 0.14 to 0.2 ounces.

short-tailed
shrew



least shrew



Favored habitats are open, dry situations, such as old pastures or meadows, or along woodland edges. Least shrews are scattered in local colonies throughout suitable habitat. More convivial than most other shrews, which tend to be belligerent toward others of their own species, least shrews may nest in groups of a dozen or more, especially in winter.

Least shrews are active at all hours, but mainly at night. They travel their own or other small mammals' runways

and burrows. They eat insects, earthworms, centipedes, millipedes, snails, mollusks, frogs and carrion, and they drink water freely.

Least shrews build nests of dried grass or leaves, either underground or beneath logs, stumps or debris. They breed from March through November. Three to six blind, hairless young are born following a gestation period variously reported as 15 to 23 days. Several litters may be raised each year. Both parents care for the young, which are weaned at 21 days. Longevity is less than two years.

Water Shrew (*Sorex palustris*)

The water shrew inhabits much of northern North America. In the East, it ranges from New England to North Carolina. It is found across Pennsylvania's northern half, and south through the Appalachians.

Sorex palustris is the second largest Pennsylvania shrew (the short-tailed shrew is more robust). Overall length, 5.3 to 6.1 inches; tail, 2.4 to 3.5 inches; weight, 0.35 to 0.6 ounces. In winter, the pelt is brownish-black above (sometimes faintly grizzled with silver) and light gray below. In summer, the upperparts are browner and the underparts paler. The long tail is brownish-black above, paler below.

The water shrew inhabits heavily wooded areas and is adapted to a semi-aquatic life. The banks of cold, clear streams provide optimum habitat. Water shrews occupy small surface runways under bank overhangs, fallen logs and brushpiles. They also

live in bogs and springs, and may shelter in a beaver lodge or muskrat house in winter. Nests are usually made of dry moss.

This shrew uses its big hind feet, fringed with short, stiff hairs, to paddle about under water. It can stay submerged about 15 seconds. Water cannot penetrate the shrew's dense pelage, so the animal itself never gets wet. A water shrew can run short distances across the water's surface, buoyed up by globules of air like a water bug.

Water shrews locate aquatic prey by touch. They eat insects and other small invertebrates (both aquatic and terrestrial), small fish and fish eggs.

Little is known about the breeding habits of this secretive species. The gestation period is about three weeks, with 4 to 8 young born from late February to June. Females probably bear more than one litter each year.

Water shrews tend to be nocturnal but are also active at dusk, on cloudy days, and in the shade on sunny days. Predators include weasels, mink, otters, hawks, owls, snakes and fish (smallmouth bass, trout and pickerel). Longevity is about 18 months.



water shrew

DOUG PIFER