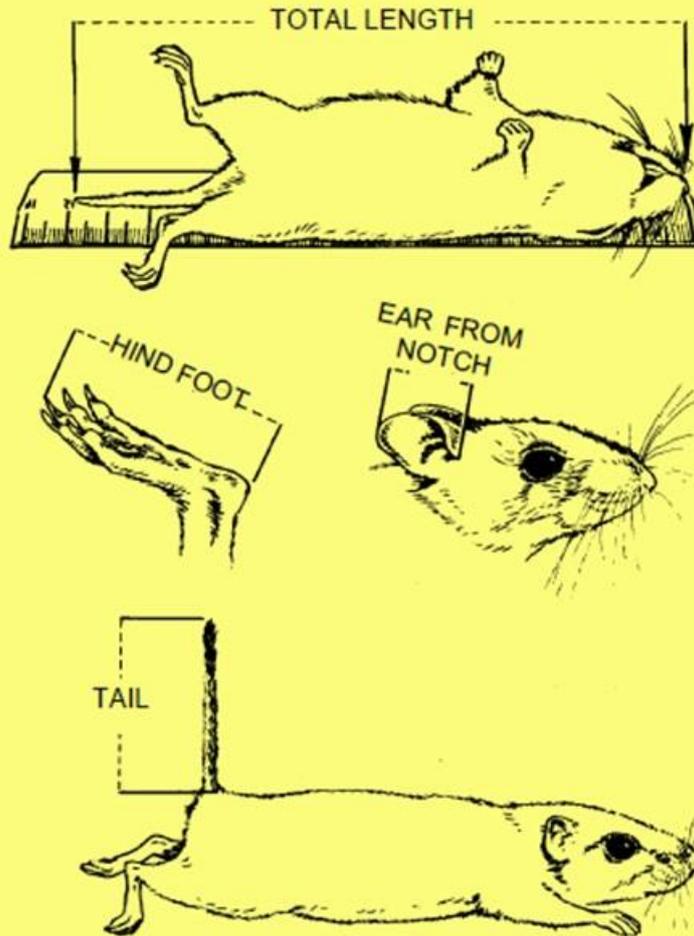


A Field Handbook of Connecticut Shrews & Small Rodents



Assembled for
University of Connecticut's
Natural Resources Conservation Academy

Standard Body Measurements



TOTAL LENGTH (TL). Measured (in millimeters) from the tip of nose pad to top of fleshy part of tail, excluding hairs that project beyond.

TAIL (T). Bend tail at right-angle with body and measure from bend on back to tip of the fleshy part of tail, excluding hairs.

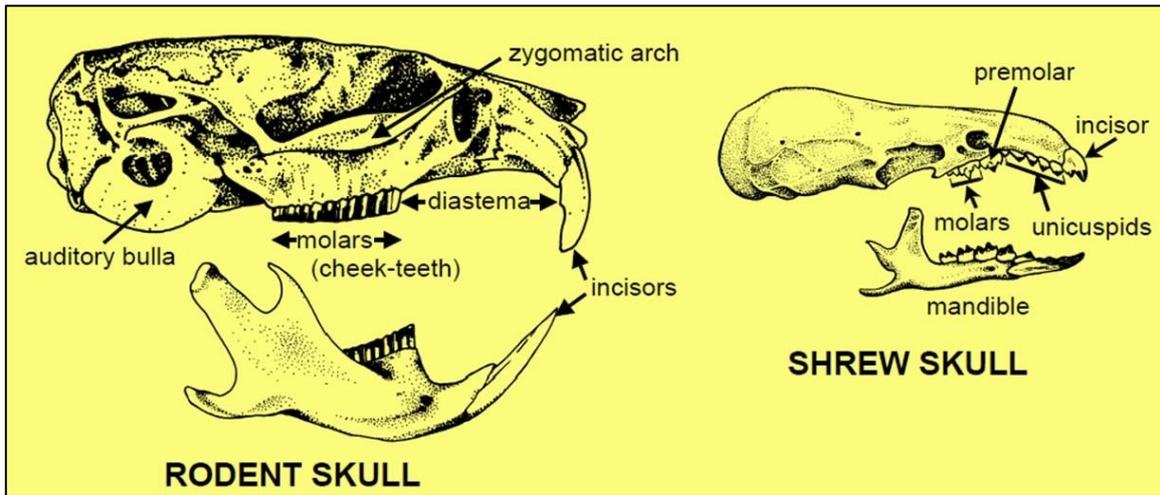
HIND FOOT (HF). With toes out straight, measure the distance from tip of longest claw to heal.

EAR FROM NOTCH (EFN). Insert end of rule in notch at bottom of ear and measure to distalmost border of fleshy part of ear.

WEIGHT (MASS). Measure (in grams) with either hand-held or electronic scale.

Key to the Orders

- Body very small, snout relatively long and slender pointed, eyes tiny, 5 clawed toes on forefeet; needle-sharp teeth in a continuous row; zygomatic arches and auditory bulla absent **SHREWS, MOLES & OTHERS (EULIPOTYPHILA)**
- Body larger, snout blunter, 4 clawed toes on forefeet; 2 pairs of large, curved, chisel-like incisor teeth visible in front of the mouth with a large space (diastema) between incisors and the row of cheek-teeth; zygomatic arches and auditory bulla present **RODENTS (RODENTIA)**



Key to Connecticut Shrews

SHREWS (FAMILY SORICIDEA)

- (a) Tail short, less than 40 percent of head and body length..... **2**
 (b) Tail long, great than 40 percent of head and body..... **3**
- (a) Total body length \geq 100 mm; dark slate colored..... **NORTHERN SHORT-TAILED SHREW**
 (b) Total body length < 100 mm; dark brown back and ash gray belly..... **LEAST SHREW**
- (a) Total length usually > 130 mm; hind feet \geq 18 mm and fringed with stiff hairs.....
 **AMERICAN WATER SHREW**
 (b) Total length usually < 130 mm; hind feet < 18 mm and not fringed with stiff hairs..... **4**
- (a) Tail length > 75 percent of head and body length; tail not distinctly bicolored.....
 **LONG-TAILED SHREW**
 (b) Tail length < 75 percent of head and body length; tail faintly bicolored..... **5**
- (a) Total length \geq 110 mm..... **SMOKY SHREW**
 (b) Total length < 110 mm..... **MASKED SHREW**

NORTHERN SHORT-TAILED SHREW (*Blarina brevicauda*)

Description & Similar Species

The northern short-tailed shrew can be distinguished from other CT shrews by the combination of its large size, short tail, and dark slate color. The only other shrew with a short tail is the least shrew, which is significantly smaller and has a dark brownish-colored back with ashy gray underparts, and has 30 teeth instead of 32.

Total Length	Tail Length
100-132 mm	18-32 mm
Hind foot Length	Weight
13-16 mm	12-23.5 g

NORTHERN SHORT-TAILED SHREW (*Blarina brevicauda*) continued...

Ecology

The northern short-tailed shrew is the most abundant and widespread shrew in CT. It frequents a variety of moist habitats including deciduous, coniferous, and mixed forests, old fields, meadows, brushy thickets, and grasslands. It has a diverse diet including invertebrates, salamanders, mice, voles, birds, fungi, plant material, larvae and pupae. The northern short-tailed shrew is one of the rare venomous mammals. Its sub-maxillary gland produces venom that is similar to that of reptiles such as the cobra. The venom is released when biting its prey and quickly immobilizes small prey. If the prey is not consumed immediately, the prey is cached in a comatose state and thus is kept as a fresh source of food for a period of time.

LEAST SHREW (*Cryptotis parva*)

Description & Similar Species

The least shrew can be distinguished from other species of shrews by its small size, short tail, and dark brown back and ashy gray belly. The least shrew most closely resembles the northern short-tailed shrew, which is larger and more slate colored and has 32 teeth instead of 30 teeth.

Total Length	Tail Length
75-89 mm	13-20 mm
Hind foot Length	Weight
10-12 mm	4-6 g

Ecology

The least shrew lives in the early successional communities such as old fields, abandoned pasturelands, and meadows of bluegrass, orchard grass, and weedy herbs. Because of its high metabolic rate, the least shrew eats large quantities of food – as much as 60-100% of its own body weight every 24 hours. Unlike most other shrews, it caches dead insects in its burrows for future consumption. It is also known for feeding on larvae and pupae and even entering beehives.

AMERICAN WATER SHREW (*Sorex palustris*)

Description & Similar Species

The water shrew can easily be distinguished by the combination of its large size, long bicolored tail, blackish-gray pelage (never distinctly brown), and aquatic habits easily separates the water shrew from other species. The only shrew in CT weighing more than the water shrew is the northern short-tailed shrew (*Blarina brevicauda*).

Total Length	Tail Length
144-158 mm	62-72 mm
Hind foot Length	Weight
18-20 mm	10-15 g

Unlike other CT shrews, the water shrew is semiaquatic, and has a number of physical adaptations to live in mountain streams and bogs. One unique feature is its large, broad hind feet. The 3rd and 4th toes are slightly webbed, and all toes have conspicuous stiff hairs along the sides. Fur is quite dense to not allow water to penetrate it, but traps air bubbles that retard wetting and enhance buoyancy. Eyes are minute and ears are small and hidden under its bicolored coat that is black above and silver below.

Ecology

The water shrew is restricted to a very specific habitat in CT. The optimal habitat for this semiaquatic insectivore is near mountain streams with rocky bottoms. The surrounding forests are usually characterized by hemlock, spruce and rhododendron (plants typical of high elevations in CT). The diet of the water shrew consists of small aquatic animals such as snails, worms, small fish and their eggs, and insects including nymphs of caddis flies, stone flies, and mayflies.

LONG-TAILED SHREW (*Sorex dispar*)

Description & Similar Species

The nose of the long-tailed shrew is the longest, in proportion to the rest of the body. Nonetheless, this species is often confused with the smoky shrew, especially in the winter when both are slate colored. In the winter, the two species are distinguished by the lighter in color belly hair of the smoky shrew compared to the uniform color of the long-tailed shrew. In the summer, the long-tailed shrew is brownish with slightly paler underparts. The species' tails are also quite different. The long-tailed shrew's tail is thicker, rope-like, and indistinctly bicolored.

Total Length	Tail Length
110-135 mm	50-64 mm
Hind foot Length	Weight
12-15 mm	4-6 g

Ecology

This rare shrew is restricted to cool, moist, very rocky areas in both deciduous and mixed forests. It is commonly found near mountain streams and eats small invertebrates such as centipedes and spiders. The long-tailed shrew forages in deep, subterranean tunnel systems among rocky outcrops where there is little or no soil but rather a loose accumulation of boulders.

SMOKY SHREW (*Sorex fumeus*)

Description

The smoky shrew – close to the same size as the long-tailed shrew – is one of the largest shrew of the genus *Sorex*. Its summer pelage is a dull brown with a yellowish belly, and its winter coat is dark gray with slightly paler underparts. The feet of the smoky shrew are pale yellow and tail is bicolored (brown above and yellowish below).

Total Length	Tail Length
110-126 mm	45-50 mm
Hind foot Length	Weight
12-15 mm	5-11 g

Similar Species

There are three CT species of shrew that may be confused with the smoky shrew. The long-tailed shrew has a longer, thicker tail, and its belly fur is the same color as its back. The masked shrew is smaller and browner with paler underparts. The water shrew is larger and blacker with stiff hairs along the sides of its hind feet, and it lives near mountain streams.

Ecology

The smoky shrew prefers moist, cool forests. It lives under rotting logs and stumps and in rocky outcrops with lush vegetation and good accumulations of humus and leaf mold. The smoky shrew's diet includes centipedes, millipedes, earthworms, sowbugs, small salamanders, and plant matter.

MASKED SHREW (*Sorex cinereus*)

Description

One of the smallest of the 6 shrews in CT. Its "mask" is barely visible and inconspicuous ears are hidden under thick, soft fur. Brownish on the back with a silvery or grayish tint on the underside.

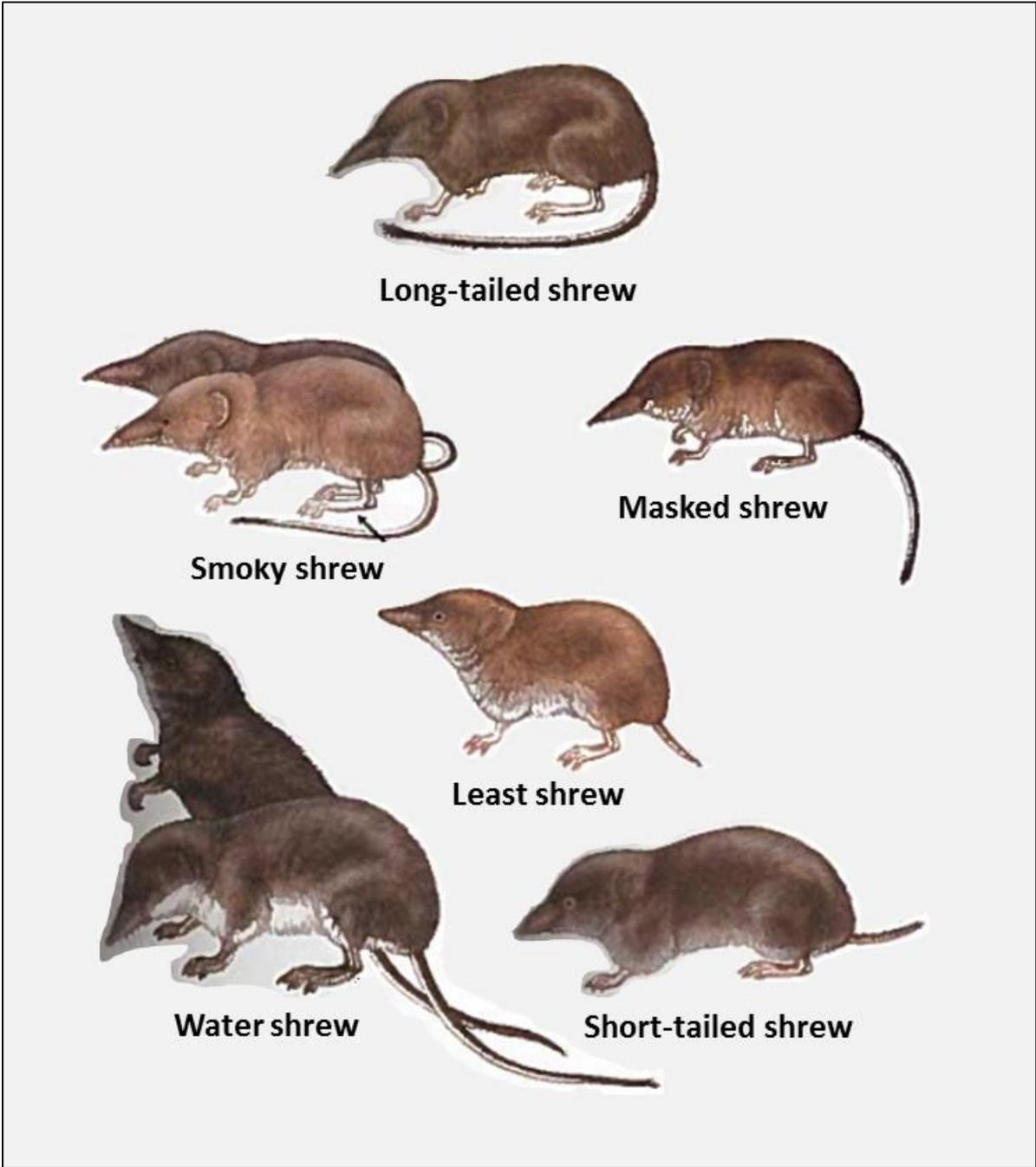
Total Length	Tail Length
75-110 mm	28-48 mm
Hind foot Length	Weight
11-13 mm	3.4-5.5 g

Similar Species

Easy to distinguish from other species of CT shrews. The smoky shrew is larger with darker underside. The long-tailed shrew is also larger with a longer, thicker tail. The least shrew has a much shorter tail.

Ecology

The masked shrew seems to prefer to live in moist woodlands, however it has a wide variety of habitats. It makes small globular nests constructed of grasses and dried leaves, which measure to about 3 inches in diameter. With poor eyesight, the masked shrew finds its food by touch and smell. In the summer, it feeds on insects, larvae, mice, snails, salamanders and plant material. In the winter, it feeds on mostly insect eggs and pupae.



Key to the Connecticut Small Rodents

NEW WORLD MICE, RATS, VOLES (FAMILY CRICETIDAE) & JUMPING MICE (FAMILY DIPODIDAE)

- 1. (a) Tail equal in length to or shorter than head and body; hind feet not particularly elongated..... **2**
- (b) Tail much longer than head and body; hind feet elongated..... **9**
- 2. (a) Long, sparsely haired tail with annulations of scales readily observable.....
- **OLD WORLD RATS & MICE (FAMILY MURIDAE; not included below)**
- (b) Tail variable length, well haired; scale annulations concealed..... **3**
- 3. (a) Total length > 220 mm; hind feet \geq 18 mm and fringed with stiff hairs..... **EASTERN WOODRAT**
- (b) Total length usually < 220 mm; hind feet < 18 mm and not fringed with stiff hairs..... **4**

- 4. (a) Length of tail > 45 percent of total body length; rostrum not abruptly constricted in front of braincase..... **5**
- (b) Tail usually < 45 percent of total body length; rostrum abruptly constricted..... **6**
- 5. (a) Tail as long as or longer than the head and body; distinctly bicolored tail with well-developed white tuft; soft luxuriant grayish brown coat with a slight middorsal stripe..... **DEER MOUSE**
- (b) Tail seldom as long as head and body; indistinctly bicolored tail lacking white tuft; reddish pelage marked by a well-defined middorsal stripe..... **WHITE-FOOTED MOUSE**
- 6. (a) Tail relatively short, approximately same length as hind foot..... **SOUTHERN BOG LEMMING**
- (b) Tail comparatively long, greater than length of hind foot (slightly in *Microtus pinetorum*)..... **7**
- 7. (a) Mid-dorsal surface having broad rusty or reddish band extending from forehead to rump..... **SOUTHERN RED-BACKED VOLE**
- (b) Mid-dorsal surface lacking broad rusty or reddish band..... **8**
- 8. (a) Dorsal pelage smooth, reddish brown; tail < 25 mm..... **WOODLAND VOLE**
- (b) Dorsal pelage chestnut to dull brown, venter silvery gray; tail > 25 mm **MEADOW VOLE**
- 9. (a) Hairs at tip of tail usually white **WOODLAND JUMPING MOUSE**
- (b) Hairs at tip of tail not white..... **MEADOW JUMPING MOUSE**

EASTERN WOODRAT (*Neotoma magister*)

Description & Similar Species

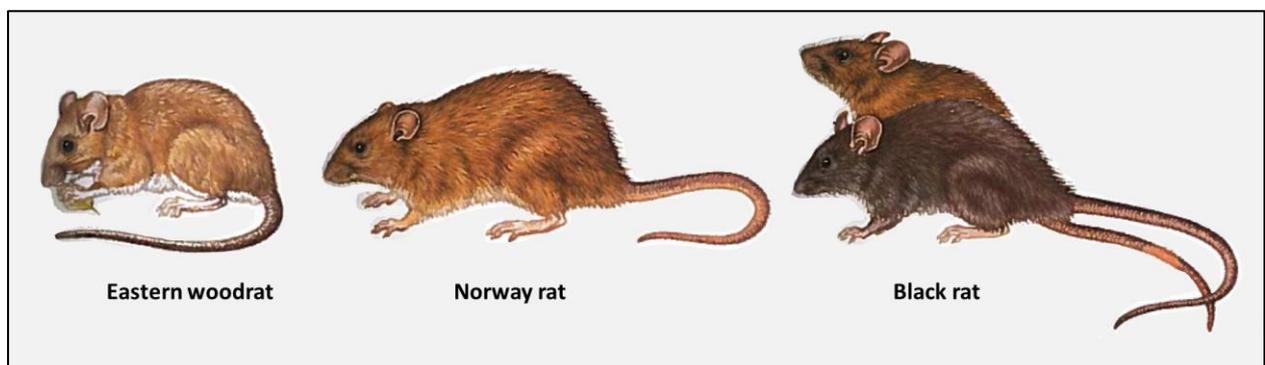
The eastern woodrat is gray, its feet and belly are white, its sides are light brown, and the hairs along its midline are slightly darker brown. Young are grayer than adults and

Total Length	Tail Length	Weight
381-465 mm	162-215 mm	273-447 g
Hind foot Length	Ear Length	
38-46 mm	25-28 mm	

sexes are colored alike. In summer, adults are more brightly colored than in winter. The eastern woodrat resembles the Norway rat; however, the woodrat has a blunter snout, larger ears, more prominent eyes and a less coarse pelage than the Norway rat.

Ecology

The eastern woodrat is a resident of the mountain and plateau sections of CT. Here, limestone caves, rocky cliffs, and accumulations of residual sandstone boulders marked by deep crevices with underground galleries represent favored habitat. The eastern woodrat is principally vegetarian; its diet consists of leaves of herbaceous plants, berries, and nuts such as acorns and beechnuts.



DEER MOUSE (*Peromyscus maniculatus*)

Description

The deer mouse wears a brown coat with a grayish brown mid-dorsal stripe and snowy white under-parts and feet. Its tail is dark brown above and white below. The deer mouse

Total Length	Tail Length	Weight
121-205 mm	50-109 mm	10-30 g
Hind foot Length	Ear Length	
18-23 mm	16-21 mm	

has two small internal cheek pouches and medium sized ears that are scantily haired and dusky in color. Its black eyes are large and luminous. When identifying the deer mouse it is important to know that the sexes are equal in size and colored alike.

Similar Species

In CT, identification of deer mice is complicated by the presence of the white-footed mouse, which closely resembles it and shares the same habitats. The species are best distinguished by differences in their skulls and teeth, but subtle differences in general appearance do exist. The deer mouse is best distinguished from the white-footed mouse by the ratio of the length of the tail to the total length of the head and body. The tail of the deer mouse is usually as long as or longer than the head and body. This is not a good diagnostic characteristic alone. Other characteristics included the often distinctly bicolored tail and well-developed white tuft of the deer mouse, which are lacking in the white-footed mouse. Also, the deer mouse tends to have soft luxuriant grayish brown coat with a slight middorsal stripe whereas the white-footed mouse has more reddish fur with less luxuriant pelage marked by a well-defined middorsal stripe.

Ecology

Its food habits vary with the habitat occupied and seasonal availability of food. During autumn, the deer mouse transports seeds—either in its mouth or in its internal pouches—to logs, stumps, hollow trees, and even abandoned birds' nests near the home site. Because the deer mouse does not hibernate, these pantries function as a fairly predictable food depository during harsh winters.

WHITE-FOOTED MOUSE (*Peromyscus leucopus*)

Description & Similar Species

The white-footed mouse closely resembles the deer mouse. Like the deer mouse, the white-footed mouse has a snowy white belly and feet. It has two small internal cheek

Total Length	Tail Length	Weight
150-200 mm	60-95 mm	13-27 g
Hind foot Length	Ear Length	
18-23 mm	16-20 mm	

pouches and medium sized ears that are dusky in color with a narrow white edge. Juveniles are grayish in color and as with the deer mouse, undergo two developmental molts. Adults are reported to molt in spring or early summer and again in autumn.

Ecology

The white-footed mouse is the most abundant and ubiquitous rodent in CT. It readily adapts to a broad spectrum of habitats. It is one of the first small mammals to colonize reclaimed strip mine sites and clear cuts. The diet of the white-footed mouse closely resembles that of the deer mouse and reflects the seasonal availability of forage. In autumn the white-footed mouse hoards food and transports food with its internal cheek pouches.

SOUTHERN BOG LEMMING (*Synaptomys cooperi*)

Description & Similar Species

The southern bog lemming has long, grizzled brown fur on the back and grades to silverfish gray on the underside. Its eyes are small and its

Total Length	Tail Length	Weight
115-145 mm	15-24 mm	25-45 g
Hind foot Length	Ear Length	
17-20 mm	12-14 mm	

SOUTHERN BOG LEMMING (*Synaptomys cooperi*) continued...

ears are well hidden in thick fur. It has four toes on the front feet and five toes on the hind feet. The southern bog lemming is easily confused with the meadow vole or woodland vole but is distinguishable by the combination of its short tail and grooved upper incisors.

Ecology

The southern bog lemming can be found at low densities primarily in old-field communities of poverty grass, timothy, and broom sedge interspersed with scattered woody vegetation such as young hawthorn, crabapple, locust, and sassafras. It feeds on succulent stems, leaves, and seeds of grasses and sedges, namely poverty grass, timothy and blue grass.

SOUTHERN RED-BACKED VOLE (*Clethrionomys gapperi*)

Description

The southern red-backed vole has black eyes, inconspicuous ears, a blunt face, and prominent orange teeth much like other voles and lemmings. However, the southern

Total Length	Tail Length	Weight
120-158 mm	30-50 mm	16-38 g
Hind foot Length	Ear Length	
17-20 mm	14-16 mm	

red-backed vole is more brilliantly colored and can be easily distinguished by a broad, reddish band running from its forehead to its rump. Its nose, sides of its head and its body are gray, often with a yellowish cast.

Ecology

The southern red-backed vole is most commonly found in coniferous, deciduous, and mixed forests with abundant mosses and ferns. Unlike most voles, it has cheek teeth that are rooted and are not adapted for a steady diet of abrasive grasses. This vole, instead, is an omnivorous, opportunistic feeder and takes advantage of whatever the forest has to offer.

WOODLAND VOLE (*Microtus pinetorum*)

Description & Similar Species

The woodland vole is CT's smallest vole. Its glossy fur is chestnut brown on the back and the belly is silvery gray. Being highly fossorial, the woodland vole has several physical

Total Length	Tail Length	Weight
110-140 mm	17-24 mm	25-37 g
Hind foot Length	Ear Length	
15-21 mm	8-11 mm	

features that suit it for burrowing: short ears, small eyes, strong forefeet and velvety fur that sheds dirt. The combination of small size, mole-like fur, brown back, and short tail distinguishes the woodland vole from all other CT microtines.

Ecology

The woodland vole occupies a diverse array of habitats. It exhibits small home ranges and concentrates foraging in its underground subways, where its food consists of roots, tubers, stems, leaves, seeds and fruits. During winter, it relies on roots and bark for sustenance. Like many other small mammals, the woodland vole also hoards food.

MEADOW VOLE (*Microtus pennsylvanicus*)

Description & Similar Species

The meadow vole is the most common vole in eastern North America. It is a shaggy rodent with beady black eyes and short, rounded ears concealed in its fur. In

Total Length	Tail Length	Weight
130-190 mm	25-65 mm	20-65 g
Hind foot Length	Ear Length	
19-23 mm	13-16 mm	

summer, it wears a short, dense, chestnut brown coat peppered with black. In winter, its back is dark

MEADOW VOLE (*Microtus pennsylvanicus*) continued...

brown. The sexes are colored alike, however the male is slightly larger. Although similar in appearance to the woodland vole and the southern bog lemming, the meadow vole is best distinguished by its long tail. Its tail is twice the length of its hind foot, whereas the tails of the woodland vole and southern bog lemming are bobbed. The woodland vole also has auburn back and shorter ears than the brown meadow vole.

Ecology

The meadow vole is one of the most abundant and widespread mammals in CT. Its optimum habitat includes moist, unpasteurized meadows and fields characterized by grasses, sedges, and rushes.

WOODLAND JUMPING MOUSE (*Napaeozapus insignis*)

Description & Similar Species

The woodland jumping mouse is CT's most strikingly colored forest-dwelling small mammal. It resembles the meadow jumping mouse by having oversized hind

Total Length	Tail Length	Weight
215-250 mm	130-150 mm	20-25 g
Hind foot Length	Ear Length	
28-34 mm	15-17 mm	

feet, radiant coloration, and a slender scaly tail. The back of the woodland jumping mouse is yellowish brown peppered with black. A distinct, broad mid-dorsal stripe runs down its midline and its belly is snowy white.

Ecology

The woodland jumping mouse is most abundant in cool, moist hemlock-hardwood forests of mountainous regions. Here, the species resides in rocky areas near streams that support a lush, low, woody vegetation. The woodland jumping mouse is omnivorous but exhibits a distinct preference for seeds. In some cases, this energy packed food may contain 75% of its diet. Insects, especially caterpillars and adult beetles are also some favorites of the woodland jumping mouse.

MEADOW JUMPING MOUSE (*Zapus hudsonius*)

Description

The meadow jumping mouse is easily recognized by its huge hind feet, brilliant color, and long, slender tail. Its tail is longer than the entire length of its body.

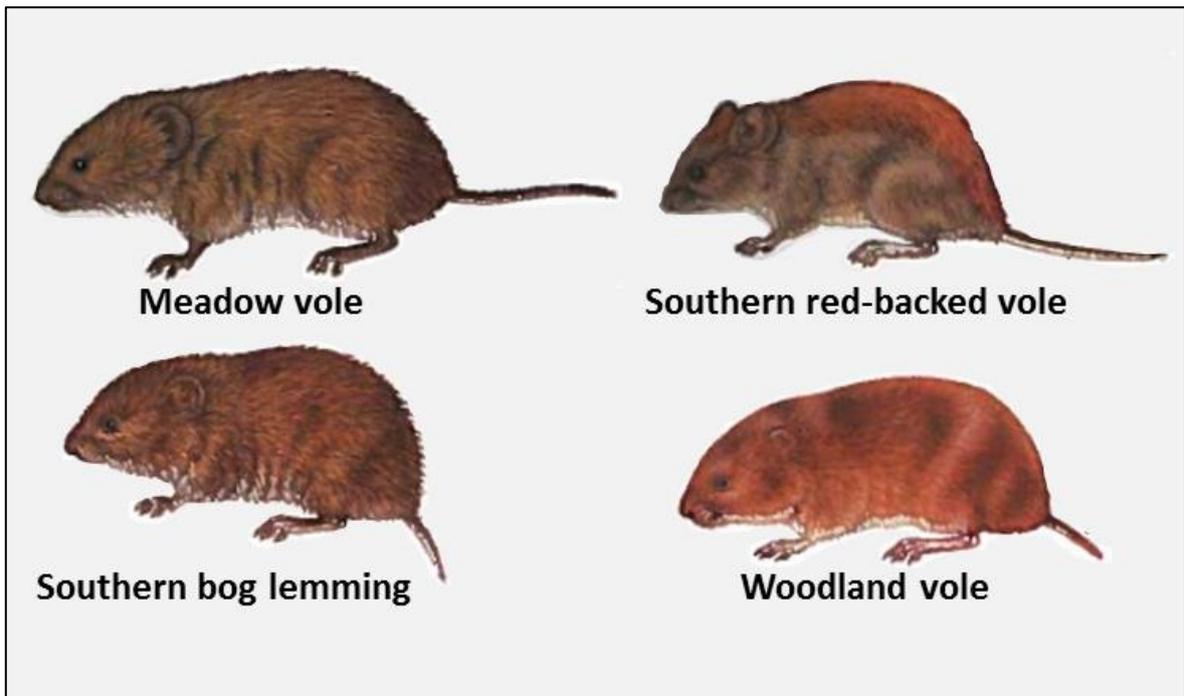
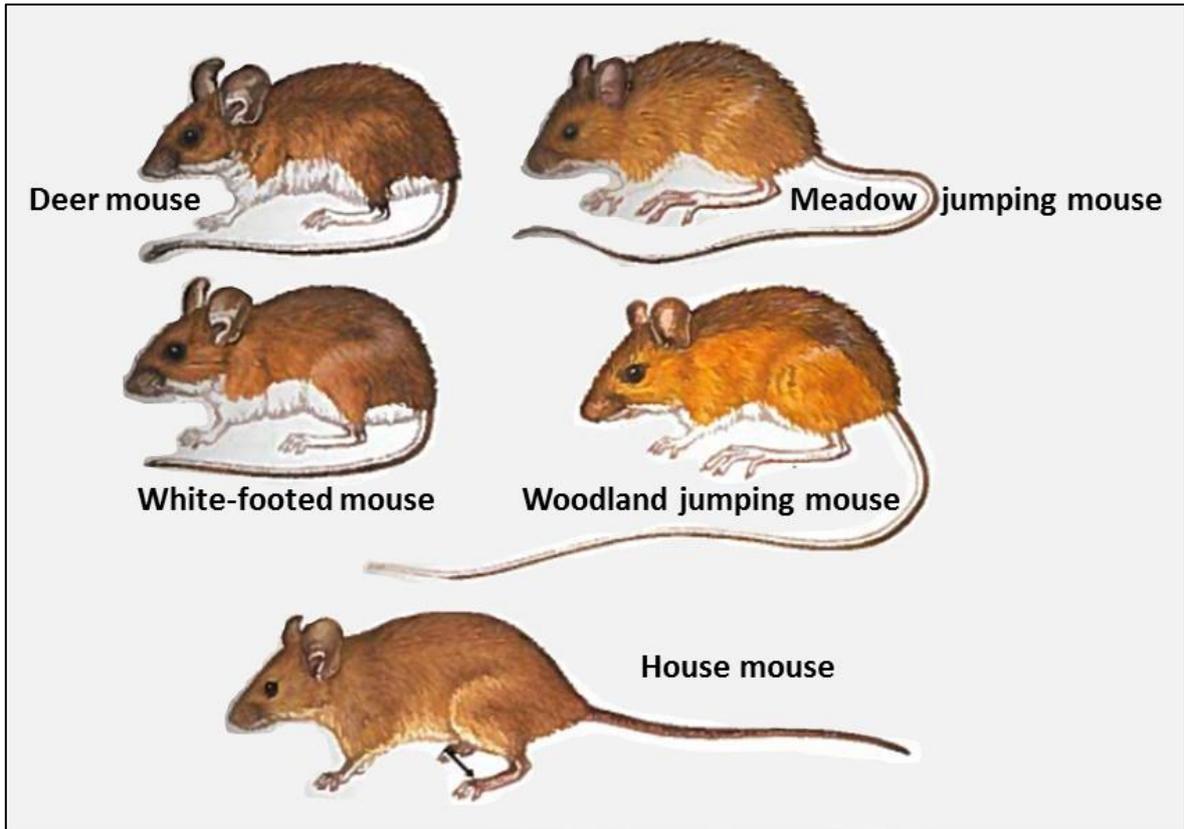
Total Length	Tail Length	Weight
185-220 mm	110-140 mm	15-21 g
Hind foot Length	Ear Length	
28-33 mm	14-17 mm	

Similar Species

The meadow jumping mouse is similar in appearance to its close relative the woodland jumping mouse, but the meadow jumping mouse is slightly duller and more yellowish in color and its tail has a dark tuft at the tip rather than a white tuft. Further, the meadow jumping mouse has four upper cheek teeth on each side of the jaw, whereas the woodland jumping mouse only has three.

Ecology

The meadow jumping mouse requires moist conditions and adequate ground cover. It resides in a variety of habitats such as abandoned grassy fields, thickets bordering ponds and streams, grain fields, and edges of woodlands. The food habits of the meadow jumping mouse strongly reflect seasonal availability. It has a high water requirement but can obtain its water in the form of dew and succulent foods.



Resources:

- Text adapted from Merritt, J. F. 1987. *Guide to the Mammals of Pennsylvania*. University of Pittsburgh Press for Carnegie Museum of Natural History, Pittsburgh, PA.
- Species drawings adapted from Reid, F. A. 2006. *A Field Guide to Mammals of North America*. The Peterson Field Guide Series, Houghton Mifflin Company, New York, NY.
- Other images adapted from MacDonald, S. O. 2003. *The Small Mammals of Alaska: A Field Handbook of the Shrews and Small Rodents*.