

**RODENTS** are mammals belonging to the order Rodentia, and almost all rodents are small, furry animals with short legs and a long tail. However their most characteristic features are their continuously growing front teeth, one pair on both upper and lower jaws. All rodents have to continuously wear down their teeth by use, or grinding them together, to prevent them from growing uncontrollably.

**Mice and rats** are the most common rodents encountered in community environments and many species have evolved to live commensally with humans to such an extent that they may not survive in natural environments. Other rodents are gophers, squirrels, beavers, prairie dogs, hamsters and porcupines.

## NOTABLE SPECIES

### Mice

**Common name(s):** Deer mouse

**Scientific name, classification:** *Peromyscus maniculatus*, **Class:** Mammalia, **Order:**

Rodentia, **Family:** Cricetidae.

**Distribution:** Throughout North America, except far southeast and north.

**Description and ID characters:** Small, grayish yellow mouse with pointed snout, large hairless ears, long tail and large, black beady eyes, very similar to the house mouse. Adults measure about 5 to 7 inches including the tail, the body alone is 2 ½ to 4 inches in length. Sizes can vary with the habitat.

**Best identifying feature(s):** Small size, pointed snout, hairless ears, long and scaly hairless tail. Eyes and ears are larger than those of the house mouse. Fur is distinctly two-toned: the upper side of the body and tail varies from light grayish brown or tan to dark brown, and is clearly demarcated from the underside and feet which are white in color. The tail is covered with fine hairs, and is not completely hairless as in the house mouse. Deer mice are excellent runners and jumpers, much faster and higher than house mice.

**Pest status:** Occasional chewing, biting and structural pest indoors, occasional pest of crops and other plants outdoors. Principal reservoirs of hantaviruses.

**Damage/injury:** Deer mice are not usually encountered indoors, but can easily enter homes and structures due to their small size. Once indoors, they readily consume, damage and contaminate food, stored items and structures. Outdoors, they can be a pest of agricultural crops and garden plants. They feed voraciously on seed and also hoard them, which can lead to reduction in yields and regeneration of plants in the wild.

Deer mice are most important because they are carriers of the deadly hantavirus called *Sin Nombre* Virus, which is responsible for the often fatal disease Hantavirus Pulmonary Syndrome (HPS) in humans. Deer mice carry and spread the virus



Deer mouse  
Photo: Gregory 'Slobird' Smith

through their saliva, urine and droppings. Humans can acquire the virus through inhalation or broken skin, when present in a contaminated area.

**Life history:** Deer mice are nocturnal and primarily an outdoor species by nature, spending the daytime hidden in tree holes, or underground burrows. They build small untidy nests with various kinds of plant material, near a food source and most activity is concentrated around the nest. Breeding can occur year-round but is mostly dependent on food availability. A single female can produce 4-5 litters in a year and the average adult lifespan is about 1 year in the wild.

**Common name(s):** House mouse

**Scientific name, classification:** *Mus musculus*, **Class:** Mammalia, **Order:** Rodentia, **Family:** Muridae.

**Distribution:** Worldwide.

**Description and ID characters:**

Small, grayish brown mouse with pointed snout, hairless ears and tail and black beady eyes. Adults measure about 5 to 7 inches including the tail, the body alone is 2 ½ to less than 4 inches in length.

**Best identifying feature(s):** Small size, pointed snout, large hairless ears, long and scaly hairless tail. Upper side of the body is covered with short, grayish brown or tan hair, underside is lighter colored (but not white). Feet are hairless and grayish pink in color. A distinct notch is visible on the front teeth, when viewed from the side.

Movement is by walking or running on all four legs, but are also known to jump, stand on their hind feet using the tail for balance, they also climb up rough vertical surfaces, to reach up to a food source or nesting site. Young mice can squeeze through openings as small as ¼ inch in diameter, and prefer to maintain contact with vertical surfaces such as walls as they move.

House mice are nocturnal by nature and tend to avoid light, but can occasionally venture out during the daytime in search of food. They are intelligent and cautious and easily escape notice. Signs of their presence, such as feet tracks, chew/gnaw marks, oily rub marks, droppings and urine, fallen hair, and chewed up paper, cloth or wood, are often found before the mice themselves.

Several other small rodent species found in and around homes and structures, e.g., deer mice and meadow voles, can be mistaken for house mice. House mice can also be mistaken for young black or brown rats. Fig.1 (under 'Rats') provides tips for quick differentiation between the species. Droppings can be helpful when identifying species, but are not conclusive, especially when viewed alone. Fig. 2 provides useful tips for identification of rodent droppings. Mice and rats leave



House mouse  
Photo: J.N. Stuart



Notch on front teeth in side view  
Photo: Magne Flåten

numerous micro droplets of urine wherever they travel, which fluoresce under UV light and can help in detecting their activity.

**Pest status:** Chewing, biting and structural pest. Can consume, damage and contaminate food, stored items and structures with their droppings and urine, produce allergens and carry and spread pathogens.

**Damage/injury:** In human homes and structures, house mice are omnivorous and will feed on almost any human food material as well as many other household items including cardboard, soap, leather, etc. Before feeding, they test the material by nibbling and this can cause unsightly chew or gnaw marks. They thrive in food storage areas or pantries if undetected for a long time, where along with consuming and damaging food and food packaging materials, they contaminate everything with their urine and droppings, and this can also cause a musky odor. Outdoors, house mice can occasionally damage crops and garden plants. They are known for their preference for seeds and grains, which they will consume in the field as well as bring to their nests for storage.

House mice can physically destroy a variety of materials found in homes and structures such as paper, cardboard, wood and cloth by shredding them to make nests. They can also cause structural damage to furniture, upholstery, woodwork, electrical and plumbing lines, computer systems and machinery by chewing or gnawing in an attempt to reach food or nesting sites.

House mice are not considered important public health hazards, but they are known to carry and spread pathogens that cause murine typhus, bubonic plague, leptospirosis and food poisoning. They can spread parasites such as fleas, mites, tapeworms and ticks to humans and domestic animals.

House mice have not been found to be carriers of the deadly hantavirus, but the similar species-deer mice are known to carry it.

**Life history:** House mice are almost always found closely associated with humans. They may occupy secluded spots outdoor, in wooded areas, fields and gardens during warm weather but these are not usually very far away from human homes and structures such as barns and outbuildings. Although they can survive outdoors, feeding on plant material, small insects and other invertebrates, they will try to move indoors as the weather gets cooler. Outdoors, they live in concealed spots such as tree stumps or under stones, or may dig underground burrows. In human structures, they will nest in any suitable hidden and undisturbed spot with a



Mouse nest in bird box  
Photo: Bet Zimmerman, Sialis.org



Mouse nest with young ones  
Photo: Kelly Madigan

nearby food source. Nests are untidy piles of any material they can collect, such as paper, cardboard, wires, wood shavings, etc., but the insides are lined with softer and more finely shredded materials such as cloth. House mice have an extremely high reproductive potential and they breed year-round in favorable conditions. A single female can produce 5-10 litters, each with 5-8 young ones or pups. The pups are born blind and hairless, but become fully furred by 2 weeks, weaned by 3 weeks and sexually mature by 5-7 weeks. Females can become pregnant again before the pups are weaned. The average lifespan is 1 ½ to 2 years in the wild, but mice can live for much longer in captivity (5 years). Social behaviors of house mice vary with their location and food availability. House mice tend to avoid black rats and Norway rats, which prey on them.



Mouse nest under car bonnet  
Photo: John Hummel

**Common name(s):** Meadow vole, meadow mouse, field mouse

**Scientific name, classification:** *Microtus* spp., **Class:** Mammalia, **Order:** Rodentia,

**Family:** Cricetidae. The montane vole *M. montanus* and the California vole *M. californicus* are common southwestern species.

**Distribution:** Western U.S., Canada

**Description and ID characters:** Small, grayish brown heavy-bodied rodent, with similarities to house mice and gophers, about 5-5 inches in length including the tail. Sizes and appearance can vary with the habitat.



Montane vole/ meadow vole  
Photo: Roger W. Barbour, [www.mnh.si.edu](http://www.mnh.si.edu)

**Best identifying feature(s):** Short, stout but compact body, short legs and small thin tail, covered with fine fur, small eyes, small and partially hidden ears. Fur is dark grayish brown on the upper side of the body and tail, and paler (not white) on the undersides and flanks; but the body is not distinctly two-toned as in deer mice.

Voles spend most of the daytime in their burrows underground, but they have distinct runways above ground and these can be indicative of their activity. They try to cover runways with cut grass or other plant material, but sometimes green colored droppings can be found near burrow entrances.



Vole runways  
Photo: Stephen M. Vantassel, UNL Extension