

## Commensal Rodents

The word commensal is used to describe rodents that are generally found living in close associations with humans and very often dependent upon human habitat for the essential elements of food, water, shelter and space. The rodent species we normally categorize as commensal are the house mouse (*Mus musculus*), Norway rats (*Rattus norvegicus*) and roof rats (*Rattus rattus*). None of these three species are native to the United States; they are Old World species and were brought to this country on European ships in the 17th and 18th centuries.

House mice have a small, slender body with a pointed muzzle, and adults usually weigh less than one ounce. They are generally grayish-brown in color with slightly lighter underbellies, but color can vary from black to white. The tail is almost hairless and is as long as the head and body together. House mice can be distinguished from young rats by the fact that the mouse feet and head are much smaller, in proportion to the body, than that of a young rat. In addition, the young rat's tail is not as long as the head and body together, as is the tail of the mouse. House mice can be distinguished from other species of small indigenous mice (deer mice, harvest mice, white-footed mice, etc.) by the fact that these native mice generally have whitish underparts, including the undersurface of the tails. Native mice also have larger eyes and ears.

House mice damage consists primarily of the consumption and contamination of stored foodstuffs. They do not consume large amounts of food, but tend to partially eat and discard food. They contaminate greater amounts of food with their urine, droppings, and hair. As with all commensal rodents, there is a potential for the transmission of a number of diseases to humans from handling the rodent, or from bites, droppings or their arthropod parasites. The presence of house mice can be determined by the characteristic, strong odor of their urine and/or by visual inspection for droppings. House mouse droppings are 1/8 to 1/4 inches in length and pointed at both ends, whereas rat droppings are 1/2 to 1-inch long and blunt at one end. Mice presence may also be detected by mouse tracks in dust or by spreading talc or unscented body powder on floors along the base of walls. Additionally, both the urine and hairs of these mice are fluorescent under black light.

Both Norway rats and roof rats have been reported in Arizona, but occurrences of these two species as pests have been rare. Sightings of the roof rat may have been due to misidentification. Norway rats have a stocky body with a blunt nose and an average adult weight of about one pound. Norway rats are generally brownish or reddish gray with a lighter underbelly and a tail that is mostly hairless, scaled, and not as long as the head and body combined. Roof rats have a more slender body, larger eyes and ears, a longer tail, a pointed muzzle, and are smaller than a Norway rat. Roof rat coloration tends to be blackish with a lighter underbelly.

Norway rats are mostly nocturnal and a daylight sighting may indicate a large number of rats present. They usually nest in underground burrows, often next to foundations and under debris piles. Norway rats have amazing physical abilities. They can climb up and down pipes up to 4 inches in diameter, jump up to 3 feet vertically, and have been known to jump 8 feet horizontally. As with mice, Norway rats eat only a few ounces per day, but contaminate much more than they eat. Norway rats have tremendous gnawing capabilities, and if there is a rough surface or an edge present, they can gnaw through almost any material, including lead and cement. They commonly gnaw on electrical wires and pipes, causing much damage. Their gnawing and burrowing can cause structural damage to buildings, and they sometimes damage insulation by building nests in walls and attics.

Two other species of rats which are not generally categorized as commensal, but commonly reported as pests of structures and urban areas, are the wood rat (*Neotoma* spp.) and the cotton rat (*Sigmodon* spp.).



Several species of wood rats (genus Neotoma) occur in Arizona and are locally referred to as pack rats. Pack rats are about the same size as Norway rats, and can be distinguished from Norway rats by their hairy, rather than mostly naked, tail and larger ears. Pack rats are generally gray to grayish-brown, with lighter feet and underbellies than those of Norway rats. Pack rats build a very characteristic nest, often at the base of cactus plants, small trees, shrubs or rock outcroppings. These nests are large, messy piles of twigs and other plant materials. Pack rats are mostly nocturnal. They are often a nuisance around seldom-used structures, tearing up upholstered furniture and mattresses for nesting materials. They frequently take up residence in abandoned vehicles.

The several species of cotton rats found in Arizona are generally confined to the central and southern portions of the state. Cotton rats are generally blackish brown with coarse, black guard hairs which give them a ruffled appearance. They have a short, blunt body, large eyes, and large ears which are not apparent due to the ruffled fur. Cotton rats are usually smaller than roof rats and have a sparsely-haired, shorter tail.

An integrated commensal rodent management plan would include monitoring, exclusion, habitat modification, population control with traps and/or rodenticides, and continued monitoring for reinfestation.

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