

Handling Mice and Rats

Our topics for this week are:

- Behavior and handling of mice
- Behavior and handling of rats

MICE

The mouse (*Mus musculus*), also called the house mouse, originated in Asia and has spread throughout the world. They were first domesticated by royalty in Japan and China who selectively bred them for atypical colors.

White mice have been selectively bred in captivity for use in research and as pets. Some have been selectively bred for various colored (called “fancy”) hair coats. Few mice are comfortable being held gently in a handler’s hand and will bite to escape. They are more likely to bite than domestic rats and are not a good choice of pet for children.

Male mice are called *bucks*. Female mice are *does*, and young mice are *pups*.

Natural Behavior of Mice

Mice are nocturnal and prefer to hide. Adult males fight each other. Dominant males may chew the hair off some submissive members of their group. This activity is called *barbering*. Exing can be accomplished using the anogenital distance. In males, the distance between the anus and external genitalia is much larger than in females. Also, in females nipples emerge after about two weeks and the scrotum in males should be readily visible when the testicles are everted. Most small mammals housed alone are more anxious about being handled than those kept in groups.

The vision of mice is poor, but sound, smell, and movement are well detected. To attempt to avoid detection of their movement, cats remain still for long periods and advance slowly in spurts when stalking mice. Mice mark exploration paths with secretions from the soles of their feet and occasionally with urine and use their sense of smell to retrace paths.

Approaching and Catching

The primary defense of mice is to seek a dark, quiet area to hide. As a result, they may be captured by providing a cup, called a rodent recreational vehicle (RV), for hiding and then entrapping them for transport.

Many mice will attempt to bite if unaccustomed to being restrained or restrained roughly. When they bite, they are often reluctant to let go. Mice are best captured from a transport cage free of water and food bowls and exercise apparatus. All doors and windows in the handling room should be closed and possible hiding places blocked before removing a mouse from a cage. Mice will climb or jump out of boxes or cages or chew out of an enclosure, if given the opportunities. Before capture is attempted, all feeders, water bowls, hiding boxes, or other moveable objects in the enclosure should be removed.

Handlers should avoid carrying any sources of odor when handling mice, especially odors that might be associated with a predator.

Handling for Routine Care and Management

Frequently handled pet or research mice may be able to be handled by cupping hands around them. Plastic gloves should be worn for protection from allergens. More often, a handler must grasp the base of the tail and lift the mouse to a surface that it can cling to, such as the handler's shirt or lab coat covered arm or a small rug on a table. The mouse will continue to try to pull away while the handler continues to hold its tail. Adult mice can be moved short distances by the base of tail, but if pregnant or obese, its body should be supported with other hand.

Additional restraint can be applied by holding the tail and pressing the body down while grasping the skin on the back of the neck between the thumb and index finger (scruffing) and then swinging the body into the palm of the hand with the tail grasped between the ring and little finger. The non-dominant hand should be used for restraint so the dominant hand can perform examinations, write notes, and administer medications.

Young mice, less than two-weeks-old, can be grasped by the loose skin of the neck and shoulder with a thumb and forefinger. Plastic gloves should be worn to prevent adding odor to the babies. Mother mice will cannibalize babies having strange odors.

African (Egyptian) spiny mice are a type of mouse that are gaining popularity as pets. They are larger than domestic mice and should not be picked up by their tail because of the risk of degloving injury to the tail.

RATS

Pet and research rats were derived from the Norway rat (brown rat or wharf rat), which is the most common wild rat. They were domesticated in the United Kingdom to be used in rat baiting in the 18th and 19th centuries. Rats were put in fighting pits, and wagers were made on how quickly a dog could kill them.

Rats, specifically the black rat, also called the roof rat, were reviled in Europe because of their association with Black Death (bubonic plague) that killed at least 1/3 of all people in Europe in the 14th century. Transmission was primarily by the fleas they carried and brought into human settlements.

Many domestic rats are selectively bred for various colored (called "fancy") hair coats. Sprague Dawley or Long Evans rats (specific families of *Rattus norvegicus*) are most easily handled and are preferred for pets.

Male rats are called ***bucks***. Female rats are ***does***, and young rats are ***pups***.

Natural Behavior of Rats

Rats are smart, interactive, nocturnal omnivores. They can be prey or predator. If not overcrowded, they are clean and virtually odor free. They are less skittish than hamsters and gerbils, less likely to bite than mice, and less likely to scratch and injure a child than handling a rabbit. Rats tolerate living in mixed groups better than mice.

Rats are similar to mice in that a large AG distance is consistent with being male. Males lack nipples, and their testicles are very pronounced at all ages. The brown rat is larger than the black rat and prefers to burrow and tunnel. The black rat prefers to climb and is an excellent jumper.

Aggressive rats will arch their back, fluff out the hair on their back, swish their tail similar to the aggressive posture of a dominance aggressive cat.

Approaching and Catching

Domestic rats are generally docile if handled gently and slowly.

They behave best with minimal restraint. Rat pups should be handled at weaning for socialization. They should not be startled when they are asleep or they may bite in defense. The primary defense response of rats is to hide when possible, but they will bite if cornered. The intent to bite is often signaled by a rat standing on its hindquarters and facing the approaching hand.

As with all small mammals, capture of rats is best attempted after removing feeders, water bowls, hiding boxes, or other moveable objects in the enclosure. All doors and windows should be closed and hiding places blocked before removing a rat from a cage. Capture should begin with grasping the base of the tail, but a rat should not be picked up by end of its tail. Its body should be supported by the other hand.

The Harderian gland is located behind rat's eyeball. Stressed or sick rats will produce a red porphyrin from the Harderian gland that looks like blood, called red tears. Porphyrin can be identified by its fluorescence using a Woods light.

Handling for Routine Care and Management

Rats like to hide, so many rats will become calm if allowed to hide in a coat pocket. They are more comfortable if allowed to move around on a sleeved arm and intermittently repositioned by grasping the base of the tail or the shoulders. Older rats often have chronic respiratory disease and can be severely stressed by restraint. Both hands should be used to restraint rats more than 200 gm in weight.

Firm manual restraint of rats is performed by grasping the base of the tail with one hand and the rat's shoulders with the other hand, using the thumb under a foreleg and the jaw. The handler's index and middle fingers restrain the foreleg on the other side of the rat. The rat's chest or trachea should not be squeezed. If its breathing is impaired, it may panic and attempt to bite when held or when released.

Now, let's recap the key points to remember from today's episode:

- Mice are less tolerant of handling than are rats
- Plastic gloves should be worn when handling rodents
- Mice and rats can be restrained by the base of their tails, but the tip of their tails
- The chest of rodents should not be squeezed during handling or restraint

Abby says it is time to wrap up this episode.

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.