

Rats, Mice, and Guinea Pig Containments

Our topics for this week are:

- General containment requirements for small mammals
- Basic containment needs for rodents
- Containments for rats and mice
- Containments for Guinea pigs

Small mammals housed alone are more anxious about being handled than those kept in groups. Most small mammals should be contained in groups, but there are important exceptions. Neither sexually mature male rabbits nor adult male mice should be housed together to prevent fighting. Adult hamsters prefer to live a solitary life, especially adult females. For these reasons as well as managing reproduction within groups, is important to be able to correctly determine the sex of small mammals. Anogenital (AG) distance is generally used for sexing small mammals, except for guinea pigs and young rabbits. Females have shorter AG distance than do males. Pressure on either side of the prepuce in male guinea pigs or young buck (male) rabbits will cause the penis to extrude.

The safest approach to minimizing aggression within a group of small mammals is to group members of same sex and same litter after puberty to control breeding and fighting. Spacious enclosures and small hide boxes that can be defended will minimize aggression among males. Introduction of new rodents to an established colony should take days to weeks, beginning with mixing used substrate material from both cages and sharing the mixture in each cage to allow adaptation to smells that will be the new mixed group. All small animal containments should be free of sharp projections, easily cleaned, well ventilated but free of drafts. Wood enclosures absorb urine and will foul the air with ammonia. Most small mammals will also gnaw through wood enclosures. Wire mesh lids are recommended for adequate ventilation. Drinking water should be constantly present and provided in a way that prevents the water from being spilled or contaminated. Shade from direct sunlight should always be present in the enclosure.

Substrates (bedding) should be kiln dried pine, aspen, paper products, or good quality grass hay. Cedar or fresh pine shavings should not be used due to volatile irritant oils, and cat litter should be avoided because of dust or possible ingestion and digestive tract compaction. Cloth materials such as towels should not be used for bedding. Strings can be ingested and cut the lining of the digestive tract or become caught around a leg or neck.

Small mammal pets should have exploration and exercise time outside their primary enclosure. However, no other animals which could be a predator (dogs, cats, rats, birds, ferrets) should be allowed within sight, hearing, or smell of the small mammals. Time outside of primary enclosures should be directly supervised.

Most small mammals, including rodents and rabbits, burrow and rest during the day to avoid heat and thermoregulate. When in captivity, they can be at risk of heat stress, and the

temperature of their containment should be carefully regulated.

Rabbits and many rodents produce and ingest *cecotropes* (also called night feces) important to their nutrition. Cecotropes are smaller, softer, and more moist than regular feces. Rabbit cecotrope pellets stick together with a greenish mucus. Cecotropes have a high concentration of vitamin K and B vitamins, plus twice the protein and half the fiber of regular feces. Wire bottomed cages could cause wastage of cecotropes although if able, rabbits eat cecotropes directly from the anus.

Rodent Containment

Cages for all rodents should be made of wire, sheet stainless steel, or non-galvanized aluminum, or glass with solid gnaw-proof material. Wood or plastic cages can easily be gnawed through by rodents. Flooring should be solid to prevent foot and leg injuries from wire flooring. Plastic coating will be chewed off and should not be used on wire cages. Substrate should be one inch deep, but cedar shavings should not be used. Wet cedar shavings release fumes that are toxic to the respiratory tract. Other unsafe wood substrates include cherry, citrus wood, pine that has not been dried, oleander, plum, and redwood. Aspen shavings, chopped straw, or stripped paper are safe. Sand can be used for gerbils. Mice, hamsters, and gerbils need mesh wire lids to provide adequate ventilation. Substrates should not be dusty, especially if used in solid wall enclosures such as aquariums.

Gerbils and hamsters can be satisfactorily housed in large aquariums so that at least three inches of substrate can be provided to meet their burrowing desire while containing the substrate within the enclosure. Hiding and sleeping areas should be provided. Small prey animals hide in small dark areas to escape being eaten in the wild and are stressed if they do not have a hiding area. Enrichments for mental and physical stimulation should be added such as clay flowerpots, empty coconut shells, or tunnels of PVC pipe. Enrichments can include ladders and ropes for climbing as well as exercise wheels. Exercise wheels should not have any rough edges. Exercise balls should not be used if there is access to stairs or other ledges for the ball to roll off.

Blocks of untreated wood should be provided for gnawing. All rodents and rabbits will gnaw wood. Their teeth continually grow and gnawing is an instinctive means of wearing off the teeth to keep up with new growth. Containment contents should be routinely rearranged on a regular basis to maintain interest and mental stimulation, except for hamsters which prefer stability in the location of their possessions. Boredom and stereotypic behaviors will result from an inability to gnaw on objects and sort through mental challenges. Mice should have substrate replaced every 2-3 days and enclosures washed weekly. Gerbil and hamster cages can be cleaned less often but at least weekly.

Rats and Mice

Glass enclosures are recommended for mice and rats. Mesh wire sides allow drafts, and metal condenses moisture which supports bacterial growth. Wire mesh lids should not have mesh openings of more than 1 cm square. The size of the enclosure and mesh lid should be large enough to provide adequate ventilation. An adult mouse should have 15 square inches of floor space and cage height of five inches, while an adult rats should have 40 square inches and a height of seven inches.

The minimum space requirement for two or three mice is 18 X 18 inches and 10 inches high. Mice should have 1 inch deep substrate, but rats do not require as much. Mice are excellent climbers and need a mesh wire lid on the top of their confinement.

Rats should have at least 12 X 24 inches by 12 inches high space for each rat. Wire bottomed perches for rats should not have mesh openings greater than ½ X ½ inch to prevent the rat's foot from getting caught in the wire. Solid floors are preferred.

Vertical exercise with climbing structures such as ropes, ramps, and branches are desirable, especially for rats. PVC pipes and blocks of wood with drilled holes can provide tunnels to explore and hiding areas. Exercise wheels for rats should be at least 12 inches in diameter. Chewing toys can include untreated wood blocks, cardboard tubes and boxes, and rawhide chews for dogs. Rats and mice like to create their own nesting material by shredding toilet paper, paper towels, straw, or other easily shredded materials.

Rats should be kept away from birds and dogs, cats, and other small mammals since they may be prey of some animals and predator of others. Male rats can be housed together, but adult male mice will often attack each other.

Enclosures should provide a temperature of 65-75°F and humidity of 40-70%. Temperature above 85°F can lead to heat stroke. Humidity of less than 30% for rats can cause dehydration and necrosis of the tail, called *ringtail*.

Guinea Pigs

Guinea pig containment is simple since they do not climb or jump. The cage should have at least 12 X 24 inches of floor space per adult and wire sides that are at least 10 inches high. Long-term enclosures should provide 2 X 4 feet of space for each guinea pig to provide sufficient exercise space. Ventilation and regular enclosure cleaning are important to reduce the risk of respiratory problems from urine-produced ammonia. Sides of the enclosure may be glass, plastic, metal, or wire mesh. Wood should not be used since it can absorb waste products and pathogens. Although guinea pigs do not climb well or jump, a top lid should be provided to protect guinea pigs from other animals and should be wire mesh to provide needed ventilation. An exercise area should be 36 inches long. Environmental enrichments should include multi-levels with gentle sloping solid bottomed ramps, PVC pipe tunnels, and chewables (wood blocks, rawhide chews).

To protect their small feet from injury, the floor, ramps, ledges, and exercise wheels should have a smooth solid bottom. A sturdy plastic tub is sufficient if adequate ventilation can occur. Guinea pigs will clog sipper water bottles with food, and contaminate water bowls with feces. Tip resistant, heavy water bowls should be cleaned daily. Food bowls should be small enough to prevent the guinea pig from climbing in it. Guinea pigs of either sex can be kept in the same containment, but adult males will fight with newly introduced males.

For supervised outdoor excursions, guinea pigs can be contained in collapsible, portable fencing or small plastic pools made for children. Shade and hiding boxes should be provided. Guinea pigs should be maintained at an environmental temperature of 65 to 75°F and a humidity level below 50%. Heat stroke is a risk at temperatures above 85°F.

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

- **Knowing the gender of small mammals is important to selecting housing that prevents fighting**
- **Wooden cages are inappropriate for rodents**
- **All small mammal containments should include hiding boxes for stress relief and enrichments for mental stimulation**

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.

Additional information is available at www.betteranimalhandling.com

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.