

## Containment of Pet Rodents

Our topics for this week are:

- **Rodent cage construction**
- **Contents of rodent cages**
- **Containment needs for rats, mice, Guinea pigs, gerbils, and hamsters**

### General Containment Needs of Pet Rodents

Pet rodents housed alone are more anxious about being handled than those kept in groups. Most pet rodents should be contained in groups, but there are important exceptions. Adult male mice should not 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, it is important to be able to correctly determine the sex of small mammals. Anogenital (AG) distance is generally used for sexing rodents. Females have shorter AG distance than do males.

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.

Most rodents 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.

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 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 simulation, 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.

### **Rat and Mouse Containments**

Plastic or 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  $\frac{1}{2}$  X  $\frac{1}{2}$  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 65-75F and humidity of 40-70%. Temperature above 85F can lead to heat stroke. Humidity of less than 30% for rats can cause dehydration and necrosis of the tail, called ringtail.

### **Guinea Pig Containments**

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 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 75F and a humidity level below 50%. Heat stroke is a risk at temperatures above 85F.

### **Gerbil Containment**

Gerbils are gregarious and can be housed together, regardless of gender. They are good jumpers and the enclosure walls should be tall enough to prevent them from jumping out plus a lid for additional assurance of preventing escape. Gerbils are very active and need space to prevent behavior problems associated with overcrowding. Therefore, enclosures should provide at least 12 X 24 inches for a pair of gerbils with walls at least 12 inches high.

The container floor should be solid and smooth. Gerbils like to frequently stand on their hind feet which could lead to injuries of their small feet or delicate tail by wire mesh flooring. Likewise, only solid floored exercise wheels should be used for gerbils. Wheels that have spokes which might catch their tail should not be used. Glass aquariums or plastic tubs with wire mesh lids for ventilation are adequate containment structures. Five gallons of space are needed for each gerbil. Gerbils are indigenous to the desert so a pan of sand should be provided for gerbils to bathe in for personal hygiene and mental stimulation.

The best temperature range is 60-90F, and relative humidity should be near 30%. Aspen shavings, sand, or paper products are adequate substrates. Container enrichments should include PVC tubing for hiding and exercise, as well as ladders, cardboard boxes, toilet paper or paper towel tubes, ramps, and rocks.

### **Hamster Containment**

Adult, sexually mature, golden (Syrian) hamsters should be housed alone, except for breeding. Chinese or Russian hamsters are smaller, less solitary, and can be housed in groups of littermates. Stainless steel cages are best with deep bedding for burrowing using aspen shavings or paper products. Enclosure walls should be at least six inches above the level of the substrate. A single hamster should have a cage of at least 12 X 16 inches and 12 inches high.

Cages should be well ventilated. Wire cages are preferable. Female hamsters come into estrus every four days accompanied by a strong odor.

Recommended cage enrichments include an exercise wheel of fine mesh or solid running surface, and ramps, ladders, and tubes for climbing and hiding. Exercise wheels should be at least 5 ½ inches in diameter. A hamster exercise ball may be beneficial, but there can be risks of injuries from rolling down stairs or exhaustion.

When reassembling the enclosure after cleaning, hide boxes, chew blocks, and other items should be replaced in their original locations. Hamsters are finicky about the arrangement of their enclosure.

The temperature should be maintained between 64 and 79F. At temperatures below 50F, hamsters will hibernate (go into a prolonged dormant state) and at above 80F, hamsters will estivate (a sleep-like state similar to hibernation).

If you have comments or you're interested in particular animal handling subjects contact us at [CBC@BetterAnimalHandling.com](mailto:cbc@betteranimalhandling.com)

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

- 1. The gender of pet rodents should be confirmed to provide needed separation for some.**
- 2. Rodent cages should never be made of wood. All rodents gnaw wood.**
- 3. Rodent containment considerations include species-appropriate ventilation, temperature, substrate, hiding areas, and exercise room.**

More information on animal handling can be found in my book, *Animal Handling and Physical Restraint*, published by CRC Press and available on Amazon and from many other fine book supply sources. My new spiral-bound handbook, *Concise Textbook of Small Animal Handling* was recently published and available from all major science book supply sources.

Additional information is provided at: [www.betteranimalhandling.com](http://www.betteranimalhandling.com). This website has more than 150 past podcasts with notes on handling of dogs, cats, other small mammals, birds, reptiles, horses, cattle, small ruminants, swine, and poultry.

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.