

Operational Guide

Small Mammals



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About the Authors

Joanne Cronan Hamoy of the Stevens-Swan Humane Society of Oneida County, Inc. in New York wrote the rabbit, rodent and exotics portion of the Small Mammals Operational Guide, with contributing editing and updating in the 2010 edition by Dena Fitzgerald of American Humane. Cathy M. Rosenthal wrote the ferret portion, with contributing editing by L. Vanessa Gruden of the Ferret Association of Connecticut.

American Humane would also like to thank the following for their contributions in reviewing, rewriting and updating this guide: Jean Weber, director of shelters for the Massachusetts Society for the Prevention of Cruelty to Animals, and Dr. Tracy K. Ritzman, DVM, Dipl. ABVP, avian and exotic animal veterinarian for the Angell Animal Medical Center.

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Introduction

The number of rabbits, rodents, ferrets and other exotic animals surrendered to shelters has increased significantly over the past several years.

Rabbits rank third, just behind dogs and cats, when it comes to owner surrenders at shelters. Some shelters house such significant rabbit populations that February is designated as “Adopt-a-Rescued-Rabbit Month” by the American Society for the Prevention of Cruelty to Animals (ASPCA) and the House Rabbit Society. Overall, rabbit ownership has increased significantly. According to the American Pet Products Association 2009/2010 National Pet Owner’s Survey, there are approximately 5.5 million companion rabbits owned by 2.2 million households in the U.S.

Whenever exotic pets gain popularity, their numbers usually increase. While rabbits, rodents and ferrets are considered only slightly unusual, other species may fall into the highly unusual category, such as chinchillas, sugar gliders and hedgehogs. These animals are considered “fad pets” since people often buy them at the height of their popularity, only to surrender them when their “newness” wears off or when it becomes too expensive to properly care for them. These “fad pets” will eventually make their way into local animal shelters and rescue groups, leaving shelter staff to determine their fate.

It’s an increasing challenge for shelters as more and more of these small pets are surrendered. Many shelters are not prepared financially or logistically to care for these animals. With space often at a premium, it is difficult to find room for

appropriate housing. When space is available, it is usually in an out-of-the-way location that generates little foot traffic.

There is a continuing need for shelter staff to better understand the health and behavior issues associated with these animals, not only to properly care for them while in the shelter, but also to educate the public and successfully place them into responsible and appropriate homes.

In order to keep pace with the never-ending changes in our society, shelters must constantly re-evaluate programs and services offered, including taking on pets beyond cats and dogs. To determine whether your shelter can realistically accommodate and meet the needs of small animals, answer the following questions:

- Can you set up an area separate from dogs and cats?
- Do you have money in your budget for equipment and start-up accessories?
- Will you have adequate staffing to cover the extra work involved?
- Are there available resources in your community for equipment and supplies?

If the answer is yes, the following guidelines will help you establish and maintain a small-animal population within your shelter. This guide includes information on basic care, proper housing, handling, nutrition, behavior and common illnesses.

Using Volunteers

Most shelter volunteers are adept at caring for dogs and cats, but small animals are just as social and need just as much interaction during their shelter stay.

Volunteers can be a huge asset here. Make sure volunteers are trained to properly care for, handle and socialize small animals. The more interaction they have with people, the better their chances for adoption. Local rescue groups can also be good resources. They may be helpful in training staff and volunteers to care for small animals and/or in placing them.

A Note on Safe Litters and Bedding

When choosing bedding for small animals, never use pine or cedar shavings, as they contain toxic chemicals that can cause liver disease, as well as respiratory problems.

As for litter, don't use clay, clumping-sand cat litters or corncob litters, as these products are harmful to small animals if ingested. (Corncob litter can be used only with rats.)

There are litter alternatives that are effective, nontoxic and safe. Two inexpensive and readily available litter products for rats, mice, hamsters and gerbils are rabbit food and alfalfa pellets. However, do not use these products with rabbits or guinea pigs since they will see the pellets as a food source.

Paper litter is a good alternative since it absorbs and holds moisture in place.

A listing of small-animal litter/pellet manufacturers is below:

CareFRESH[®], International Absorbents, Inc., 800-242-2287, www.carefresh.com. CareFRESH is made from extra-long, extra-soft, bleached-paper fibers, providing a natural, comfortable and absorbent living environment

Cell Sorb Plus[®], Fangman Specialties, (888) 247-3993, www.cell-sorb-plus.com. Soft pellets of recycled newspaper containing a nontoxic, patented, naturalizing mineral for excellent odor control

Critter Litter[®], Super Pet, 847-956-1130, www.superpetuse.com. Made from all-natural nontoxic bentonite, Critter Litter absorbs moisture on contact and inhibits the bacteria that cause pet-waste odors

Kozy Korner Ferret Litter[®], Sheppard & Greene, (800) 851-6661. Pellets are made from recycled newspaper and are treated with natural enzymes to help prevent odors

Yesterday's News[®], Purina, 800-778-1205 www.yesterdaysnews.com. Pellets are made from recycled newspaper with an odor-absorbing ingredient; pellets available in regular or soft textured

Critter Country[®], Mountain Meadow Pet Products, Inc., (800) 752-8864. Critter Country is a small-animal, reptile and all-critter bedding made of winter wheat grass and several other plant fibers; provides a safe, odor-free and dust-free environment

Pet Rabbits

Overview

According to surveys conducted by the American Veterinary Medical Association and American Pet Products Association, rabbits are the most popular small-mammal pets in the United States.

Rabbits are considered a non-ruminant, monogastric, herbivore (plant-eating) mammal. Some sources still classify rabbits as rodents, but this is erroneous. They are lagomorphs.

Rabbits have 28 teeth that grow continuously throughout their life. These teeth include the front incisors, a set of peg teeth directly behind them, and a full set of premolars and molars on both the top and bottom jaw.

Rabbits have a sensitive gastrointestinal tract and a cecum that is a fermenting vat, rich with vitamins that produce cecotrophs. These cecotrophs contain valuable minerals and are re-ingested by the rabbit. Because of the anatomical arrangement of the cardia and stomach, the rabbit is unable to vomit. A second fecal pellet that is rounder and drier than the first is deposited as a consequence of digestion.

A rabbit's long ears can funnel sounds into its inner ear. The ears also help regulate body temperature.

The skeleton of the rabbit comprises only 8 percent of its total body distribution, compared with 13 percent in cats.

Rabbits have wide, laterally set eyes and can see from all sides (but not from above). They also have a blind spot

directly in front of their nose, so they don't like people approaching them from this vulnerable spot.

Rabbit glands produce scents that can only be detected by other rabbits. Rabbits of both sexes use glands at the chin to mark territory, and secretions at the perineal area (located between the anus and external genitalia) to establish territory and attract the opposite sex. Rabbits also possess inguinal pouches (vent areas near the groin) on either side of the genitals that emit a strong scent.

Rabbits are born with acute senses to detect motion and are capable of fleeing within seconds from imminent danger. As a result, they can be difficult to catch, especially in rescue situations.

Because rabbits lack footpads on their paws, they slip easily on slick surfaces. They have five digits on their front paws and four on the back. Their nails grow constantly and must be clipped every three to four weeks.

Setting Up Your Rabbit Area

Create a rabbit area that can comfortably hold about six cages. Ideally, cages with a plastic base and epoxy-coated, detachable wire top should be used. Wire-bottom cages should be avoided, as they are uncomfortable and can cause sores of the rabbit's feet. If wire-bottom cages must be used, then be sure to provide a piece of wood as a comfortable resting place. All rabbits should be provided with a litter box. Provide good ventilation to keep rabbits healthy. Accessibility to natural light or windows is essential, as a sunny, cheerful area will minimize stress. To further minimize stress, add a door to the

area to block out the sounds of the other animals in the shelter.

Keep the rabbit area at about 60-65 F, with low humidity. Rabbits are highly subject to heat stress at temperatures greater than 72 F. It is not recommended that rabbits be housed outdoors due to danger from temperature fluctuations and from predators. Always transport a rabbit in an air-conditioned vehicle if the weather is hot.

Here are some things to consider when planning a rabbit area:

- The area must be climate controlled or have a constant exchange of fresh air. Although enclosures will be cleaned daily, odors from urine can cause ammonia fumes, so keep air moving. With unaltered male rabbits, high levels of testosterone also cause an odor (one reason why neutering males is so important).
- In addition to daily cleaning, empty the cages and move them outside a few times a year for heavy-duty cleanup.
- Secure the entire area to prevent unfortunate encounters with other animals in the shelter. The actual enclosures also need to be secure to prevent rabbits from escaping. Make sure the cage parts are free of sharp edges, rust and corrosion.
- Do not use enclosures made from wood or any other porous surface, because these surfaces cannot be properly sanitized and can contribute to the spread of disease.

- Choose rabbit enclosures that are as large as possible to accommodate a wide variety of breeds, because you never know what type of rabbit will be relinquished. You may receive a 3-pound Netherland Dwarf one day and a 15-pound Flemish Giant the next.
- Rabbits need privacy. Supply them with a cardboard box or other boxed-in area with a small nesting area where they can get away from people and noise.
- When establishing a rabbit space at your shelter, consider calling rabbit experts, possibly from a special-interest rabbit group. They might offer tips to make setup easier.

Housing Rabbits

Housing is the most important investment you will make. In a shelter setting, it is important to set a good example by making sure the area is comfortable, spacious and tailored for the rabbits' specific needs. New rabbit owners can use your setup as a guide to furnishing a rabbit enclosure at home.

When it comes to either altering an existing location or purchasing new housing for rabbits, go with plastic-bottom cages (as mentioned above) that are specifically made for rabbits. A common mistake in rabbit housing is using a cage that is too small. Transport cages are designed only to house rabbits for short periods of time. Unfortunately, many people don't understand a rabbit's needs and think these cages are adequate for long-term housing. To put it in perspective, living in this environment is the

equivalent of eating, sleeping and living in your bathroom. Couple those cramped quarters with no mental stimulation, and you end up with a very unhappy animal. Confining any animal in such conditions is inhumane.

As a rule, a standard rabbit cage should measure at least four times the size of the rabbit. The door on the front of the cage usually flips outward. Having a top door is a nice feature when bunnies are too shy or too scared to come out of the cage on their own.

Overall, proper rabbit housing provides the animal with an environment that is:

Safe

Keep all wire free from sharp parts or open holes (such as the spot where a metal feeder inserts). Any sharp wire can cause injuries that may be hard to detect under fur.

Private

Keep a wooden box or cardboard box in the cage that can be replaced when it becomes soiled, and a small blanket or towel for the rabbit to use to hide and burrow. These items provide a secure, dark hideaway that can calm a stressed rabbit.

Spacious

The cage should provide plenty of space to include:

- A litter box
- An empty area to hop around in
- A small sleeping area with box and toys
- A food bowl and water bottle

Equipment Needs

Basic equipment needs for a complete rabbit housing unit include:

Water Bottles

Water containers for rabbits come in a standard 32-ounce size and are made from polyethylene (hard plastic). They have a stainless-steel sipper tube that is placed inside the cage at a comfortable height for the rabbit to reach (3 to 5 inches from the cage floor). The wide-mouthed style is recommended and preferred by most rabbits. Order one water bottle for each cage and a few extras in case of breakage.

Food Bowls

Use only heavy stoneware food bowls for rabbits. Anything lightweight will be used as a toy and flung around the cage, wasting food. A bowl 5 inches in diameter is the most widely used size for all breeds. Order them by the dozen, stocking a few extra bowls in case of breakage.

Hayracks

This small trough-type accessory is for feeding hay to a rabbit. Attached to the outside of the cage, the hayrack enables the rabbit to pull mouthfuls of hay through the cage bars. This device keeps hay clean and prevents waste. Most hayracks are small, however, and will only allow a few ounces of hay to be fed at a time. You can custom-make your own larger hayrack, if desired.

Other

Other backup items include:

- A commercially made nesting box for unexpected litters
- Litter boxes for each cage
- Rabbit-safe cleaning supplies
- Several rolling waste barrels for food/hay storage (with covers)

Daily Cleaning

Daily spot cleaning and maintenance of rabbit cages is essential. The area must not only be clean and cared for to appeal to the

public, but to maintain the animals' health as well. Rabbit areas often become untidy, since rabbits like to move items around. They may knock the hay from their cages onto the floor. Unaltered males are likely to spray urine and drop fecal matter onto the floor too. Therefore, clean all equipment daily. This also prevents the buildup of ammonia in the air.

Never use a quaternary agent (which breaks down mucous membranes), pine-based cleaners, heavy oil-based cleaners or ammonia in a rabbit area. Bleach diluted 1:32 with water can be used only when the rabbit has been removed from the cage and is out of the room. Allow 10 minutes of contact time, then thoroughly rinse and dry before placing the rabbit back in the cage. Dishwashing liquid is the only cleaning agent that should be used in cages when rabbits are present.

Remove, clean and refill all water bottles every day, and check them periodically throughout the day. Dump out all food bowls and replace with new pellets daily. Pellets will absorb moisture from the air and therefore can spoil after being in the open for 24 hours. Provide fresh grass hay every day.

A rabbit area that has odors or looks untidy gives a poor impression to the public, leading people to believe that these animals are hard to keep clean and won't make good house pets.

Dietary Needs

Rabbits are strict herbivores and should be offered a diet rich in high fiber. They are monogastric (one stomach), hindgut (cecal) fermenters with additional microbial digestion.

Rabbits have a very delicate digestive system. And although they thrive on high fiber, they cannot store coarse fiber for long periods. Instead it is passed through the digestive tract and extruded in their hard, dry fecal droppings within several hours after eating. They also pass darker, sticky clusters of fecal droppings called cecotrophs that look like a roll or a grape cluster. This phenomenon is not ordinarily known to most new rabbit owners and sometimes causes concern when seen for the first time, especially when these cecotrophs are re-ingested by the rabbit. No need to be alarmed, though, as this is normal behavior. The cecotrophs are rich in vitamins.

Commercial pellets provide rabbits with the essential vitamins, nutrients and minerals needed to grow and maintain good health. Pellets should be fed in measured quantities according to a rabbit's size and age. Growing bunnies under 5 months of age should be free-fed alfalfa-based pellets. Adult rabbits should not be free-fed, as this can lead to obesity and digestive problems. Ideally, adult rabbits should be fed Timothy-based pellets that provide a higher fiber and lower calorie level. However, Timothy-based pellets are significantly more expensive than the alfalfa-based variety. In the shelter environment, it is acceptable to feed all rabbits alfalfa-based pellets as long as care is taken in restricting the amount fed to adults. Rabbits should never be fed pellets that are mixed with seeds, nuts, dried fruit or other treats, as these can cause severe digestive problems.

Pay attention to expiration dates and make sure bags of pellets are not broken or damaged. The pellets should also be free of dust or parasites, especially near the bottom of the bag. Avoid buying pellet

feed from open bins or containers in feed stores. Without an expiration date, you may not be able to determine whether the product is rancid or not. (The fat content in the feed is the first to spoil.)

Pellets may be purchased in convenient 25- or 50-pound bags. For safe storage, set the bag inside a rubber or hard plastic garbage barrel on wheels. Keep the lid on tight at all times to prevent parasites from creeping in during the spring and summer months. Do not purchase more than six weeks' worth of feed, as it will spoil.

As with any animal, abrupt changes in a rabbit's diet may cause stomach distress, so it is important to use the same brand of pellets consistently. Some rabbits are very picky eaters. If the pellets are poor in quality, the rabbit may not eat them at all, and you may have to switch to a higher-quality pellet.

Feeding rabbits is relatively easy, as they adapt quickly to a regular routine. Most shelters feed rabbits early in the morning and again in the late afternoon before closing. However, do not refill the bowl after the daily pellet ration is eaten. Unlimited amounts of pellets can lead to obesity, kidney or bladder disease, diarrhea and other digestive tract problems. Feeding excess pellets is one of the major causes of health problems in rabbits, so make sure you are not overfeeding. Adult rabbits should be fed 1.5 tablespoons of pellets per 2 pounds of body weight daily for non-breeding, non-nursing rabbits.

A rabbit diet is more than just pellets though. All rabbits should have access to free-choice Timothy grass hay. Alfalfa hay should not be given to rabbits because it contains high calcium levels, which can

lead to bladder stones. Make sure all hay is fresh, free of dust and/or mold spores (smell it), and doesn't harbor any thorns or foreign objects, such as sticks, pieces of plants or thistles. Fresh hay should be green in color, soft or silky to the touch, and have a fresh aroma. Hay should not be used if it is wet or appears to be dusty, dirty, moldy or old. Hay can be kept in a barrel that is covered with a lid or in a small shed or outbuilding if it is purchased in large quantities. Based on a dozen rabbits, a bale usually lasts one month.

A rabbit's diet should also be supplemented with some fresh vegetables. Safe veggies include carrots, carrot tops, parsley, collard and mustard greens, romaine lettuce, kale and spinach. Rabbits should not be fed iceberg lettuce, cabbage, beans or potatoes! Always make sure vegetables are fresh, not wilted or spoiled. Fruit, seeds, nuts, cereal and all types of treats should be avoided because they can cause digestive problems.

Rabbits drink a lot of water for their body size, so provide adequate water at all times. Clean and inspect water systems daily, because many rabbits will chew on the ends of the sipper straw and damage it. If using water bowls, make sure the sides are high enough that the rabbits' dewlaps do not get wet, causing wet dewlap disease. Clean and disinfect the water bowls daily, as they are easily contaminated.

Rabbit Examinations

Give every rabbit that enters your shelter a health evaluation before putting it up for adoption. Ideally, quarantine a rabbit overnight in a small cage away from the main adoption area and examine it on the following day. However, if this is not possible, a thorough examination can be

done on a new arrival, but only after the animal has had a chance to rest.

Rabbits can be a challenge to hold during an examination. They are nervous and capable of biting, scratching and bucking until they are either dropped (often shattering small bones) or escape off the table. Rabbits are not comfortable on slick surfaces, so place a blanket or towel on the examination table.

Don't forget to scan for a microchip if the rabbit was brought in as a stray.

The following is a list of things to look for during the exam:

Body Movement.

Place the rabbit on a large rug or blanket and observe its movements.

Good Signs

- Normal movement
- Seems alert
- Looks around
- All limbs move normally
- Head is level

Bad Signs

- Slipping
- Twisting of head
- Drifting from side to side
- Inability to move
- Back legs cannot move
- Lameness in any limb
- Lack of coordination
- Loss of balance

Fur

Run fingers through fur to check the overall condition.

Good Signs

- Clean, soft, silky, lustrous and completely covers body
- Molting (several times a year is normal)

Bad Signs

- Patches of balding
- White, flaky dandruff appearing when fur is plucked from the body
- Areas of red, scabby skin lacking fur
- Very thin, coarse fur
- Fleas or dirt
- Fur soiled with waste material at the perineal area

Eyes/Nose

Check eyes and nose for signs of problems.

Good Signs

- Eyes are lively, bright and clear
- Looking around and able to focus on objects

Bad Signs

- Discharge that is either clear or whitish in appearance
- Red-rimmed eyes
- Swollen or sore eyes
- Scratches to the eye surface
- Cloudiness, cataracts, ulcers or other conditions
- Nose should be clear of discharge, lesions, scabs, or sneezing and rattling

Ears

The ears should be in good condition and easy to examine with an otoscope or pen flashlight.

Good Signs

- Inner canal of the ear should be pink and free of brown, scabby matter

- Ear should be clear of odor, discharge and excessive ear wax buildup

Bad Signs

- Shaking the head or scratching at the ears
- Outer surface scabs
- Severe mite infestation (appears as brownish-red deposits and leaves lesions)
- Scratch marks from nails in attempt to alleviate itchiness
- Tears and/or fresh wounds from predator or aggressive cage mate

Note: Occasionally a small wart may be seen in lopped ears and is not usually a cause for concern.

Respiratory Tract

The rabbit should be breathing normally. If possible, listen to the rabbit's chest with a stethoscope. Otherwise, lean in and listen to the chest with your ears.

Good Signs

- Breathing through the nose, clear and virtually without sound

Bad Signs

- Wheezing or labored breathing
- Sounds of distress
- Congestion
- Rattling and/or snorting, sneezing

Mouth

With the rabbit gently restrained in dorsal recumbence (on its back) on your lap, check the mouth.

Good Signs

- Whitish-yellow and translucent teeth
- Properly aligned and of uniform short length
- Free of odor, bumps and open cuts

Bad Signs

- Overgrown, curling teeth that do not meet in a bite
- Teeth spurs or other problems
- Gums that are whitish-blue and not pink (could indicate a circulation problem)

Body

Give a good overall examination of the entire body.

Good Signs

- Body and fur is lustrous and free of lumps or bumps (abscesses, tumors or cysts)
- Jaw has no bumps
- Genital area free of fecal waste or urine scald, foreign debris, maggot infestation, perineal staining or lesions

Bad Signs

- Anorexia, lethargy or obesity
- Bloated abdominal region or hard abdomen (listen for internal sounds with stethoscope)

Nails

Check all nails on front paws and back feet when rabbit is in dorsal recumbency on your lap.

Good Signs

Nails should be short, blunt and all present (five on each front paw, including dew claw, and four thicker nails on the back feet)

Bad Signs

Nails are twisted, broken off, excessively long, and curling or bleeding. Trim with small cat claw scissors, taking great care not to cut into the artery. If there are dark claws, use a penlight or flashlight

projected through the claw to determine where the artery is before clipping

Urine Output and Fecal Droppings

The rabbit should be passing waste in a normal fashion.

Good Signs

- Round, hard droppings in moderate amounts
- Clear or yellow urine (Rabbit urine changes color frequently. Urine colored red by high amounts of alfalfa or beta-carotene has often been mistaken for bloody urine)
- Moist, grape-like cecotrophs
- Unaltered male rabbits deposit white, chalky or strong-smelling urine

Bad Signs

- Real blood in stool or urine
- Sludgy piles of runny stool
- Excessive fibers holding fecal droppings together
- Mucous in stool
- No urine output or fecal droppings in a 24-hour period
- Parasites in stool, the most common being coccidiosis

Signs of Aging

It is difficult to determine the age of an adult rabbit, but they will generally begin to develop nuclear sclerosis (clouding of the eye) around 8 years of age. Many older rabbits also develop cataracts and moderate arthritis.

Basic Health Care

Rabbits are an entirely unique species when it comes to health care. Basic medical knowledge can be extrapolated from other species, but rabbits are prone to diseases entirely specific to lagomorphs. Rabbits exhibit much subtler signs of

illness than other species, mainly because they don't vocalize. Many times illness is not detected until it's too late. They can become sick and go off feed, but by this time the prognosis is usually poor. However, many common illnesses can be treated in rabbits, so euthanasia for simple, commonly seen conditions in rabbits is not usually necessary. Rabbits showing any of the above "bad" signs should be further examined by a veterinarian.

In the last 10 years, the domestic rabbit has made great leaps in popularity as a house pet. As a result of this phenomenon, veterinarians now see rabbits more often as patients. Exotic-animal veterinary practices are increasing across the United States, so rabbit owners can expect competent medicine, treatment and surgery for their beloved pets. Shelter veterinarians have no doubt seen an increase in the number of rabbits needing to be spayed, neutered or treated for some type of medical condition.

Major rescue organizations for rabbits are increasing in number, and their publications are filled with medical and health information for the serious pet owner, as well as for shelter personnel and veterinarians. However, make sure the information you receive on rabbit care is current, because dated medical advice may result in fatal consequences. For example, rabbits cannot tolerate medications, such as amoxicillin, that are suitable for dogs or cats. Veterinarians caring for rabbits should be well-versed in exotic-animal medicine, surgery and treatment regimens.

Three highly recommended resources for rabbit medicine include:

- *Ferrets, Rabbits, and Rodents, Clinical Medicine and Surgery* by Elizabeth Hillyer, DVM, and

Katherine Quesenberry, DVM
(published by W.B. Saunders)

- “Diagnostic and Therapeutic Techniques in Rabbits” by Karen Rosenthal, DVM, MS, ABVP Diplomate (as repeated in the Proceedings from House Rabbit Society Veterinary Conference, 1997, Berkeley, Calif.)
- “Shelter Medicine for Veterinarians and Staff” Edited by Lila Miller and Stephen Zawistowski

Spaying and Neutering

Spaying and neutering has revolutionized keeping rabbits as pets. Altering improves rabbit behavior and health in many ways. For people who are familiar with rabbits, it is probably difficult to imagine living a happy, content and harmonious life with an unaltered rabbit.

From the standpoint of animal welfare groups, spaying and neutering is one way to control overpopulation and reduce the number of rabbits surrendered to facilities and euthanized year after year. Female rabbits can be spayed as young as 3 to 4 months of age. Spaying and neutering not only improves behavior and prevents aggressiveness, but also prevents uterine adenocarcinoma (cancer), which can affect as many as 80 percent of female rabbits over the age of 4 years. Female rabbits who are not spayed may also have frequent mood swings and can become very territorial, making some of them unapproachable. An unspayed female may lunge, bite and act miserably, even when caged alone.

Males can be neutered as soon as the testicles descend, usually around 3 months of age. An unaltered male rabbit may exhibit aggression and urine spraying.

Even though neutering can eliminate urine spraying, many pet owners are unaware of this solution and eventually surrender their rabbit to the shelter.

When rabbits sexually mature, whether male or female, their behavior changes drastically: sexual mounting, injury-causing biting, urine spraying and acting aggressive with other rabbits of the same sex are the most common. Altering is the best way to pair two rabbits. Altered rabbits respond more to being petted and their personalities, in general, are calmer.

Rabbits have a gestation period of approximately 31 days. A female rabbit, called a doe, can conceive again within a few hours after giving birth, which makes rabbits one of the most prolific animals on earth.

Altering a rabbit is a very safe procedure when performed by an experienced veterinarian who is familiar with procedures both pre-operatively and post-operatively. There are surgical considerations for rabbits that are quite different from dog and cat surgeries. The rabbit must be closely monitored. Anesthesia must be calculated at the appropriate dosage, used for the correct duration of time and be appropriate for use in rabbits. Dangerous responses to commonly used drugs and resistance to restraint and other procedures during surgery can compromise a rabbit. The use of the inhalant anesthesia isoflurane has made it possible to safely spay and neuter rabbits.

Complications that may lead to longer surgeries include excessive abdominal fat that makes locating organs difficult, or a cryptorchid male (a problem in which one

testicle is located in the abdomen or other areas).

A common misconception is that fasting is necessary in rabbit patients. Due to the anatomical arrangement of the cardia and stomach, risk of aspiration during surgery is nonexistent. Some veterinarians may recommend pulling food a few hours before the surgery, but you should make water available at all times (especially after surgery).

During a typical neuter or spay, the rabbit is anesthetized and prepared for surgery. All reproductive organs are removed as swiftly as possible. Rabbit tissue is extremely delicate and should be handled very carefully. After a male has been neutered, it is essential to avoid a hematoma (painful swelling accompanied by pressure of blood) inside the scrotal sac. This can be avoided by making sure that all tissue has been ligated tightly. Veterinarians should also close the outside of the scrotal sac in rabbits. Since rabbits will often chew sutures, closure of the external surgical site should be done with surgical skin adhesive.

Spaying a female rabbit is challenging surgery, even for skilled veterinarians. In many cases, it may be difficult for the veterinarian to locate and remove all reproductive organs. It is important that no remnants are left behind. Veterinarians are urged to consult with another colleague if they are not familiar with analgesia protocols, surgery and follow-up treatment for rabbits.¹

Rabbits require post-operative care. They should start nibbling at food or hay within six to eight hours after surgery. The incision must be observed closely for bleeding, infection or swelling. Rabbits

should be restricted to cage rest for at least one week. Avoid lifting the rabbit except for the daily check of the incision.

The rabbit patient is delicate, and the use of analgesics may become necessary after surgery as well.

Assisted Feeding

Rabbits are prone to conditions that may be difficult to diagnose when presented to a veterinarian, especially when the rabbit has no known prior history. A common problem is gastric stasis, which occurs when gastrointestinal motility ceases. Rabbits can go off feed during periods of stress, when pellets have been suddenly changed or when bacteria in the intestinal tract has been altered by toxic antibiotics. Under these conditions, place rabbits on a high-fiber diet.

If you must assist the rabbit with feeding, make a simple mixture by pulverizing pellets into a fine powder mixed either with baby food (apple or carrot baby food works best) or canned pumpkin. A small pinch of powdered lactobacillus acidophilus and a powdered enzyme supplement works miracles in getting rabbits to eat again. Another supplement now available and very effective is Oxbow Herbivore Critical Care Powder[®]. Mix well to a liquid consistency and allow the rabbit to be positioned in a normal ventral position to syringe feed. Gently open the mouth and insert the syringe at the diastema (the gap between the front incisors and cheek teeth) and administer slowly, taking great care to avoid aspiration.

Give the rabbit plenty of time to swallow between servings. Usually three feedings of approximately 10 to 15 cc daily will get its gastrointestinal tract moving again.

Never let a rabbit go without eating in the hope that he will eventually eat again on his own. Ketosis or hepatic lipidosis (both life-threatening conditions) can quickly develop in an anorexic rabbit. Fresh greens are often successful in getting a rabbit to eat again on its own.

Antibiotics and Other Drugs

Administering powdered, liquid or injectable antibiotics without the direct supervision of a veterinarian is not recommended. Rabbits are extremely sensitive to antibiotics, and fatal results can occur from incorrect dosages, improper administration and not using the drug for the appropriate length of time. Antibiotics used in the water may prevent the rabbit from drinking. Always consult a veterinarian when a rabbit is ill and needs antibiotics.

Antibiotics that have been used with excellent results include fluoroquinolones (enrofloxacin, ciprofloxacin), sulfa drugs (trimethoprim sulfa, etc.), chloramphenicol, and metronidazole.² Discontinue use of antibiotics if diarrhea or other side effects occur.

Antibiotics that should never be used for treating rabbits are the cephalosporins: amoxicillin, ampicillin, clindamycin, lincomycin and erythromycin.

Parasites

Advantage[®] produced by Bayer is generally safe as an off-label use for treating flea infestations in rabbits. Topical ear-mite medications used in cats can also safely be used in rabbits. Internal parasites, upon confirmation, can be treated with many available drugs that have a wide safety margin in rabbits. An exotic formulary, such as those found in publications available through Veterinary

Learning Systems and the American Animal Hospital Association, offer valuable information on what is safe and widely used to treat conditions in rabbits. Almost all medications that are used must be extrapolated from other species and used “off label.” Since rabbits are classified as a minor species, the Food and Drug Administration (FDA) has not cleared specific drugs for use with them.

Common Rabbit Diseases

This section offers a list of the most common clinical problems seen in rabbits. However, this is not a complete list of all possible diseases that can affect rabbits. For more information on specific diseases, consult a veterinarian.

Dental

Malocclusion occurs when the rabbit’s teeth are not properly aligned. This is usually a genetic condition and is most common in smaller breeds, like the Netherland Dwarf and Holland Lop. Since a rabbit’s teeth grow continuously, they are normally worn down by eating and chewing as the upper teeth grind against the lower teeth. However, maloccluded teeth will not be worn down and will grow into the rabbit’s gums or protrude outside the mouth, making it painful or impossible for the animal to eat. Malocclusion can be managed by trimming the teeth every two to three weeks as needed.

Dermatological

Alopecia is hair loss, thinning and bald spots often aggravated by nervousness, false pregnancy and hormone imbalance.

Dermatitis is skin inflammation caused by ear mites, fur mites, fleas, flea allergy, bacterial infection and fungus (ringworm, for example).

Rabbit fur mite, also known as *Cheyletiella parasitovorax*, lives on the keratin layer of the skin and is very contagious. Clinical signs include “walking” dandruff flakes over the head, back and near the tail that can cause reddening of the skin, swelling and sensitivity to touch, bald spots and excessive fur loss. Treat rabbits as well as the environment.

Rabbit ear mite, also known as *Psoroptes cuniculi*, burrow into the ear canal and can spread to other areas of the head and neck, causing severe itching, redness, crusts, lesions and bleeding in affected areas. This is also called an “ear canker.”

Abscesses are most commonly caused by the bacteria *Pasturella multocida*.

Viral skin diseases, like myxomatosis, cause swelling, lesions, tumors, discharge, fever and often death. Although these diseases were concentrated on the West Coast of the U.S. several years ago, there have been several cases reported on the East Coast as well. They are usually transmitted by biting insects, most commonly mosquitoes, that bite infected wild rabbits and transmit the virus to domestic rabbits who do not have immunity to the disease. Keeping rabbits indoors will help reduce the risk of them contracting the disease.

Dermatophytosis is a form of ringworm (fairly uncommon) that causes round, patchy lesions of hair loss around the facial area, ears, feet or legs. *Trichophyton mentagrophytes* is the most common ringworm isolated.

Fleas are commonly seen in rabbits who have been outdoors or in multiple

households. Treat rabbits as well as the environment.

Myiasis, also known as fly strike or maggot infestation, usually occurs in the perineal area. Common flies invade the area and deposit larvae that hatch and attack the skin, genitals and insides of legs. Cuterebra larva from the myiasis fly causes a large swelling with a small air hole. The larva needs to be removed with hemostats to avoid rupturing it. Anesthesia may be necessary to calm the rabbit. Myiasis is painful and causes itching and irritation. It can also cause extensive tissue damage and can become life threatening. This is another reason to house rabbits indoors.

Hair pulling can occur in rabbits who are bored or lack the necessary levels of fiber in their diet.

Moist dermatitis, often called “wet dewlap,” is from saliva or moisture from a water crock that collects under the chin. *Pseudomonas aeruginosa* can cause the skin to turn greenish; it should be treated and kept dry. Urine scald in the perineal area is another common form of moist dermatitis. Keep the area dry, and provide the rabbit access to dry resting material.

Gastrointestinal

As the rabbit matures, the gastrointestinal tract is prone to several disorders. Various factors — such as dietary changes, too many carbohydrates in the diet, stress, bacterial infections or toxic antibiotics — can cause enteritis complex. When a small disruption in normal cecal flora occurs, soft or pasty stools can form.

Obesity can complicate matters when the rabbit is unable to reach the area to groom. The solution to these problems usually

involves reducing the cause of stress, increasing fiber in the form of hay (timothy, alfalfa or mixed) and removing starches and carbohydrates from the diet. To encourage the growth of normal bacteria, provide a high-fiber diet and “assist feed” with a pulverized pellet mixture. A veterinarian may also prescribe the use of gut motility drugs.

Bacteria and Protozoan parasites can cause diarrhea in rabbits and can include coccidia, *Encephalitozoon cuniculi*, *Toxoplasma cuniculi* and *Toxoplasma gondii*. Prevention includes keeping rabbits away from contaminated food, water and infected waste from another carrier.

Cyniclomyces guttulatus is a normal yeast present in rabbit cecal bacteria that can confuse many practitioners when seen during a fecal examination because it looks similar to parasites.

Neurological

Rabbits can be affected with neurological disorders caused by *Encephalitozoon cuniculi*. This organism can cause head tilt, lethargy, weight loss and/or tremors. Acute death can also occur with this infection, and some rabbits with this disease may not show any clinical symptoms prior to death.

Torticollis, or “wry neck,” causes head tilt or drifting and is another common neurological disorder.

Loss of balance, urinary incontinence and hindquarter paralysis can be observed.

Seizures, lead poisoning, pregnancy toxemia, heat stress and rabies (rare) can all cause neurological disorders in rabbits.

Baylisascaris procyonis, or the raccoon roundworm, (found in feces) can cause neurological symptoms as well. This can be carried by wildlife to rabbits who are housed outdoors, are in direct contact with soil or eat contaminated feed or hay.

Reproductive

Uterine adenocarcinoma is an extremely common cancer in unsprayed females. Spaying is highly recommended before the age of 2.

Pyometra/endometritis is a disease of the uterus that can cause enlargement, anorexia, weakness and discharge.

Orchitis/epididymitis is a disease that causes enlarged testicles and may be accompanied by fever or weight loss. Abscesses may be present. *Pasteurella* is often involved.

Rabbit syphilis, or vent disease, is caused by a spirochete, *Treponema cuniculi*. It is highly contagious, sexually transmitted and usually seen in breeding animals. Sores develop around the vent (genital) area and sometimes on the face. Treatment is with injectable antibiotics.

Pregnancy toxemia occurs when inadequate nutritional intake during pregnancy causes the rabbit to become weak, depressed, lethargic and anorexic.

Mastitis is an infection of the mammary gland in lactating females. The mammary glands become swollen, hot and infected.

Prolapsed vagina is when tissue protrudes from the vulva as a red mass.

Hydrometra is an accumulation of watery fluid in the uterus. Spaying and supportive care are indicated.

Respiratory

One of the most common Gram-negative bacterial infections seen in rabbits is *Pasteurella multocida*.³ The infection can cause significant damage to the rabbit's respiratory tract, as well as cause abscesses, nasal discharge, conjunctivitis, middle and inner ear infections, head tilt (torticollis) or pneumonia. The signs may point to pasteurellosis, but sometimes it may be something else altogether.

There are other pathogens that can cause rhinitis in rabbits. The most common include staphylococcus (25 percent), pseudomonas (25 percent), pasteurella (11 percent), streptococcus-pathogenic (8.4 percent), bordetella (8.4 percent), streptococcus-nonpathogenic (2.8 percent), other Gram negative (5.6 percent), other Gram positive (2.8 percent) and negative culture (11.1 percent).⁴

Urinary

Urinary incontinence can result from vertebral fractures causing posterior paralysis or dislocation. Urine scald of the perineum is usually seen, as well as a strong odor in the urine.

Blood in the urine can be caused from polyps, adenocarcinoma or from the genital tract. Cystitis, bladder polyps and urolithiasis could cause blood originating from the urinary tract.

Red urine, sometime seen as orange, rust-color or brick-red color after alfalfa has been consumed, is a strange but common phenomenon in rabbits.

Rabbit Behavior

Rabbits have ways of communicating with other animals and people that are unique. Being naturally preyed upon, they rely on extraordinary features that help them

detect motion and danger within seconds. They are also highly territorial and will protect their belongings or a cage mate if they feel threatened.

It is essential to understand basic body language when taking care of rabbits. Common behavior is often misunderstood, and many rabbits have been euthanized for simple behavior patterns that are normal. Rabbits are generally nervous animals and are always on alert. They use their long ears to detect sound, wide eyes to check motion from all sides, and sharp nails and teeth to protect themselves when threatened.

Rabbits do not like loud, sudden sounds or stressful situations, like barking dogs or bright lights. They tend to favor natural light, low stress and a calm environment. A cage becomes the rabbit's territory. When cleaning the cage or rearranging items, you'll find that some rabbits do not mind the intrusion while others may stomp, growl, lunge or bite. This is normal rabbit behavior. You can distract the rabbit with a treat or remove it from the cage while cleaning the interior. This will give the rabbit a chance to stretch, run and exercise, which are important for their mental and physical well-being.

Their behavioral instinctive traits include face and ear washing, yawning, jumping up in the air, digging and burrowing, and grinding their teeth gently when being petted. Rabbits enjoy being stroked over the head and across the cheeks. They do not like being touched around the mouth or chin because they cannot see immediately below their nose. Most enjoy being brushed with a soft slicker brush or metal comb to remove loose hair. Most rabbits do not like being lifted off the ground, and many will bolt or jump if not

properly held. While some rabbits enjoy sitting on a lap, others will not sit still at all.

In general, larger rabbits are easier to handle and are friendlier than smaller rabbits. Some Netherland Dwarfs can be very aggressive and territorial, especially females. This is where most people are misled when thinking a smaller breed may be easier to handle. The final determination, however, should be based on the unique personality of each rabbit, regardless of breed.

Many rabbits become aggressive once they have reached sexual maturity, around 4 to 6 months of age. Male rabbits who are not neutered will spray urine that is especially strong and will make a mess out of the cage, as well as the surrounding area. An unaltered male may bite, mount any object and circle people while gently muttering low “honking”-type sounds. Living with an unaltered male rabbit is not usually a pleasant experience for the human caretaker. The same is true for unspayed female rabbits, who can become highly territorial and aggressive. A female is going to be much more calm and predictable when spayed. Rabbit behavior is modified almost 100 percent when the animal is spayed or neutered. It contributes to the overall health and cleanliness of the animal, too.

Rabbits exhibit behaviors that may seem strange to observers. Rabbits will jump up in the air (often referred to as “binkies”) when let out for exercise. Another behavior that startles people is that they will suddenly collapse on their side, as if they just had a heart attack. They will stomp their back feet when looking for attention or as a warning when they hear sudden loud noises or perceive danger.

Sometimes a shadow will startle them. They can easily be litter-box trained and will remember the location of items, like their food bowl, water bottle, sleeping box and toys. When rabbits are let out to play, they like to mark territory with their droppings and urine. They also will rub the scent glands located near their genitals and under their chin on furniture, their cage and anything else in their path.

Many rabbits prefer to live with another rabbit; however, this pairing must be done carefully. While some rabbits will instantly bond, others may aggressively fight. A spayed female and neutered male is usually the best pair. Someone experienced in rabbit behavior and body language should pair the rabbits gradually. When rabbits fight, they run in a tight circle, almost entwined with one another, and they bite. They will often leap into the air and fight until one is injured. Several attempts may become necessary when trying to bond a pair of rabbits.

Common Behavioral Traits

Some common behavioral traits in rabbits include:

Tooth Purring

When a rabbit is stroked across the cheeks and head, you may hear a quiet, gentle grind.

Tooth Grinding

A rabbit sitting hunched in a corner, accompanied by loud tooth grinding, is not a good sign. A trip to the veterinarian is recommended.

Scrunching

When a rabbit is placed on a blanket or has a towel in his cage, he will usually “scrunch” it up, only to flatten it out again.

Chewing

Rabbits who are extremely bored, are looking for attention or need to be altered will usually chew at their cage bars. The rabbit usually wants to be let out.

Lunging and Grunting

A rabbit who lunges forward, accompanied by a grunt, does not want to be disturbed. This is usually a sign that the rabbit is feeling threatened.

Nudging/Pushing With Nose

This nudging means either “get out of the way” or “give me some attention or a treat.”

Nipping

Sometimes a small love bite means they want attention; sometime it is affection that gets out of control. Nipping can also mean the rabbit wants to be free or to be placed back down on the floor. A hard bite can mean “get of the way” or that you have hurt or scared the rabbit.

Ears Back, Eyes Lined With White

This is an indicator of a scared rabbit who is likely to lunge forward.

Tail Twitching

A tail that is up and curled back with body movement in a male rabbit indicates urine is about to be sprayed at anything in his path. A side-to-side twitch in a female is a flirtatious movement, usually aimed at the nearest male.

Hypnotic Trance

When placed on his back, a rabbit can fall into a temporary trance. As long as the spine is straight and there are no interruptions of sound, this can last from 30 seconds to two minutes, just long enough to clip nails, check teeth or inspect his bottom.

Dancing and Jumping

When rabbits are out running around, they have been known to dance, jump and kick for joy. Some will also fall sideways into a sudden flop that is a sign of contentment.

Marking Territory

Rabbits mark their territory (usually everything in their path) with a small pile of fecal droppings, urine or chinning (rubbing objects with the chin). In multi-rabbit households, even when rabbits are altered, a dominant rabbit will usually mark territory, especially in front of other rabbit cages (directly in front of the door is a common spot).

Mounting and Humping

While this is commonly seen in unaltered males, this trait can be seen in both sexes. It is normally used as a sign of dominance when two rabbits meet for the first time, whether they are two males, two females or a male and a female. Unaltered males tend to carry this behavior too far, and most owners opt to have the animal neutered to reduce sexual aggression.

Shaking of the Ears

Rabbits may shake their ears after being handled. The behavior usually continues with them grooming themselves. However, excessive shaking or scratching at the ears may indicate some type of parasite in the ear canal or excessive earwax, requiring veterinary care.

Forceful Push of the Nose

When a rabbit pushes you with his nose, it's usually a sign that the rabbit has had enough handling or wants you to get out of the way.

Licking of Human Hand or Nose

Licking is seen as a friendly gesture and sign of trust. Rabbits will often lick and groom close rabbit friends or cage mates.

Lying with Head Close to Body, Eyes Half Closed

This position is also called the “meatloaf position” and indicates a very relaxed and probably sleeping rabbit. Do not disturb.

Sudden Jump, Bolt or Scramble

A rabbit is extremely scared and attempting to get away from an intruder.

High-Pitched Scream

An unpleasant sound to hear, the high pitched scream is an indicator that the rabbit is experiencing extreme fear or excruciating pain. If a rabbit is caught by a person or a predator, he may sound this cry.

Digging

Rabbits who are bored will occasionally dig in the corners of a room or inside their cage. Providing entertainment and/or a litter box to dig in with rabbit-safe litter (not scoopable) is recommended.

Chewing or Biting Through Electrical Cords

Rabbits do this when bored. To eliminate that boredom, provide chewing material in their cage, such as willow tree branches, unsprayed apple tree branches or crabapple tree branches.

Twisting/Tilting of Head

Rabbits who tilt or twist their head may have neurological damage or a severe ear infection. Consult a veterinarian.

Shaking of Body, Followed by a Jump

This usually occurs when a rabbit has just left the cage and is ready to start exploring.

Grooming

Rabbits lick, wash and chew at their fur, just like cats. However, unlike cats, they cannot cough up hairballs. Excessive grooming may be present during molting season. Too much hair ingested at one time can cause an intestinal blockage. Daily brushing helps during this period. If persistent digging at the skin occurs, a trip to the veterinarian for a parasite check is recommended.

Bobbing of the Head With Upper Body Extended

This is usually done when a rabbit is on the edge of a table or entering another room, and is an indication that the rabbit is being cautious.

Reducing Stress

Rabbits are easily stressed by new situations, such as being transported to a shelter. New surroundings with strange scents or sounds are more than stressful; they can be downright terrifying for a rabbit. If they arrive in a carrier with no blanket or towel underneath them, the sensation of sliding in the cage will have caused them stress already. Urination is common, leaving the perineal area wet, so dry the area immediately. Try to make the transition as easy and comfortable as possible.

There are ways to reduce stress and fear for an incoming rabbit. First, give him 24 hours to become accustomed to the environment and have a chance to adapt. During that time, observe for obvious health problems, such as sneezing, labored

breathing or discharge from the nose or eyes.

Second, natural lighting is always a better choice than fluorescent lights. Keep a small nightlight on when closing for the day to make them feel more comfortable. Nature tapes of soothing sounds or classical music can help calm the animals, as well as buffer the sounds of the other animals in the shelter.

Next, avoid any sudden movements or loud noises when in their vicinity. The sound of a broom crashing to the floor, walking down the hall with a dog, chasing after a loose cat or seeing a large group of people can send a rabbit into a tailspin. Rabbits prefer slow movement and a daily routine. Truly creatures of habit, they become accustomed to a routine that includes daily feeding and a quiet and calming environment, so that they may nap during the day. Rabbits usually sleep in small periods off and on during the day. They are most hungry in the morning and early evening.

Finally, you can calm down a terrified rabbit by wrapping a towel around him “burrito style.” Keep the towel over his head like a tent, so the darkness will calm him. Rabbits also feel secure when their head is tucked into a person’s shirt, under the chin or stuck in an elbow. Continuously stroke their head from the top of the nose to the tips of the ears in a rhythmic motion. Gentle petting gradually eases their stress.

Holding and Moving Rabbits

There are many ways to hold rabbits to carry them from one place to another. A “football hold” is when you grasp the rabbit with the rump in your hand and the head in the crook of your elbow. A “chest-

to-chest hold” is when you carry a rabbit vertically against your chest with his head near your head. One hand goes under the rump to provide support, and the other is kept on the back near the head. While this is a convenient carry, some bunnies will try to go right over your shoulder, so watch out. Also, be careful if the rabbit bites. Another hold involves grasping both back feet with one hand and supporting the rabbit’s upper body with the other hand, turning his face away from your body. No matter what position you use, the rabbit must always be held snugly against your body to provide security and prevent biting.

When lifting a rabbit, always secure the bottom with one hand and scoop with the other hand around the sternum (upper chest) under the front paws. Like cats, a fractious rabbit can be scruffed to gain control, but you must immediately provide support to the rump and bring the animal into a chest-to-chest to position to prevent injury.

Handling Aggressive Rabbits

Handling extremely aggressive rabbits can be stressful both for the rabbit and the handler. Do not approach aggressive rabbits from the front of their face or under their mouth. Always avoid head-on handling. Instead, approach them from above when petting. Alter extremely aggressive rabbits and allow them to calm down for a few weeks before adoption. Placing such a rabbit in a foster home with an experienced rabbit handler may become necessary. Many aggressive rabbits change their behavior when given some gentle handling and attention. A small percentage of aggressive rabbits, however, can never be rehabilitated, and it reduces their chances for adoption if they are truly mean. If a rabbit is altered and continues

to be unruly, it may become necessary to euthanize the animal.

Providing for Emotional Needs

The way the rabbit was treated (neglected, abused or handled) by his caretaker will affect the animal's behavior. Some of the best-behaved rabbits are ones that have been terribly neglected. Fortunately, abused or neglected rabbits placed with the right people will eventually express their true personality. Most rabbits love human interaction, attention and gentle handling.

Most rabbits are friendly creatures and are eager to get out and explore their surroundings. Natural instinctive behaviors, such as digging and chewing, must be satisfied with toys and safe chewing materials, such as pelleted or shredded litter material made of paper pulp or by-products. There are several natural types of litter safe for rabbits. A rabbit can stay busy for hours playing in a deep litter box or a large willow basket with shredded paper, hay or straw.

If at all possible, select a small space in the shelter where you can set up a foldable exercise pen. Rabbits should be allowed out for at least 30 to 60 minutes a day to exercise and have a change of scenery. It eases stress, loneliness, boredom and depression. All rabbits react differently when surrendered to a shelter. Some become noticeably depressed. It is essential to find a loving volunteer to give your rabbits some much-needed attention.

Toys for rabbits can be made very inexpensively. Most rabbits love to play with the following: cardboard paper towel tubes, large white plastic whiffle balls, ferret drum toys with a bell inside, a "bat-about ball" for cats (metal style with bell

and pompom removed), a chewable untreated willow basket, baked large pine cones or an empty oatmeal canister. Some baby teething toys work well also (a key on a ring of heavy plastic). Make sure the toy does not contain small objects the rabbit could chew off.

A large litter box is a great place for rabbits to lounge. During the summer months, a carton of frozen water makes a great portable air conditioner, especially if you do not have climate control in your facility. A cool fan in the immediate area with the lights low will also cool the area. Always provide a comfortable breeze, and watch the rabbits closely during the summer months for heat stress. Symptoms can occur very quickly, and include the animal lying prone and panting.

Avoid placing rabbits in an area with dogs. If they must be housed alongside other animals, place them near cats.

Litter Box Training

Litter boxes serve two purposes for rabbits: a place to eliminate waste, and a place to dig and entertain themselves.

Training a rabbit to use a litter box is much easier than people think. Some rabbits may require a few weeks to catch on, but others are quick learners. Using a litter box reduces cleaning time, too. Whenever the rabbit is out exercising and exploring, place a litter box in the room to prevent damage to floors, carpets and corners.

Rabbits usually deposit their fecal droppings and urine in corners. Unaltered rabbits may be difficult to litter train because territory plays much more of an important role, and the entire area may become one large bathroom to them. In a

multi-rabbit household, the area immediately in front of another rabbit's cage becomes a popular place to mark territory. Two rabbits let out at the same time may enjoy some friendly competition, and the litter box may be the last thing on their minds. But once they start getting into the habit of using one, it will make things much easier for caretakers.

The first rule of proper litter box training is finding the right equipment. The correct size box to use will depend upon the adult size of your rabbit. A dwarf to medium-size breed can comfortably use a kitten-size litter box, while a large breed will need a standard-size box. Experiment with different models until you find the right one.

The litter box must be cleaned every day. Rabbits like to snuggle in their litter box, and long periods of sitting on wet litter can cause sore hocks.

Cat litter should never be used for rabbits, since they will lounge in their litter box and often nibble on the litter. Always use a paper-based litter (for a list of recommended litters, see page 2).

During an adoption, the words "litter trained" become a valuable commodity. It eases people's minds to know that a rabbit is litter trained. Rabbits' natural instinct to burrow and dig helps them learn to use the litter box, but you can also help them get the message by placing some urine-soaked paper towels or fecal pellets in the box. In most cases, it is just a matter of time before a rabbit jumps in, explores and starts to use the box.

Rescue Tips

Rabbits that are in an open space are capable of moving very quickly, making them difficult (but not impossible) to capture. They tend to run into corners and then double back at top speed. They can turn on a dime. They are also quite clever at hiding in areas that humans are too big to access. With several people and some basic equipment, however, capturing rabbits is much easier.

Essential equipment for rescuing one or more rabbits running in a yard or other space includes:

Several large sheets of cardboard.

Check with a local printing company for extra-large sheets of cardboard that can be donated. Cardboard barricades are necessary when trying to corral a rabbit into a smaller area. Once they are confined, a person can enter the area and gently scoop up the rabbit.

A few large blankets to drape over the rabbit. The rabbit is going to be terrified once you capture him. Some may even scream in terror — a sound that startles and disturbs most animal care workers. After running for a while, rabbits may enjoy their newfound freedom, and restraint of any kind can come as a shock. Drop a large blanket over them to calm them.

Several cardboard carriers or a kennel cab carrier. You'll need these carriers to transport rabbits once you capture them. Line the inside of the carriers with large towels so that the rabbit doesn't slip around inside.

Some bait, such as fresh banana or carrot. Bananas seem to work better than carrots, because most rabbits can smell

them from a distance. Parsley is also very good for luring a rabbit into an area.

A humane trap. If rescue attempts fail, you may need to use a humane trap. Leave the door open and bait the trap with fresh fruit and greens. Check the trap periodically. If the trap needs to be left unattended, ask neighbors to alert the shelter when the animal has been captured.

When attempting to capture rabbits, do not allow them to run toward an open road. Try to keep them in a yard or, if there is a fence nearby, lure them near it. An open garage can also be a good area for corralling a rabbit. It is also possible to get a rabbit to run into an extra-large cardboard box.

When attempting a large rescue, such as an animal-collector situation or animals left abandoned in a building, it helps to know what resources you have ahead of time, including the availability of many volunteers and several large vehicles (such as vans or pickup trucks) for transport.

Large-Scale Rescue Housing

After proper authorities relinquish the animals to the humane society, consider housing first. If outdoor accommodations are necessary due to the large number of animals, make preparations to shelter them from the elements. Place inexpensive plastic tarps over stakes driven into the ground, then arrange cages in lines under the tarp. Be sure to keep the cages raised off the ground (wooden pallets work well for this). In chilly weather, use straw (not hay) to insulate their cages. Hay will need to be at least 6 inches deep to provide sufficient insulation and to allow for burrowing. Be sure to separate animals by sex.

If cages are not available, use or build large pens or makeshift cages. However, rabbits housed together will fight and mate, with injuries as well as pregnancies resulting. House any pregnant females alone in a quiet area.

Rabbit Resources

Organizations

House Rabbit Society
P.O. Box 1201
Alameda, CA 94501
www.rabbit.org

Write to them for the *House Rabbit Journal*, a quarterly magazine on house rabbit topics. HRS also offers handouts and reproducibles for shelters, rescue groups and educators, as well as educational services, veterinary referrals and local chapter referrals across the United States. Videotaped lectures and proceedings are also available.

Reference Books

House Rabbit Handbook, How to Live With an Urban Rabbit, fourth edition by Marinell Harriman. Available on Amazon.com. Highly recommended as the “bible” for all house rabbit owners.

Rabbits: Gentle Hearts Valiant Spirits: Inspirational Stories of Rescue, Triumph, and Joy by Marie Meade and Nancy Laroche. Available on Amazon.com

Other Resources

Petfinder.com and PetPlace.com have good information for both rabbits and other small animals.

Pet Rodents

Overview

Rodents belong to the order Rodentia that includes both the larger species (chinchillas and guinea pigs) and the smaller species (rats, hamsters, gerbils and mice). They all like to gnaw and have sharp incisor teeth capable of inflicting a sudden sharp bite, if provoked. Rodents also have molars for grinding and distributing food for digestion. All rodents have small padded feet that can be used for climbing and clinging onto surfaces. They are capable of grasping small items, such as pieces of food, and may hold onto a cage bar when being forced from their cage. This behavior can cause injuries if the rodent is not handled properly.

Smaller rodents, such as gerbils, hamsters, mice and rats, have an instinctive need to build nests. They can chew and gnaw at fibers, and enjoy burrowing and sleeping in their nest. On the other hand, the larger rodents (chinchillas and guinea pigs) seldom build nests, but still enjoy gnawing wood, chew sticks and other materials that are safe to ingest.

Rodents are mostly nocturnal and are primarily herbivores, although some sources report that they are omnivores (will eat anything). They thrive on pelleted diets, fresh hay, fruit, nuts, seed mixes and commercial preparations. Rodents also communicate between one another with an extensive set of scent glands located in many parts of their bodies. While rodents may have similar habits, dietary needs and anatomy, they are still a separate species requiring specific needs.

Types of Pet Rodents

Guinea Pigs

The guinea pig, or “cavy” as it is often called, originated in South America. These animals are herbivores (plant eating) and have large front incisors that grow continuously. The most common varieties of domesticated guinea pigs (*Cavia porcellus*) include the American, English and short or smooth-haired.

They have a compact, stocky body with no tail. Males are usually larger than females. A male is called a boar, a female a sow. Guinea pigs have a large fermenting vat called the cecum, and they are notorious chewers. They are very social animals that prefer to be housed in groups. They can live from six to 10 years, if cared for properly.

The American Cavy Association recognizes several breeds. They include the Abyssinian (characterized by whirls of hair called rosettes), Abyssinian Satin, White Crested, Peruvian (silky or satin), Texel, American (normal and satin) and Teddy (normal and satin). There are some rarer breeds that are not nationally standardized for show purposes, such as the Himalayan, Sheltie, Dalmatian, Saffron, Magpie, Dutch, Roan and Rex breeds.

Guinea pigs are the fourth most-common animal relinquished to shelters. They make wonderful pets for older children, as they are rarely aggressive. They are quite entertaining and exhibit a variety of strange noises when communicating with people and other animals. They are the largest rodents kept as pets, weighing an average of 2 to 4 pounds.

Rats

The laboratory or domestic pet rat is related to the wild rat (*Rattus norvegicus*) found all over the world. Bred from laboratory strains, most pet rats do not carry the same diseases prevalent in wild colonies. Rats are most commonly used in biomedical research, but they are also bred and sold as pets and as a food source for reptiles.

The domestic rat looks similar to a mouse, but larger. The average length of a rat is 7 to 10 inches, measuring from the head to the tip of the tail. Their tail has 210 scales — 30 more scales than the average mouse. They are bred in either basic solid colors or recognized pattern markings. The Albino or solid-white variety with pink eyes is most commonly seen in pet rats. Hooded varieties have colored saddle markings that extend over the head and down to the back of the tail (usually gray, brown or fawn).

Domestic rats are intelligent and can be easily trained to respond to voice, handling and food rewards. A male is called a buck, a female a doe. Rats can live to a maximum of 6 years in captivity.

Mice

The standard laboratory mouse is raised for pet stock, biomedical research and as a food source for other animals. They are small, prolific breeders with a gestation period of nine to 21 days.

There are currently about 50 color forms available with white (albino) being most commonly seen. With each breed, there are many color and coat varieties available. Many fancy types of mice, such as pygmy, multimammate, spiny and the zebra mouse, are raised for pets as well as show.

Mice that are handled regularly become gentle, but they still move very quickly. Because of their size, handling can become awkward, especially for the inexperienced. Mice are omnivorous (will eat almost anything), territorial within a group and not necessarily nocturnal. They sleep for short periods throughout the day as well as the night. The average life span for a mouse is 18 months to 3 years. A male is called a buck, a female a doe.

Hamsters

The golden hamster originated from the desert of Syria. Hamsters are small rodents with large cheek pouches used to store food during travel. For such a small animal, they have powerful jaws that can inflict painful, sharp bites if provoked. With six molars and two incisors on the upper and lower jaw, hamsters can gnaw and chew extremely well. They are usually small and weigh about 6 ounces, with a tail that averages about ½-inch long. They have sensitive ears and large whiskers, or vibrissae, that aid in touch and balance.

While hamsters have large eyes, they do not see particularly well. Hearing is excellent, as they can hear some frequencies not distinguishable by humans. They have the ability to hibernate, if environmental conditions warrant it. Hamsters usually sleep for long periods of time during both day and night.

Hamsters make excellent pets, as they are small, relatively easy to care for and can live from two to four years. They are usually territorial, and pairing must be done carefully. They are also nocturnal, natural-born burrowers and prolific breeders with a 16- to 18-day gestation period.

Gerbils

Gerbils are small, odorless rodents with “kangaroo-like” bodies (shorter forefeet and longer back legs). They have an elongated head, slightly slanted eyes and a long tail. They hop instead of walk and are capable of moving extremely fast. Gerbils are small and can vary in size from 2 to 9 inches in length from head to tip of tail.

There are many species of gerbils, including the Mongolian (most common), Egyptian, Indian, Namib Paeba, pygmy, Jerusalem and Libyan.

Gerbils are burrowing animals and readily enjoy soft, clean bedding for digging. They enjoy living in familiar groups and are capable of communicating with a complex array of sounds that are not always audible to the human ear. They are rarely aggressive toward people. They can live an average of three to four years and have an average gestation period of 26 days.

Gerbils are native to arid, desert regions of Mongolia and China. They are generally nocturnal, and in the wild their burrows are elaborate tunnels featuring nest areas, food storage areas and multiple entrances. Seizures have been observed in some gerbils. These seizures can be aggravated by stress, environmental conditions, excessive noise and/or handling. The seizures apparently have no lasting effects on their health.

Chinchillas

The short-tailed chinchilla originates from the Andes Mountains in South America. They have only recently become popular as pets. Chinchillas are more expensive than other small pets because they have many specialized needs. They are more difficult to take care of and to handle, and

their living space must be high enough to allow them to jump and freely move.

Chinchillas, like rabbits, have a very sensitive gastrointestinal tract. They like to live in pairs, but two males will fight. Two females or a neutered male and a female are more suitable roommates. Chinchillas are characterized by soft, plush fur in many varieties of colors. Gray agouti is most common.

Chinchillas are entertaining to watch, but they are not suitable pets for children. They generally do not like to be restrained or cuddled. While these small creatures are irresistible, they should never be purchased on impulse. Chinchillas require daily dust baths. They can live 10 to 20 years. The gestation period is 110 to 118 days.

Setting Up Your Rodent Area

Ideally, locate rodents in a quiet, isolated section of a shelter away from dogs, cats and rabbits because of stress and possible cross-contamination of disease. The noise from the kennels can cause them undue stress, and there is always the risk of danger for rodents if they escape in a dog or cat area. Locate the rodent area where public visitors have access to encourage viewing. It doesn't take much room to house your rodents, but a nice, cheerful area with plenty of natural light and low stress is best.

Avoid direct sunlight and cold drafts from windows or other areas. Direct sun that shines into a glass aquarium can cause irreversible damage to a small rodent when temperatures inside reach potentially high levels; the result can even be fatal. Keep the relative humidity around 50 to 60 percent. Rodents prefer the temperature slightly warmer rather than too cold. Keep

the area about 60 to 75 degrees year-round.

Never place rodent housing at floor level. A metal or molded-plastic utility shelf or a long table is ideal for elevating cages and glass aquariums. Sturdy metal or plastic shelving is not only practical for cleaning purposes, but also attractive for a rodent area in a shelter. Even better are shelving units mounted on rolling caster wheels, which makes moving the structure quick and easy when cleaning underneath is necessary. Scattering cages in all areas of a room is not as appealing as having them all centrally located and organized by species. Place a cabinet near the structure with airtight, labeled containers for food and treats. Keep cleaning supplies, a barrel with a snap-on lid for bedding and a barrel for trash nearby.

Regardless of the enclosure you select, make sure it is secure, so there is no chance the animal will escape. For example, if you use a glass aquarium, put a screen on top that fits securely and has cage clips to hold it in place. Sometimes, you may need to place a heavy item on top of the screen to prevent an animal from pushing it off. Avoid plastic lids since rodents may chew their way out.

It is relatively easy to house rodents, and fortunately, in a shelter environment they do not take up much room. Knowing what type of enclosure is appropriate for each type of rodent is important for keeping them content, safe and healthy. Each enclosure should have some type of cage card attached with information on the animal, such as age, breed, sex, health information and any other pertinent information that potential adopters would need to know. Following are

recommended guidelines for housing rodents.

Guinea Pigs

Housing guinea pigs is relatively easy. Similar to rabbits, guinea pigs can live safely in galvanized wire cages with a slide out drop pan, if 65 percent of the grated floor is covered with solid flooring, such as a sturdy carpet remnant or similar solid material that is replaced on a daily basis. Guinea pigs have sensitive feet that can be injured if they get a foot caught in the grated metal. “Baby-saver” (1/2-inch by 1/2-inch grids) wire-bottom cages are available that are easier to walk on than standard flooring (1/2-inch by 1-inch grids). Ideally, house guinea pigs in stackable units of three cages, 2-by-2 feet each.

Some publications suggest using glass aquariums to house guinea pigs, but because of the difficulty of cleaning them on a daily basis, coupled with increased chances of respiratory problems from lack of adequate air circulation, they are not recommended. Avoid aromatic wood chips when choosing bedding, because they can contain harmful oils and could cause respiratory problems and skin irritations, as well as liver problems. A safer alternative is recycled-paper bedding. A small litter pan can be provided for the guinea pig. A water bottle, heavy stoneware food crock for dry food and hayrack are essential. Supply chewing materials, such as fresh willow or apple branches. Guinea pigs also crave a box or large carpet, plastic or wood tunnel for hiding. Having a roof over their heads is their only way to hide if they are scared, want some privacy or feel threatened.

Rats, Hamsters, Gerbils and Mice

These rodents can be comfortably housed in either a spacious glass aquarium with a screened top or a solid-bottom cage with a wire top. Many new-style bird cages can also be used for housing small rodents because the cage bars are spaced close enough together to avoid injury or escape (bars no more than ½ inch apart should be sufficient to avoid injury or escape). For rats, a smaller galvanized wire cage with a drop pan can be used. Make sure the rats cannot squeeze through any openings in the cage. Check all potential escape routes. Cover 65 percent of the grated floor with solid flooring to prevent injury. Provide a piece of material for them to shred and a small box that they can build a nest in. A small litter pan with soft wood chips or paper-based litter (avoid sawdust with rats) can also provide burrowing material.

Soft aspen wood or processed soft wood chip bedding is essential for all small rodents to burrow in, as well as sleep. Gerbils, in particular, like to burrow deep into the bedding. Provide bedding that is at least 1 to 2 inches deep in the bottom of the cage or aquarium. Do not use cedar shavings.

Other accessories include a small water bottle, a food crock for dry food, toys and tunnel tubes for sleeping. All small rodents enjoy small wooden boxes with holes for hiding that are available at most pet supply stores. A hollow wooden branch or a commercial grass-nest ball provides a sense of security for small rodents. Cardboard paper towel tubes make great toys, as well as dozens of other accessories that you can find at a well-stocked pet supply store.

Enclosures for rodents have changed over the years. Some wire cages have multiple

levels for climbing and plenty of room for many rodents living together in a colony. Some models have colored plastic tubes that attach together. Make sure that any overweight rodents (particularly hamsters) do not get stuck in the narrow tubes. Double check all exits and entries to make sure that the round plastic pieces are screwed on tightly at the end of the tubes. Most glass aquariums can be fitted with an upstairs “rodent condo” equipped with plastic sidewalls, exercise wheels and plastic tubes for exercise. Use common sense when providing an exercise wheel. They are great for all small rodents, but require extra precaution with long-haired varieties, since long, fine hair can get tangled in the wheel, causing pain and injury. Keep a close eye on them, and make sure the interior of the cage is safe.

Sawdust and wooden shavings made from aspen or pine are available for bedding. Natural, recycled paper-based litter can be used in either shredded or pelleted form. Straw, hay, shredded cotton, small pieces of soft material or paper toweling can also be used for nesting material. Make sure that sawdust does not irritate large eyes or get tangled in fur. All burrowing rodents will usually construct a nest far away from their bathroom corner. It is crucial that hamsters, gerbils, mice and rats have a place to burrow.

Chinchillas

The chinchilla has different housing needs than other rodents, requiring plenty of vertical space for jumping and climbing. Choose a galvanized wire cage, complete with drop pan, high sides and several perches for jumping. Thick branches of wood from willow or pine trees are also recommended.

Chinchilla cages can be found through special mail-order companies, as well as high-quality pet supply stores. Chinchillas can also be housed in a ferret cage, if necessary. Do not house chinchillas in wood shavings in a glass aquarium. Create a solid wall about a quarter of the way around the wire cage from the bottom to help keep drafts out. A large avian cage can also be adapted for use when housing chinchillas. The cage should be at least 32 inches wide by 20 inches high by 39 inches long to allow room for perches, a sleeping box and a large pan to provide the required daily dust baths.

Maintaining a Rodent Area

Proper cleaning and maintenance are required to keep rodents tidy, healthy and content. Maintaining a small rodent area can be time consuming, but volunteers can greatly help staff in this area.

If rodents are organized by species, it is easier to develop a cleaning regimen. As each cage is cleaned, use a small carrier lined with towels for holding purposes. Do not try to clean a cage with the animal still inside. Rodents may become territorial and bite if scared or angry.

When cleaning the cages and aquariums, use hot water and a mild dishwashing liquid. Do not use pine-based oil cleaners, ammonia or a quaternary agent, as those chemicals are too strong for these animals and may leave a toxic film on equipment. Soak all cage parts and scrub them using sponges or a sturdy brush. Remove all old bedding and replace with fresh bedding. A small, sturdy brush works well for removing hair and feces buildup in cage corners. White vinegar is an excellent calcium remover for cage parts and is safe to use with rodents. (Store wood chips in an airtight plastic or metal barrel to avoid

insect infestation or mold.) Line the bottom of glass aquariums, as well as cages, with clean newspaper and then spread the chips over the surface at least 1 inch thick.

Clean all equipment, such as water bottles and food crocks, with very diluted bleach water at least once a week to prevent bacteria from building up. Check rodent cages every week and inspect for gnawed areas that may eventually end up as escape routes. Always repair any damage or else replace the habitat.

Maintain a cleaning calendar to keep track of when the cages were changed last. (Not all kennel workers are enthusiastic about rodents, so you may have to rotate personnel or volunteers.) Completely change out the bedding and thoroughly clean each cage at least three times a week. Check food and water daily.

Dietary Needs

Rodents require a balanced diet complete with the necessary protein, minerals, fats, carbohydrates and vitamin levels to keep them in good health. Most commercial-brand rodent food from pet supply stores offers just the right amount of all essential nutrients in a variety of mixtures. Supplementing the diet with a moderate amount of treats in the form of vegetables, fruit, hay, greens, nuts and seeds keeps small rodents content and relieves boredom from serving the same food everyday. Occasionally, provide a few pieces of dry dog or cat food into the pellet-based mix (except for guinea pigs, which are true herbivores and should never be given any meat derivatives). Most rodents also enjoy the addition of fresh hay.

Supply all rodents with small, heavy stoneware food crocks for dry food and a separate one for vegetables or moist foods. Guinea pigs, smaller rodents and chinchillas can easily tip over plastic bowls and may contaminate the food with their feces or urine. Do not set the food crock in the nesting or bathroom corners of the cage. Avoid placing the bowl under a dripping water bottle as well.

Provide fresh water in the correct-size water bottle for each species. For rats, mice and hamsters, use a small bottle with a slender sipper tube. You can also suspend a bottle inside the cage or aquarium with a metal hook or bar. Rodents occasionally chew and damage the sipper tube of a water bottle, so replace as necessary. Always give rodents access to fresh, unaltered water. Vitamin supplements in the water are usually not necessary when an adequate and varied diet is supplied. Many rodents may not drink water if it tastes peculiar. If you are providing a vitamin C supplement to guinea pigs, you may want to offer a second water bottle with unaltered fresh water as an alternative, especially if you are not feeding it a balanced diet of pellets, hay, vegetables and fruit. Serve chinchillas water from a 16- or 32-ounce bottle.

Guinea Pigs

Guinea pigs are herbivores and so do not need meat. The staples of their diet include high-fiber pellets and plenty of fresh grass hay. Avoid alfalfa hay if possible because of its high calcium content. Guinea pigs also enjoy fresh fruits and vegetables, such as broccoli, carrots, apples, strawberries and Brussels sprouts. Fresh willow or apple branches (omitting the leaves) are good for chewing to keep teeth trimmed.

Guinea pigs are unable to make vitamin C, so they need to be given a supplement to avoid serious health problems. Many pellets made for guinea pigs are produced with vitamin C supplements, but the vitamin degrades quickly on the shelf and becomes ineffective, so give them 60 mg of vitamin C daily. Liquid, powder and tablets are available.

Guinea pigs drink a lot, so make sure the water bottles are filled daily and checked often.

Rats and Mice

Domestic rats and mice are omnivorous, but their diet should still be consistent and of high quality. Pet supply stores often have commercial rat and mice food in prepackaged plastic bags or in bulk food bins by the pound. A commercial nut/seed mix with pellets is perfect for the dry food bowl. Supplements to their diet may include: dried banana chips and other dried fruit, fiesta-type mixes, crackers, rolled oats or plain croutons; dry dog or cat food in small bite-size pieces or a small dog biscuit (bone-shaped); grass or alfalfa hay; fresh fruit, such as bananas, apples or strawberries; carrots or fresh clover; and parrot-food mix with pieces of dried fruit, dry cooked rice and raisins. Don't give them candy or salty items, wilted or spoiled vegetables, rich food or hard-to-digest vegetables, like cabbage. Remove spoiled food from the enclosure after several hours because both species like to hoard items and hide them in hard-to-find places.

Hamsters and Gerbils

Hamsters and gerbils enjoy the same variety in diets. Commercial preparations specifically made for each are readily available in pet supply stores (check expiration dates). A basic pelleted mix,

supplemented with grains, seeds and nuts, is available and can be added to their dry food. A small quantity of fresh grass hay (timothy or alfalfa) is a healthy diet staple. Sunflower seeds should only be offered as an occasional treat, as they are fattening. Other foods you can include in their diet are: banana chips, peanuts, raw unsalted pumpkin seeds, carrots, apples, celery, broccoli, romaine lettuce, dandelion greens, fresh uncontaminated grass and clover (white or pink); dry cereal, such as Cheerios, corn flakes and granola; and berries that are marketed for exotic birds. Don't give them people food. Dry cat or dog food in small pieces or an occasional dry dog biscuit broken into pieces are good sources of protein and minerals. Always inspect the cage for spoiled food; hamsters are notorious food hoarders. For both species, occasional mealworms can be offered, and twigs from apple or willow trees are good for the teeth and relieve boredom.

Chinchillas

Chinchillas are true herbivores and have gastrointestinal tracts similar to rabbits: they cannot vomit and are prone to "bloat" or diarrhea if given rich foods. Their dietary staple should be a fresh, high-quality pellet mix made specifically for chinchillas. This food is usually available in pet supply stores or through mail-order companies. Fresh timothy hay can be given in unlimited quantities. Alfalfa hay is not recommended for adult animals due to its high calcium and protein content.

Chinchillas should only be offered occasional treats. Their diet can be supplemented with wild herb mixes marketed specifically for chinchillas, as well as rose hips, papaya enzyme tablets, fresh fruit (apples or strawberries), carrots or greens in very small amounts (such as

endive, dandelion greens, or romaine lettuce). Avoid bananas and grapes due to their high sugar content. Restrict carbohydrate intake by limiting grains, breads or crackers. Do not give chinchillas junk food, treats intended for other species or any other food made for human consumption.

Non-chemically-treated branches of maple and birch trees or pieces of bark from apple or pear trees can be offered for gnawing and proper tooth wear.

Rodent Examinations

When examining smaller rodents, keep the environment as stress-free as possible. Avoid grabbing any small animal by the tail, since that can tear the skin. Instead, lift the animal by placing your hands over their back or cupping them in the palm of the hand. Squeezing a rodent around the midsection can be dangerous. You can "scruff" the animal by the skin at the back of the neck to examine the abdominal area, but do so with great care. Rodents can bite if frightened. A small rodent can be placed in a stockinet (stretchy material available in rolls from medical supply companies or veterinary mail-order catalogs) when administering medicine or injections to make handling these tiny patients easier. The procedure can also help reduce their level of stress.

Sexing Rodents

Rodents are usually easy to sex. They possess large scrotal areas that are easily seen. The tail area is tapered in females, while males show a bulging, rounded area. Chinchillas and guinea pigs are slightly more difficult to identify and can sometimes be misidentified by the inexperienced eye.

Guinea Pigs

Male guinea pigs have a circular prepuce (foreskin) with a penis upon depression with manual pressure. The testes are large and prominent inside the body cavity. There is no break in the line between the penile opening and the anus. The prepuce appears to look like a “belly button” directly above the anus. Female guinea pigs have genitals that are close together and resemble the letter “Y.” The urinary opening, vaginal closure membrane and anus are all close together. Nipples are evident on the female.

Rats

A male rat’s genitals are easily seen after sexual maturity. The large scrotal sacs inside the body wall are evident, and the odor is stronger than that of a female, especially in mature rats. There is much more distance between the urinary orifice and the anus in a male. The female perineal area is tapered above the tail. The urinary orifice, vaginal opening and anus are lined up one behind the other. Nipples are evident on females.

Mice

In males, the urinary opening and anus have a longer distance between them. The prepuce, large testes inside the body wall and anus are observed in that order. There is a slight bulge near the base of the tail, but it is more difficult to see than in other rodents. Females have a shorter distance between urinary opening, vaginal opening and anus. Nipples are evident on females.

Hamsters

Male hamsters have a large bulge at the base of the tail that is evident upon examination. There is a longer distance between the urinary opening and the anus in the male. Females have an obvious tapered section at the perineal area above

the base of the tail. There is less distance between the urinary opening, vaginal opening and anus on a female, and all parts are located in a direct line above the tail.

Gerbils

Males have a longer distance between the urinary opening and the anus. The large bulge containing testes inside the body cavity is evident and is located directly above the tail. Females have a tapered shape above the base of the tail. There is less distance between the urinary opening, vaginal opening and anus on a female, and all parts are located directly above the base of the tail.

Chinchillas

Chinchilla sexing is much more difficult than with other rodents. Males have a wider distance between the penis and the anus. The penis is slightly evident and appears upon manual depression above the anus. The scrotum is not directly seen above the anus, as it is inside the body cavity contained inside the inguinal canal. Females have a shorter distance between the urinary opening, vaginal orifice and anus. They have a fairly large urinary papilla that can be confused for a penis. The vaginal opening appears as a slightly raised semicircular area directly above the anus.

Basic Health Care

Rodents are susceptible to many different bacterial and viral infections, internal and external parasites, and other conditions. They can be easily injured because of their small size and speed of movement (such as falling from heights), and by inappropriate handling (especially by children) and accidents involving poisoning or chewing electrical wires. They also can suffer from neglect (like escaping from their enclosure

and getting lost in the home or outside), inadequate diet or outright abuse. Although they all share a relatively short life span, they are still plagued with many illnesses that require veterinary attention.

In the past, most medical journals and books catered only to laboratory references for small rodents. As they have gained popularity in the past decade as pets, clinical references for veterinarians have become more precise and updated, as well as more readily available. Books, journals, veterinary conferences and the internet have changed the way rodents are treated for injuries, disease and surgical considerations. As a result, veterinarians can find answers more easily for simple concerns, such as antibiotics that are safe and well-tolerated in these species, surgical procedures, handling and restraint, blood collection, analgesia and anesthesia, diseases that are commonly seen in clinical practice, successful treatment regimens, and euthanasia concerns and procedures.

Antibiotics and Other Drugs

When deciding what antibiotic may be appropriate for a rodent, choose one that is relatively safe in these species. All drugs must be used “extra-label” in rodents, as well as other exotic species. Many exotic-pet formulary publications make dosage amounts slightly easier to calculate. Unfortunately, many rodents and rabbits succumb to antibiotic toxicity within hours or days. Many die when the drug disturbs the normal delicate balance of flora in the intestines, causing an overgrowth of clostridium to proliferate.

Diluting antibiotics may become necessary in these small species, and compounding the drug into an oral suspension that tastes sweet may be more practical. If antibiotics

are mixed into the drinking water, an alternative bottle should be available in case the animal does not drink from the medicated water. However, it is not practical to administer medication in water, since it is virtually impossible to administer the correct dosage because of their infrequency of drinking.

Hamsters and guinea pigs are very sensitive to certain antibiotics, such as penicillin (amoxicillin, ampicillin), streptomycin, erythromycin and lincomycin.⁵ Their sensitive gastrointestinal tract may become susceptible to an imbalance in the normal flora. These antibiotics may also cause diarrhea in other rodents as well. The safer antibiotics used in rabbit medicine are reportedly successful when administered to rodents, too. The use of enrofloxacin, ciprofloxacin, chloramphenicol and trimethoprim-sulfa combinations are all reportedly clinically safe to use in rodents.⁶

Probiotics, such as lactobacillus, have been suggested for use during antibiotic therapy in rodents. The effectiveness of this supplement is still questioned by some sources, but it certainly does not cause harm to provide it. This popular powdered, microencapsulated, water-soluble product can be mixed with baby food or juice, given orally or in drinking water, or sprinkled over food (the most common application).

Administering Drugs

Administering drugs to rodents may be a challenge for veterinarians. Smaller-gauge tuberculin or insulin syringes with needles are appropriate for use in these species. Please consult professional publications or the American Humane Association for

safe and humane euthanasia protocols for these species.

Other commonly used “extra-label” drugs are effective against a wide variety of conditions seen in rodents. Every shelter should maintain a reference library of publications that can help in diagnosis, treatment and recovery of sick rodents. These smaller creatures are often overlooked and euthanized for simple problems that can be easily treated.

External Parasites

For treating external parasites, an injectable parasiticide is clinically effective in small dosages as an alternative to dips, sprays and powders.⁷ Properly quarantine rodents that are being treated for clinical signs of illness or parasites if at all possible. A cage mate will most likely be suffering from the same condition if the disease is contagious. In this case, it may be less stressful to keep them together as a support system for each other. Most rodents, as in other species, enjoy the company of others, and for convalescing animals, it may provide some comfort.

Common Rodent Diseases

Rodents can have a variety of clinical signs of disease. A variation in simple daily behavioral patterns can signal trouble. Signs of general disease can include:

Respiratory Problems: sneezing, discharge from the nose, labored breathing, rattling or wheezing sound, pneumonia, irregular breathing patterns or excessive breathing attempts from the mouth

Gastrointestinal Problems: diminished appetite, lack of fecal dropping, diarrhea, unusual stool formation or blood/mucous

in the stool, “sloshing” sounds in abdomen, swelling and soreness in the abdominal area, unusual enlargements, “wet tail” (diarrhea that causes complications at perineal area), prolapsed bowel, unexplained weight loss, limited movement and loss of appetite

Urinary Problems: excessive urinating or no urine output, blood in urine, straining while urinating, unusual texture (stones or sludge), odor or color, and unusual swelling (tumors) in the urinary tract

Ocular Problems: discharge injuries from cage mates or irritation from sawdust/wood chip bedding, “red tears” also known as chromodcryorrhea (sometimes seen in rats that are stressed or chronically ill), conjunctivitis, corneal ulcers or any other unusual signs around or in the eye

Neurological Disorders: tilting or gradual twisting of the head, loss of balance, convulsions, incontinence, paralysis in any are of the body, circling in one direction or seizures

External Problems Involving Skin or Fur: alopecia (loss of fur), barbering or hair pulling by cage mates, a coat rough or dull in appearance, bite wounds or lacerations, dermatitis, eczema or fungal infections (ringworm), lesions or scabs that result from scratching at ears or body, ulcerative pododermatitis, limb or tail necrosis, and flea, lice, tick, mite or “fly strike” (myiasis or maggot infestation)

Internal Parasitic/Protozoan Conditions: coccidian, pinworms, tapeworms, giardia, toxoplasma gondii and encephalitozoon cuniculi (rarely occurs in rodents)

Orthopedic Problems: fractures, dislocations, skull trauma, spinal column injury, strained muscle or sprain, or other signs of lameness or paralysis

Dental Diseases: overgrown or maloccluded teeth, inability to eat, loss of appetite, signs of excessive salivation or odor around the mouth, moist dermatitis, and abscesses at the jawbone, in the mouth or at the root of a tooth. Normal color of front incisors is yellow to orange or light brown (from iron deposits). The normal length is long, sharp and chiseled to a fine point, but to the inexperienced eye may look overgrown.

Reproductive Problems: cannibalism, discharge or bleeding from genital area, mastitis, pregnancy toxemia, pyometra, abdominal swelling from cysts, tumors and abscesses, adenocarcinoma or fibrosarcoma

Other Conditions: heat prostration, viral infections, salmonellosis, complications from lack of vitamin C (especially seen in guinea pigs), dietary inadequacies, anorexia from stress, illness or rancid feed, and constipation

Understanding Behavior, Group Living and Basic Physiology

Most rodents are sociable creatures and enjoy living with others. There are always exceptions, since an older animal who is known to be territorial may prefer living alone. From a shelter standpoint, the subject of overpopulation and birth control is the single most important issue influencing co-ed living. Putting a stop to all breeding cycles is essential. With the short gestation period of rodents, it is imperative that no opposite sexes are living together, unless they are altered.

Sterilizing rodents is a very challenging procedure even for the most experienced veterinarian. The American Humane Association does not consider the procedure necessary, as the cost of the surgery tacked onto the adoption fee would greatly reduce the animal's chances of getting adopted. Most rodents, therefore, are not altered because of cost and the scarcity of veterinarians willing to perform such surgeries.

Rodents need plenty of private space to get away from other rodents. Having multiple cage partners can become difficult if the cage is overcrowded or in a stressed environment. Male roommates must be closely monitored, especially in guinea pig relationships. An overview of each rodent follows and is based on its particular personality traits, behavioral patterns and basic physiology.

Guinea Pigs

Two females make the best pairing and will generally get along. Two males can usually get along, but only if they are raised together from the same litter and not exposed to a female (seeing a female can cause dominance or territorial fighting).

Guinea pigs will chatter, mutter and squeal when it comes to mealtime. They will whimper or squeal when frightened or restrained against their will.

When guinea pigs prepare to fight, they usually start circling each other with a low mutter and then attempt to bite each other in the flank.

The average gestation period is 65 days. The average litter is three to four offspring. They are born completely covered with fur, with their eyes and ears open, and teeth erupted. Birth weight is

60-100 grams. Young guinea pigs begin eating solid food during the first few days post partum (after birth). Weaning occurs at 14 to 28 days.

They can scramble very fast in their cage when frightened and can easily injure themselves.

Their vision, sense of smell and hearing are acute and well developed.

Guinea pigs can learn to use a shallow litter pan set up in a corner for waste.

Guinea pigs make great pets for older kids, but they must be handled gently, with squeezing or “scruffing” by the neck avoided.

Neutering guinea pigs is a relatively simple procedure, but most veterinarians consider spaying them difficult, even high risk. Isoflurane is the preferred anesthesia for guinea pig surgery.

They possess a cecum, so check geriatric guinea pigs for impacted fecal material within the anus on a weekly basis.

Other Vital Statistics

- Average life span is 5 to 8 years
- Heart rate is 230 to 310 beats per minute
- Respiratory rate is 42 to 104 per minute
- Rectal temperature is 99.0 to 103.1
- Average number of teeth is 20
- Average blood volume is 70 ml/kg

Rats

Rats enjoy the company of others and will usually get along if raised from birth. Always keep males and females separated.

The gestation period is only 21 to 23 days, making overpopulation in a group a problem within a short period of time.

Rats are intelligent and respond to their human caretaker. They can become very tame and are trainable when handled on a daily basis.

An exercise wheel is not recommended, since a rat’s long tail can get caught.

Several females raised from birth can live happily in a colony. Make sure the cage is spacious enough to allow for private space for each rat. Two older females who are unfamiliar with each other will probably fight. Separate them as soon as possible to avoid injury.

Males can get along with one another in a colony if raised together from birth. When introducing two males for the first time, watch for aggressiveness and separate them as quickly as possible if an attack occurs.

A pet rat can be carried on one’s shoulder or placed in a pocket. Urination or passing feces is common if they are frightened. Be prepared.

Rats do not have sweat glands, and therefore don’t do well in high temperatures. They do not have a gallbladder.

They have a high metabolic rate. Regurgitation is virtually impossible because of a limiting ridge at the junction of the esophagus and stomach. Fasting is not recommended for any reason.

Other Vital Statistics

- Average life span is 2 to 3 1/2 years

- Heart rate is 313 to 493 beats per minute
- Respiratory rate is 71 to 145 per minute
- Rectal temperature is 99.5
- They have 12 molars and four incisors for a total of 16 teeth
- There are four front toes and five hind toes
- Tails have strong muscles and possess scales
- Tidal volume is 0.6 to 1.2. Total blood volume is 50 to 65 ml/kg

Mice

Mice can be housed alone, paired by sex (preferably from the same litter) or housed in larger, same-sex groups. Occasionally a fight may occur, but overall, they usually enjoy each other's company, preferring to sleep huddled together. Opposite sexes must be separated to avoid unexpected litters. Mice are prolific breeders and are capable of producing more than 1 million descendants in 425 days.

Domestic mice are meticulous groomers.

Their tails are muscular and possess scales.

Exercise wheels are recommended. Make sure the wheel operates efficiently so that small tails or long, fine hair does not get caught in the wheel.

Mice are great at balancing and can walk across a branch or a rope in the cage. They are active and can escape from a cage that is not secure.

Mice will fearlessly protect their offspring and should never be disturbed, threatened or handled when raising their young.

While they have acute sensory capabilities, their eyesight is only fair to poor.

Other Vital Statistics

- Average life span is 1 to 3 years
- Heart rate is highest of all rodents at 427 to 750 beats per minute
- Respiratory rate is 91 to 216 per minute
- Normal body temperature is 96.4 to 100.2
- Gestation period is only 18 to 24 days
- Weaning age is 21 to 25 days
- Average number of teeth (molars and incisors) is 16
- Tidal volume is 0.15. Total blood volume is 70 to 80 ml/kg

Hamsters

Hamsters are generally friendly, easy to care for and slower moving than other small rodents.

They possess large cheek pouches used to store food. They have looser skin than other rodents, and the tail is short.

Hamsters can escape more readily than other rodents from their enclosure because they are very good at using their paws.

Hamsters are more likely to jump from a surface and don't like being suddenly awakened or disturbed. They can hiss and inflict painful, sharp bites if provoked. Aggressiveness can occur and is noted more often than not in this species.

Exercise wheels are recommended, but should be used with caution with long-haired varieties. Check daily for possible injuries.

Hamsters are loners and prefer living the single life. Some female hamsters can be

paired from birth. When introducing two older ones, use caution and watch them before placing together. If fighting occurs, separate them immediately. Never house two males together. Most hamsters can never be paired and should be left alone.

Hamsters can become obese if their diet is too rich. The stomach has a high pH.

They are nocturnal and can also hibernate if the temperature drops.

Typical hamster behavior includes grooming, hoarding food, building nests, sleeping for long periods of time and playing.

When hamsters are about to attack, they will usually bare their teeth, hiss, chatter or mutter sounds. They may also roll over on their back and play dead.

Other Vital Statistics

- Hamsters usually live 1 to 2 years
- Average heart rate is 310 to 471 beats per minute
- Respiratory rate is 85 to 160 per minute (90 mean average)
- Normal body temperature is 99.5
- Weaning age is 20 to 25 days
- Gestation period is 15 to 16 days
- Tidal volume is 0.8. Total blood volume is 65 to 80ml/kg

Gerbils

Gerbils are friendly, alert, very active and inquisitive. They should always live with other gerbils since they do not like to live alone and can become bored or depressed if they do. Same-sex pairings are recommended. Larger colonies can live together if the enclosure is roomy enough for the group to move about.

Older gerbils may have difficulty accepting a new roommate. If you have to bond an older pair, it should be done gradually on neutral territory over a period of days. Watch carefully for signs of aggression. It is best to keep same-sex littermates together from birth.

An exercise wheel is recommended, but check daily for any possible injury to body or tail.

Gerbils usually select a mate for life and do not readily accept a new one.

Gerbils exhibit a wide range of behavioral traits, from burrowing and frantically digging to thumping with their hind legs, a behavior that signifies danger, courtship or just showing off.

Gerbils move around on all four feet and will sit up to get a better view of something above. They also mark territory by rubbing along objects (a scent gland is located on their stomach).

They do not tolerate excessive humidity. Their skin produces oils that prevent dryness and can produce an unusual ruffled appearance in their fur.

Gerbils can suffer from “tail slip,” a condition where the tail breaks off into segments because the skin is very thin.

Gerbils can have spontaneous seizures that will pass when the animal is left alone.

Other Vital Statistics

- Life span averages 3 to 4 years
- Heart rate is 360 to 600 beats per minute
- Respiratory rate is 90 per minute
- Their average body temperature is 97.5 to 102.0

- Gestation period is 24 to 26 days
- Weaning age is 20 to 28 days
- Total blood volume is 65 to 80 ml/kg

Chinchillas

The chinchilla is an adorable creature with plush, thick fur covering the entire body. Chinchillas enjoy hopping, climbing and jumping and will need a cage with high walls to accommodate these behaviors.

Chinchillas can be kept together, preferably a female and neutered male. Female pairings are possible from the same family, but two males should never be housed together.

A chinchilla's coat can get an oily buildup that will become sticky and uncomfortable for the animal. To remove the buildup, provide a daily dust bath that they can roll around in. Commercial preparations are available in pet supply stores or by mail order.

A "hair ring" can occur around the genitals in a male chinchilla and needs to be removed as soon as possible. You'll need blunt tweezers and a second person to help. Have a veterinarian assist the first time to show you what to look for. If the chinchilla continually jerks the perineal area upward, it is usually a warning sign that this has occurred. It can be dangerous because the penis cannot retract back into the body, causing irritation. A sterile lubricant to ease the procedure is advised.

Their sensory organs are well developed. They are capable of exhibiting many vocal sounds, such as a barking sound when threatened, grunts when calling to a mate or a warning cry that sounds like a whistle. They can spray urine when an intruder is near and are capable of biting when cornered or scared.

Chinchillas are very sensitive to dietary changes, toxins in their water, some antibiotics and even stress from other animals being in the immediate area. Their veterinary care is very specialized and should be considered before someone adopts a chinchilla for a pet.

Other Vital Statistics

- Life span can range from 10 to 20 years
- Heart rate is 100 to 150 beats per minute
- Body temperature is 98.4 to 100.4
- Gestation period is 105 to 118 days
- They have 20 teeth (incisors may have a yellowish tint from iron deposits) and large, bat-like ears
- They have a long GI tract and a cecum

Reducing Stress

The odors, sounds and sights of potential predators, such as dogs and cats, easily frighten rodents. To reduce their stress, make sure they are protected, comfortable and located in an area that provides some relief from these elements.

In a rodent area, good design helps keep stress to a minimum. Give all rodents plenty of room to move around and hiding places to get away from people viewing them. Keep the area quiet and allow them time for sleep during the day. Post signs warning visitors to keep their hands out of the cages to avoid being bitten. You can place the cages behind a Plexiglas® front to prevent visitor contact with the animals. Raising cages up on a shelf will also help (they should still be at eye level). A screened front or complete enclosure works with some creative design. You can move glass tanks down below and keep the open wire cages higher up to avoid any accidents.

Handling rodents can be a challenging experience for anyone in the animal care field. Most of the time, we are familiar with handling dogs, cats and even rabbits. But rodents are smaller, and therefore more awkward to handle.

When your shelter receives a rodent, make sure you have a cage or glass-walled enclosure set up for immediate occupancy. If an area is not prepared, keep the rodent(s) in a box or carrier while doing so. Do not attempt to handle them unless you are identifying sexes for separation. Try to keep stress to a minimum. Rodents that get excited or scared may bite or attack. Let them calm down before assessing their temperament.

Even in the best shelter facilities, it is easy to react hastily and euthanize a rodent because of information provided by the owner. Rodents who are not socialized, or ones who have been “mauled” by children, may actually be good candidates for adoption if given a chance to recuperate, settle in and become socialized. A one-time bite from a hamster is not enough of a reason for euthanasia. On the other hand, a constant stream of attacks from a miserable rodent can be grounds for euthanasia. Most often a “mean” rodent is just misunderstood or not being handled carefully. Some basic handling tests can be employed once the rodent has settled in and had time to acclimate over a period of 24 to 48 hours.

Handling Rodents

Handling rodents requires a little practice. Here are some guidelines to make sure you avoid injury to yourself, as well as to the rodent.

Make sure your hands are clean and do not have traces of sugar, sweets or food odors

on them, since the rodent may bite if he is attracted to a smell. Some rodents can be lifted inside a cup or box if transferring them into an enclosure. Some kennel staff may not be as enthusiastic about handling these animals as others. Gloves are not recommended as they make handling awkward.

Handling all rodents when they are young is especially important. If they are not socialized, recruit volunteers to spend time handling them so they get used to people. Lifting them properly is crucial because small bones can easily break.

Once animals are in your hands, scoop them up to make them feel secure. Don't pick them up by the tail, midsection or base of the neck. Avoid placing your fingers under the nose of a rat, as it may bite. Keep your fingers above their head when handling rodents. Small rodents can move fast, so it is essential to keep them well secured in your hands to prevent them from falling.

Larger animals, such as guinea pigs, can be picked up with one hand under the chest as you secure the rear end of the animal and scoop upwards. Then bring them to your chest, so that they feel secure. A convenient way to examine a rodent, when it is necessary, involves holding the rodent under the front paws and wrapping the other hand around their bottom for restraint. This is convenient when trimming nails or examining genitals.

During a medical examination, there are ways of restraining rodents that make the procedure easier on the veterinarian and the patient. The following three books in particular are excellent references:

- *The Biology and Medicine of Rabbits and Rodents*
- *Ferrets, Rabbits and Rodents — Clinical Medicine and Surgery*
- *Rabbit Medicine*

Your Guinea Pig, A Kid's Guide by Wanda Curran. KW Cages, (800) 447-CAGE

Diagrams and photographs show excellent restraint methods for a clinical examination, administering injections, blood collection, anesthesia protocols, surgical procedures for commonly seen diseases in practice and other topics.

Rodent Resources

Reference Books

A Petkeeper's Guide to Hamsters and Gerbils by David Alderton. Published by TetraPress, 201 Tabor Road, Morris Plains, NJ 07950. ISBN#3-923880-59-6. Includes information on rats, chinchillas, and mice

Chinchillas: A Complete Pet Owner's Manual by Maike Roder-Thiede. Barron's Educational Series, Inc., 250 Wireless Blvd., Hauppauge, NY 11788. ISBN#0-8120-1471-5

Family Pet Series: Guinea Pigs by Katrin Behrend. K.W. Cages, (800) 447-CAGE. ISBN#0-8120-6596-4

Gerbils: A Complete Pet Owner's Manual by Raymond Gudas. K W Cages, (800) 447-CAGE. ISBN#0-8120-9020-9

Hamsters: A Complete Pet Owner's Manual by Otto von Frisch. KW Cages, (800) 447-CAGE. ISBN#0-7641-0654-6

Rats, A Fun and Care Book, published by BowTie Press, a division of Fancy Publications, 3 Burroughs, Irvine, CA 92618, www.animalnetwork.com. ISBN#1-889540-05-6

Ferrets

Overview

Ferrets belong to the Mustelidae family. Other members of this family include the mink, otter, sable, badger and skunk. The endangered black-footed ferret, whose scientific name is *Mustela nigripes*, is not considered an ancestor of the domestic ferret. In fact, there are no wild populations of ferrets in the United States.

The domestic ferret originated in Europe and was brought to the U.S. 300 years ago to help farmers with rodent control.

Today, these animals are popular as pets and are bred to emphasize their docile and gentle nature. Very social creatures, ferrets can get along well with other ferrets, dogs, cats and people. They are very energetic, inquisitive and fearless creatures who require a lot of time and attention from their owners.

In appearance, ferrets are small, furry creatures that may weigh anywhere from 2 to 5 pounds. About 14 to 16 inches long, females are smaller than males in both weight and length. Their heads are oval-shaped and have small, bright, clear eyes, but they cannot see well in dim light. Their body is elongated, lean and muscular. Their legs are short and their feet have five toes, all ending in claws. They come in a variety of colors, such as albino (solid white with red eyes), sable (raccoon mask), panda (white head) and Siamese (dark legs and tail).⁸

Ferrets can be trained to use a litter box and do tricks. Most ferrets love to go places, either by riding on a shoulder, in a hooded sweatshirt or in a cat tote. Be careful of shoulder riding, however, as ferrets can jump. Well-cared-for ferrets can live six to eight years and are active

throughout their entire lives. If they are lethargic, even for one day, there is probably a medical reason. While they sleep about 14 hours a day, they are always ready to engage in play when awake.

A male ferret is called a hob, and a female is called a jill. A baby ferret of either sex is referred to as a kit.

Setting Up Your Ferret Area

Ferrets can be housed in cat cages or in a cat room, but should never be housed with rodents, rabbits or birds. In fact, as you move from the ferret area into other small-animal areas of the shelter, be sure to wash your hands because these animals will get upset if they smell ferret. Keep ferrets away from dogs, as they are susceptible to canine distemper.

Here are some other things to consider when planning a ferret area:

Ferrets cannot tolerate temperatures above 95 F because they don't have sweat glands, so they should never be placed in direct sunlight.

The cage should be large enough for a litter box. Place the box in one corner and make sure the pan has a low entry (you may have to cut the box down on one side) to allow for easy access. The pan should be at least 4 inches high on the other three sides, since ferrets back into their litter boxes to urinate or defecate.

Do not use enclosures made of wood or any other porous surface, as these surfaces cannot be properly sanitized and can contribute to the spread of disease.

While some shelters use empty aquariums for temporary ferret housing, it is not

recommended. Glass enclosures offer poor air circulation, and they are difficult to clean and maintain. In addition, most aquariums are not nearly big enough to accommodate a ferret.

Ferrets need a special nesting spot with appropriate bedding materials for sleeping since they will not like sleeping on a cage floor. The bedding area should be in the opposite corner from the litter box. The sleeping area can be a small box attached to one end of the cage so that it cannot be tipped over during ferret play. It could also be a soft cloth that they can curl up in, such as a T-shirt or a towel. Ferrets are more like cats than hamsters, so don't use hay, straw, sawdust, cedar chips or wood chips for bedding.

The cage should be safe and secure to prevent encounters with rodents, birds or other small animals that are easily frightened by the signs, sound and smell of a ferret.

The cage can include a play toy, such as a milk carton with 3-inch holes cut out of it so the ferret can crawl in and out from all sides. Make sure the toy is safe and cannot be swallowed.

Pairing Ferrets

While ferrets are very social creatures and can often learn how to get along well with other ferrets, this isn't always the case, and certainly not always the case right away. In the shelter environment, house ferrets separately, especially if the animals are not spayed or neutered. The exception is ferrets brought in as a pair or social grouping, which can be housed together and should be adopted out together. Two unneutered males will be very territorial, especially during the mating season

(February to September), and their fights may result in injury or even death.

Equipment Needs

Cage Dimensions

A standard ferret cage should be at least 14 inches wide by 24 inches long by 10 inches high, but they can be bigger. This space can easily accommodate up to two ferrets, if you receive an established pair. Look for cages with bars about 1 inch apart.

Food and Water Dishes

Their food dishes should be shallow and weighted to prevent the ferret from dumping the food and using the bowl as a toy. Bowls that can be attached to the cage are also suitable. The food should be placed near the nesting area of the cage and not the litter area. Rabbit water bottles can be affixed to the cage and used for ferrets. Make sure the bottle is within easy reach.

Litter Pans

Cat litter pans that are 4 inches high and are cut low on one side for easy access work fine for a ferret. However, you can also use small storage boxes, plastic dishpans or large school-supply boxes. Just make sure that one side is always lower than the other three sides so that they can get in and out easily. Any clay litter suitable for cats is fine for ferrets, though clumping litters are not recommended. If ferrets are not litter box trained, they can be trained to use a flat piece of newspaper in the corner of the cage.

Dietary Needs

Daily Diet

Ferrets are carnivores (meat eating) and require a diet high in animal protein. Ideally, their food should contain a minimum of 36 percent protein, 22 percent fat and a maximum of 2 percent fiber. Feed them a specially formulated ferret food or a premium-quality cat food high in animal protein. Ferrets also require taurine that can only be found naturally in poultry products. Sometimes a ferret will not eat a premium-quality food, especially if its diet has consisted of a lower grade of cat food. Mix the premium-quality food with the low-quality cat food, gradually increasing the amount of the premium food each day.

Because of their short digestive cycles (around three hours), ferrets digest animal-based proteins more easily than vegetable proteins. Chicken, turkey, beef and lamb are all fine, but most ferrets don't like fish. Choose feed that lists animal protein as a first or second ingredient. Corn or other plant products should never be the first ingredient listed on ferret food. An average ferret eats about one-half to three-quarters of a cup of food daily. Soft cat food is not good for ferrets, partly because it contains less protein than dry food. Never feed ferrets dog food.

Since food passes through their digestive tract so quickly, ferrets should have constant access to food. There is little chance they will overeat. However, ferrets do gain and lose weight, depending on the seasons. In the fall, under natural lighting conditions, ferrets eat a lot and gain large amounts of weight to insulate their bodies for winter. In the spring, ferrets eat much less and thus lose their insulation in preparation for the summer months. The unnatural lighting conditions in a home or

shelter environment may contribute to an irregular weight gain and loss cycle. However, an appetite change unrelated to seasonal changes requires veterinary attention.

Special Nutritional Needs

There are two times in ferrets' lives when they have special nutritional needs: When they are young (kits) and when they are old.

Kits

Ferrets grow very quickly, attaining 90 percent of their adult size in just 14 weeks. During this time, kits may eat much more than their adult counterparts — as much as a cup a day. Kits begin to eat dry food at around 6 weeks of age, but they should not be weaned from their mother before 8 weeks. Add water to make the food more palatable. Add water to just above the dry food level and allow it to soak for 10 or 15 minutes before serving. Kits who aren't eating can be encouraged to eat by adding a few drops of Linatone[®] (a vitamin-rich liquid ferrets love), a small amount of kitten milk replacer or goat's milk to their food. Do not give them cow's milk as it can make them very ill. Ferrets are considered adults at 6 to 7 months of age.

Seniors

Ferrets 5 years old and older may have problems digesting the protein in their food. Add one-half teaspoon of vegetable oil to their dry food to aid digestion and improve the look of their coat. Also, older ferrets do not absorb the nutritional levels as readily as when they were younger, so it is important to keep an older ferret on a high-quality food. Some older animals with dental problems may experience problems chewing the dry food. As with the kits, you may need to add water to soften the food for chewing. Keep a soy-

based supplement, like Ensure[®], on hand to soften food or to feed the animal should it stop eating.

Supplements

Supplements are not necessary if ferrets are eating a proper diet, but they can be used as a treat or to encourage eating. Feretone[®] and Linatone[®] are similar vitamin supplements that nearly every ferret loves. However, both of these supplements contain vitamin A, which can be harmful or even fatal to a ferret if given in excess amounts. One- or two-drop dosages daily are safe.

While ferrets love milk and ice cream, they should not be given dairy products because it upsets their stomach. Goat's milk is fine. Sugary treats aren't good for them either, especially chocolate, as it may be toxic in large quantities. Also limit raisins, bananas, prunes, oatmeal, apples or anything with bran as it can give ferrets diarrhea.

Bitter Apple is a bad-tasting liquid or paste used to stop ferrets from chewing.

Basic Ferret Examination

Every ferret should receive a health evaluation before being put up for adoption at your shelter. Ideally, quarantine ferrets overnight and examine them the next day. Here are some things to look for during the exam:

Check for clear bright eyes. Watery or dull eyes are generally the first signs of health problems. Watery eyes also could indicate allergies.

Check their mouth. The gums should be pink. White gums could indicate anemia or poor nutrition. Dental disease is common

in older ferrets and could be the cause of eating problems.

The whiskers should be long and soft. Short, broken whiskers indicate the animal has been on a poor diet.

Check the ferret's coat. If the coat is dull in appearance, it is also an indicator that the animal has been on a diet low in animal protein. The pads on their feet should be pink.

Rub your hands over the ferret's body, especially along the jaw line, to check for lumps that may be a tumor or abscess. A lump may need to be removed by a veterinarian.

Check for an enlarged spleen. The spleen enlarges to fight infection, but it sometimes does not return to its normal size. An enlarged spleen can cause anemia and other complications. This is a fairly common condition that can be diagnosed by holding the animal upright from under its arms. If the animal's side is bowed, there is a good possibility of enlarged spleen. The ferret will need to see a veterinarian for treatment, which may include surgically removing the spleen.

Examine the vulva in the females and the opening of the penal sheath in the males for signs of discharge. Discharge indicates the ferret has an infection and will require veterinary care.

Weigh the ferret. Ideally, the ferret should be slender and muscular and weigh between 1 and 2 pounds for females, and 2 to 5 pounds for a male.

Check the ears for ear mites, a black wax-like substance in the ears. Ear mite

medicine for cats can also be used on ferrets.

Check their stools. While ferrets do not get worms, black tarry stools could indicate intestinal bleeding. Blocked stools may indicate an internal blockage. Ferrets like to swallow things they shouldn't. In both instances, consult a veterinarian.

Examine the ferret's body for mites, ticks and fleas. Cat or kitten shampoos can be used on ferrets, but dog and cat dips cannot as they are too strong.

Determine whether you have a male or female. If you can't tell, then it's probably a female. On the belly of the ferret, halfway between the tail and the bottom of the rib cage, you will see what looks like an "outie" belly button. It's not a belly button, but an indication that you're holding a male ferret. On females, there is a second opening, often under a tiny flap of skin located in front of the anus.

Ferret Diseases

Adrenal-associated Endocrinopathy
Alopecia, or hair loss, is the most common sign of adrenal-associated endocrinopathy (AAE). This disease may also be referred to as hyperadrenocorticism. AAE is caused by the presence of a proliferative lesion within the adrenal cortex, the region that is responsible for secreting a number of important hormones. Other signs may include the swelling of the vulva, vaginal discharge and stump pyometra in spayed females, and dysuria in males. Behavioral abnormalities include increased mounting behavior or aggression in both males and females and marking behavior in males. This is a very common and very treatable disease.

Aplastic Anemia and Septicemia

It may shock you to learn that female ferrets who are not repeatedly bred have a 90 percent chance of dying from aplastic anemia and septicemia. These two diseases are the direct result of prolonged heat in females. Unlike other mammals that go in and out of heat during the year, ferrets are in heat continually from February to September. Obviously, this is another compelling reason to spay all female ferrets before they are adopted. Spaying can be done at any age, but most veterinarians prefer to do it when they are not in heat. However, if a ferret is already in heat, do not wait until her cycle finishes; spay her as soon as possible.

Chordoma

A smooth, hard nodule encompassing the tip of the tail. While considered potentially malignant, chordomas rarely metastasize and are not debilitating to the ferret. The nodule, however, will need to be surgically removed.

Dirofilariasis (Heartworm Disease)

Like dogs, ferrets can get heartworms from mosquitoes. While uncommon in ferrets, heartworm disease is certainly on the rise. Because of the small size of the ferret heart, just four or five worms can cause heart failure. Clinical signs may include lethargy, anorexia, dyspnea and pale mucous membranes. Heart sounds may be muted as a result of the disease. Prevention and treatment is available. Check with your veterinarian.

Epizootic Catarrhal Enteritis (ECE)

Also known as the green virus, ECE is a highly contagious coronaviral disease that is transmitted ferret to ferret. Clinical signs of ECE, which is an inflammation of the intestine, begin with vomiting that is watery and clean. A profuse, green and

watery diarrhea follows four to six hours later. The diarrhea often possesses an abundance of mucus, thus the reason this disease has sometimes been called the “Green Slime.” Infected ferrets are often lethargic, have no appetite and may suffer from dehydration.

Transmission of ECE most commonly occurs when a ferret is introduced into a new household or a humane or rescue facility. Since the animals may shed the virus for up to six months following infection, care in handling affected ferrets is important. The virus can be transmitted via hands, clothes or shoes, or through direct ferret-to-ferret contact. Individuals who handle infected ferrets should wash and change clothes before handling uninfected animals. Veterinarians often recommend that ferrets be isolated and examined for signs of diarrhea for a minimum of one week, as healthy-appearing animals may not show signs of the disease right away. This is not always possible in a shelter environment, so watch for early signs of this disease, and take proper care when moving a ferret from one cage to another.

ECE treatment often includes antibiotics, fluids and a bland diet. (More detailed information on this disease is available at www.ferret-fact.org.)

Gastric Ulcers

Ferrets, like humans, are predisposed to the development of ulcers during times of stress. This debilitating and potentially deadly disease should be considered in any systemically ill ferret. While the ferret may stop eating, have poorly digested stools or vomit, two signs definitely point to ulcers and should not be ignored — grinding the teeth (an indication of abdominal pain) and thick, black, tarry

stools (a sign of digested blood).

Treatment often includes antibiotics, a bland diet and a stomach protectant. A nutritionally complete assist-feeding formula for ferrets is Oxbow Carnivore Critical Care[®]. Reducing stress levels, preventing overcrowding and maintaining good sanitation can help decrease stress levels that may lead to this condition.

Insulinoma

Sometimes called hypoglycemia or pancreatic tumors, insulinoma is caused by tumors in the pancreas (the organ that produces insulin). This disease is the result of the pancreas producing too much insulin. A ferret with this disease may show a variety of symptoms, including seizures, screaming, clenched teeth, locked jaws, fainting spells, drooling, staggering and staring into space. This disease requires veterinary care.

Mast Cell Tumors

A common tumor of the ferret, mast cell tumors are generally flat, scaly areas on the skin of the ferret, which may or may not be associated with hair loss.

Sometimes, the tumors appear as an itchy scab on the skin. Mast cell tumors are more common in older ferrets, and several tumors may be present at once. Consider all mast cell tumors benign. While they pose no significant health risk to the ferret, the tumors can be surgically removed.

Infectious Diseases

Colds and Flu

Ferrets are susceptible to many infectious diseases. They can catch colds and flu from people and pass the diseases right back. With pneumonia, they generally suffer from the same symptoms: rattled breathing, fevers and signs of a cold. If

symptoms like this persist for more than a day or two, take the ferret to the veterinarian for antibiotics. You can use a few drops of a non-alcoholic infant cold formula to treat minor cold symptoms.

Distemper

Ferrets are highly susceptible to canine distemper and will most likely die if they contract the disease. Therefore, all ferrets should be vaccinated for canine distemper. The vaccine should be modified-live and not of ferret-tissue origin, as this type of vaccine may actually give a ferret distemper. Use instead either a ferret vaccine (Fervac D[®]) or a canine distemper vaccine (Galaxy-D[®]). There have been a few unconfirmed reports of ferrets getting feline distemper, but these stories are rare. Most veterinarians claim that ferrets are not susceptible to feline distemper. However, there is no harm in giving a ferret a feline distemper vaccine as a precautionary measure, especially if you have cats in the shelter with the disease.

Rabies

While there are few documented case of rabies in ferrets, just as with dogs and cats, these animals can carry and transmit the disease. The IMRAB-3[®] rabies vaccine is available and approved for ferrets. They should be given a rabies vaccine at 3 months of age and then annually. All ferrets entering your shelter should be inoculated against this disease.

Other Health Concerns

Blocked Scent Glands

Ferrets have anal scent glands that release an unpleasant odor when they are frightened or during breeding season. The scent only lasts for a few minutes, but it should not be released under normal conditions. If the odor continues or if the

animal is repeatedly releasing the glands, have a veterinarian examine the animal to see if there is an infection present.

Deafness

Deaf ferrets are fairly common. They are often recognized by their white head or by the white stripe on the top of their head. This striped “badger” pattern is a genetic defect that indicates deafness about 90 percent of the time. These animals may be skittish, especially if they don’t see you before you pick them up. Startled ferrets will likely bite.

Eye Problems

Ferrets have a genetic link with eye problems. They may develop eye infections, cataracts and even blindness. Blind ferrets do not have any difficulty getting around, since their keen senses of sound, smell and touch enable them to cope in the world as easily as a sighted ferret. However, speak to blind ferrets before picking them up or pulling them out of the cage, as they may bite if startled.

Intestinal Disorders

Change in the frequency and consistency of bowel movements can be a sign of disease, serious illness or a reaction to a change in diet. Diarrhea can result from a change in diet or treats high in milk products, like ice cream or cottage cheese. However, greenish diarrhea may indicate your ferret has intestinal flu. To prevent dehydration, the ferret may require intravenous fluids.

Stress, like changes in their coat or heat cycles, and enteritis, an inflammation of the intestinal tract, may cause black, tarry stools. The black stools are an indication of intestinal bleeding and require veterinary care.

If a newly arrived ferret does not pass a stool within 24 hours, it may have an internal blockage. The ferret may have swallowed a small object that will need to be removed surgically. An x-ray can confirm if this is the problem. The ferret may or may not vomit in connection with the obstruction. Of course, any animal that is sick or not eating much may not have a stool. In either case, have the ferret examined by a veterinarian.

Ferret Surgery

Ferrets are hardy creatures, but they occasionally require surgery. Often, the problem is not the surgery, but waiting too long before an illness or problem is recognized before making the decision to operate. The most common surgeries include spaying and neutering, removal of tumors or lumps, or elimination of intestinal blockages. Ferrets should not have food or water for four hours before surgery. Do not fast them any longer than this, however, as many ferrets have problems with their blood sugar. In ferrets, gas anesthesia is safer than injectable anesthesia.

During the recovery period, heat support is very important. Convective warmers and warm water-circulating blankets are a good way to keep the ferret warm. The stress of the surgery combined with the loss of body temperature can sometimes lead to setbacks in the recovery process and may even make the difference between recovery and death.

Many ferrets entering your shelter will already have had their anal scent glands removed. The anal scent glands are a defense mechanism only, but many people have them removed because they think it will improve the overall smell of the ferret. Ferrets with or without these scent

glands generally smell the same.

Discourage potential adopters from having this surgery performed on their pet, as it is a painful and unnecessary procedure.

Ferret Behavior

Ferrets are very social creatures and usually enjoy the company of other ferrets. However, they shouldn't be put in the same cage together and then left, as some ferrets may not get along with other ferrets. It can take a few weeks for ferrets to establish a harmonious relationship, so they should be monitored. When two ferrets first meet, there will be hopping, jumping, clucking and neck grabbing. This is done in order to establish a pecking order. The more dominant ferret may end up carrying the submissive one around by the neck, much like a mother does with her kit. Once the relationship is established, the animals usually settle into their roles and become friends. But some ferrets will never tolerate their own kind, primarily because they weren't socialized with them at a young age.

The Language of Ferrets

Ferrets communicate through body gestures and sounds. Knowing these sounds and movements can help you better understand your shelter guest. Here's a list of some of the things a ferret might do in the shelter environment:

Clucking

Whether angry or excited, a ferret may make clucking noises. Sometimes these noises occur when they see other ferrets they don't know. Look at what else is going on at the time to determine whether the animal is mad or happy.

Hissing

This noise is associated more with fear than aggression, so it's not a precursor of

something worse to come. Hissing is also something ferrets can learn from other ferrets, so they may simply hiss in imitation of their shelter mates. Note the circumstances surrounding their hissing to determine the cause.

Hopping, Jumping and Bouncing

Some people will interpret this behavior as aggressive, since the animal appears to be lunging toward you, especially when it is in a cage. But these gestures are simply the ferret's attempts to engage you or another ferret in play.

Plucking Hair

Pregnant ferrets will pluck the hair from their bellies a few days before they deliver their litter. Be careful not to handle the kits for a few weeks, especially with another animal scent on your hands. Some ferrets have been known to kill their young if they sense the animals have been handled.

Puffing

Much like a cat, ferrets puff their bodies, arch their backs and raise the hair on their bodies to make them seem larger to an aggressor. This is definitely a fear gesture if two animals are fighting, but the behavior may also be seen when ferrets are playing.

Running Backwards

Ferrets will run backwards to prevent being picked up or to avoid an unpleasant situation.

Screaming

Sounding almost like a child, a ferret will scream if stepped on, dropped or scared. This sound can be disconcerting, but kind words and gestures will help calm the animal down.

Sudden Head Movements

Ferrets don't see well, so they rely on their other senses, especially smell. When someone picks them up, they may swing their heads around (they can go 180 degrees) to smell who it is. To keep them from being frightened (and releasing their scent glands), allow them to smell you before picking them up.

Teething or Biting

Like puppies, ferrets communicate with their world by mouthing and biting. But ferrets can bite hard, so they must be taught not to bite. Because they are often taken away from their littermates at a young age, they don't learn what is and is not acceptable behavior. Ferrets bite for many reasons, including loneliness, anger, wanting to be put down or just plain not knowing any better. Some animals can be persuaded to stop biting with a tap on the nose, but this gesture may actually make some ferrets angry. Be sure that you understand the individual ferret and don't reinforce the biting behavior by doing what the ferret demands. For example, some ferrets learn that if they bite the hand that is holding them, they will be put down. Adopting animals that bite will depend on the potential adopter and their willingness to work with the animal.

Litter Box Training

Ferrets prefer to relieve themselves in the same place every time, making them easy to litter box train. Place the litter box with some feces in the corner of the cage and the ferret will likely use the box quickly. Most ferrets relieve themselves within several minutes of awakening, so before cleaning the cage, wake them up and give them a few minutes to use the litter box. Then place the animal in another cage while you clean.

Caged Behavior

Young, active ferrets who have been caged too much may develop behavior problems. Often this can be determined by asking the previous owner how long the animal was out of the cage each day. If not much, then the animal will need a home that will offer lots of daily interaction with people and plenty of time outside the cage to play, as this often remedies most behavior problems. At the shelter, give ferrets play time every day, either in a confined ferret-proof room or by providing toys in the cage, such as plastic grocery bags (they love crinkly bags) or plastic tubing they can crawl through.

Ferrets and Children

As with most animals, always supervise ferrets and children when together. A ferret is not a good pet for small children, though older children may be taught to handle ferrets. If a ferret owner can't properly supervise the two (and that means **never** leaving them alone), then the ferret should be kept confined to a separate area of the home.

Ferret Ownership Regulations

Until recently, domestic ferrets have been illegal to own in some places in the United States. In recent years, however, many efforts have been made to change legislation and regulations regarding the ownership of domestic ferrets. As a result, many states, cities, counties and municipalities have changed their regulations to allow ferrets as pets, some with the provision that a license or permit is required. Military bases, as well as several large cities (including Dallas, Texas, Ft. Worth, Texas, and Washington, D.C.), do not permit ferrets. In California and Hawaii, ferrets are still classified as wildlife and are banned as pets. Although

New York State does allow ferrets, they are still banned in New York City.

Even though rabies is rare in ferrets, the first licensed rabies vaccine approved for use in domestic ferrets in 1990 ensures they will never pose a health threat to a community. This vaccine has led to various studies that have changed many communities' viewpoints on how to handle ferrets in a bite case. Previously, ferrets were seized and immediately euthanized. Today, many communities have changed their regulations to allow ferrets the same consideration in rabies cases as dogs and cats: They are quarantined and observed for a 10-day period.

Identification

Domestic ferrets cannot survive very long in the wild. Because they run the same risk of getting out of their homes as dogs and cats, ferrets should have some sort of identification that links them to their family. Since ferrets can easily maneuver out of collars, the American Humane Association recommends microchipping.

Exotic Pets

More and more exotic pets arrive at shelters each year. In addition to numerous books and other printed materials, there are many resources on the internet regarding the care of these animals. Local, regional or national rescue groups can also be an excellent resource for care and possible placement of exotic animals.

Hedgehogs

Hedgehogs are insectivores and originated in Africa. They are nocturnal animals and usually do better when housed alone in quiet environments. They can be housed in a rabbit or rodent cage without the grated bottom flooring. Line the bottom with newspaper. Hiding places such as a wooden box lined with bedding are important. Shredded newspaper or pelleted paper bedding material works well. Avoid pine or cedar shavings that contain harmful oils for bedding. These can cause problems with the respiratory tract. Make sure the bedding is changed frequently.

The exact nutritional requirements for hedgehogs are not known, and there is still much to be learned. They appear to be omnivorous. They will eat small quantities of dry cat, dog or ferret food supplemented with earthworms, mealworms and crickets. Small amounts of chopped fruits and vegetables can also be offered. Because they are nocturnal, they should have fresh food available at night. Water should be available at all times.

Many hedgehogs will exhibit an unusual foaming, hypersalivation reaction on tasting new items, including normal dietary components, medications and toys. This is normal in the species.

Check local laws that may prohibit adoption of these animals.

Sugar Gliders

Sugar gliders are nocturnal marsupials that originated in Australia. They are about the size of a large hamster. A furry “gliding” membrane of skin extends between their wrists and ankles and enables them to glide up to 50 meters between trees.

Sugar gliders need a variety of foods to meet their nutritional needs. Insects, such as mealworms and crickets, are a good source of protein, as well as monkey chow and cat food. They should not be fed dry dog food as this can lead to vitamin imbalances. Commercial brands of food are available. Chopped up fruit and leafy vegetables are good treats. Water can be made available with a sipper bottle or non-tip dish.

Sugar gliders are agile creatures that love to climb. A large aviary cage or ferret cage can be used for housing. Provide several nesting spaces with bedding for hiding and sleeping. Aspen chips, shredded paper or a soft towel can be used for bedding. As with other animals, avoid cedar shavings. Climbing branches can be made available for exercise. Any type of wood that is safe for birds is appropriate for sugar gliders.

Sugar gliders normally live in small family groups. They are very social and companionship is important. They will do better when housed with another sugar glider.

Potbellied Pigs

Potbellied pigs were introduced from Asia in the 1980s and continue to be popular as pets. They are, however, frequently surrendered to shelters because of the challenges in caring for one. They weigh

only 2 pounds at birth but can reach 100 to 150 pounds when mature. They can live anywhere between 12 and 30 years.

The best way to house a potbellied pig is in an indoor dog kennel/run. If weather permits, pigs can be housed in an outdoor kennel, but do not put them in direct sunlight since they sunburn. Always provide plenty of shade. A wading pool is recommended if the pig is kept outdoors.

Commercially prepared food is available for pigs. Fresh fruits and vegetables should also be offered.

Additional Resources for Exotic Pets

Good Intentions Are Not Enough, A Pot-Bellied Pig Care Book. P.O. Box 2525, Carnation, WA 98014, (206) 880-4912

Pot-Bellied Pigs: A Journal for Breeders and Pet Owners. Pot-Bellied Pigs, P.O. Box 768, Pleasant Grove, CA 95668, (916) 655-1648, fax (916) 991-3049
Excellent resource

Pot-Belled Pigs in Your Home. Sarnan Publishing, P.O. Box 7668, Pleasant Grove, CA 95688 Considered the bible of pot-belled pig care

Pot-Bellies and Other Miniature Pigs by Lorrie Boldrick, DVM, and *Pot-Bellied Pet Pigs: Mini-Pig Care and Training* by Kayla Mull and Lorrie Blackburn, DVM. All Publishing Company, 10951 Meads Avenue, Orange, CA 92669, (714) 744-0146

A New Owner's Guide to Sugar Gliders by Helen O'Reilly. TFH Publications. ISBN# 0-7938-2825-2

Sugar Gliders: A Complete Pet Owner's Manual by Caroline MacPherson. Barron's Education Series, Inc. ISBN# 0-7641-0172-2

Hedgehogs by Matthew M. Vriends. Barron's Educational Series, Inc. ISBN# 0-8120-1141-4. Excellent reference information on all aspects of care; available through bookstores

The Cult of the Hedgehog by Dennis Kelsey-Wood. Published by TFH Publications. ETS-280-ISBN#0-7938-0471-X

Exotic Livestock: Llamas, Alpacas, Miniature Horses, Donkeys and Goats

You will need a barn structure or outbuilding to house these species. Shelters that have facilities for large-animal rescue and rehabilitation will be able to house these animals. Locate someone in your area to help in an emergency. Local sanctuaries, farms, rescue groups and llama/alpaca breeders may be able to house animals, as well as nationally accredited breeders and fanciers of these exotic animals. Call local zoos and breeders for dietary requirements.

Additional Resources for Exotic Livestock

The Exotic and Livestock Magazine, P.O. Box 888, Burnet, TX 7656811, (512) 756-9600, fax (512) 756-9600. Published monthly, highly recommended as a source for breeders and fanciers who may be able to help you place an animal

The Pygmy Goat Pet Owners Manual by Sandra Daigle. P.O. Box 100, Dothan, AL 35301-01100. (800) 533-3377

Your Goats: A Kid's Guide, Stock #3E005, advanced older child/adult text. Klubertanz Equipment Company, Inc., 1165 Highway 73, Edgerton, WI 53534, (800) 237-3899. Also available: *Your Sheep*, #E008, and *Keeping Livestock Healthy*, #E017

Publicizing Your Small Pets

Although the majority of animals that end up in shelters are dogs and cats, the number of rabbits, ferrets and rodents continues to rise. Many people do not know that these animals are awaiting new homes at their local shelters. It is important that your community is aware that they are available for adoption and, given the right situation, can make wonderful, fun and loving companions. Here are some ideas on how to raise awareness and get small mammals in the public eye.

Make sure your rabbits, ferrets and rodents are listed on your organization's website, Petfinder.com or similar websites. More and more people are looking for animals via the internet.

Create a display board of nice photographs of your rabbits and rodents. Avoid photographing them through cage bars. Instead, use a tabletop setting (with constant supervision) with a solid-color backdrop and a small blanket that they can sit on. The board can be set up at various events or displayed at area businesses, libraries or pet supply stores.

If you do "pet of the week" spots in local newspapers or on television, make sure your rabbits, ferrets and rodents are getting equal time.

Conduct rabbit/rodent-care classes at your shelter for your volunteers, as well as the general public.

Include photos and stories of rabbits/rodents in your shelter newsletter, appeal letters and other correspondence.

Write a short monthly newsletter devoted exclusively to your small-animal

population. Distribute to shelter visitors, pet supply stores, veterinary offices and other locations where people read while waiting for an appointment.

Make bumper stickers or print T-shirts with a positive message:

- "You're no bunny until some bunny loves you."
- "Happiness is a rabbit from (your organization's name)."

Network with other local, regional and national groups.

Participate in Adopt-a-Rabbit Month (February). Take advantage of the publicity materials distributed by the ASPCA and House Rabbit Society, sponsors of Adopt-a-Rabbit Month.

Adoption Guidelines

Most shelters have guidelines for the adoption process, and this should be just as important for rabbits and rodents as it is for dogs and cats. Make sure that the adopter is aware of all aspects of the commitment he or she is making. As with any animal, it is important for adopters to understand the special needs of the particular animal being adopted and their own ability and willingness to meet those needs.

At least one person on staff should know the personalities of the population you presently house. Matching the right person with the right animal is important.

Guidelines to use for adoption include:

All animals should be adopted as indoor, home companions. These animals should live in a safe and secure environment that is climate controlled.

Before an adoption takes place, the person should be willing to purchase a proper cage and necessary start-up supplies, and have it all set up before the animal comes home.

Strongly discourage outdoor hutch enclosures for rabbits, as they attract parasites like flies (which bring on fly strike). Freezing water and frostbite in the winter, and heat stress in the summer, can cause such stress that it actually cuts a rabbit's life span in half. The stories of rabbits being attacked and killed while in an outdoor situation have convinced most animal care staff that it is not worth the risk, especially when someone else is willing to keep the rabbit indoors where it is safe, happy and secure.

Give potential adopters all necessary booklets on care and a list of resources,

and discuss their content. Demonstrate handling options, and review behavior, diet and other questions. Basically, give the person as much information about taking care of the small animal as possible.

All rabbits should be spayed/neutered prior to adoption either by the shelter's in-house veterinarian or at a local low-cost spay/neuter clinic. Rabbit adoption fees should reflect some of the cost for spay/neuter and are generally in the \$50 to \$75 range. Most shelters charge a much lower adoption fee for rodents, anywhere from \$5 to \$10, depending on the shelter and its policies.

Adoption Advice

Here are some topics to consider and cover during an adoption interview for a small animal:

Veterinary Care

Not all veterinarians see small-animal patients. Provide the adopter with a referral to an exotics veterinarian, in case of an emergency and for ongoing health care. These pets don't get annual shots.

Cage Setup

Use the cage setup at the shelter as a guideline for home setup. If the animal has a special cardboard box or toys, send the items home with the adopter to help make the animal feel more comfortable in the new home.

Diet

Send home a cup or two of the current pellets you are feeding, so the new owner can match the diet or mix it in with new pellets to avoid stomach distress.

Allergies

People with known pet allergies should not adopt a rabbit or guinea pig because they can shed heavily at certain times of the year.

Breeding

Deny any adopters who want to breed. If an adoption looks like it's headed for trouble, you can talk to your director and deny the adoption. Better yet, recommend a "premises check" by your humane investigator. Believe it or not, some people really do walk into a humane society wanting a rabbit or rat for hunting bait, reptile food or dinner for themselves. Listen closely to the person's reasons for adoption and again, if the transaction needs to be called off, know that you have saved at least one small creature from going to the wrong person.

Classroom Pets

There are many concerns about small animals being adopted for classroom pets; however, positive, responsible attitudes toward animals can be developed by caring for and interacting with them. Adopting an animal for a classroom pet should be considered *only* if the animal is acquired for the purpose of educating students about the sentience of animals and the need for responsible, humane care. The teacher should understand the special needs of the animal and accept full responsibility for the lifetime care of the animal, including:

- Making appropriate provisions for humane care during weekends, holidays, vacations and any other times school is not in session
- Accepting financial responsibility for food, supplies and veterinary care

- Prohibiting the use of the animal for any stressful or invasive procedures

Education

Have plenty of good brochures, books and website resources on small-animal care for your adopters.

Routine Care

Explain routine care for each animal, so the adopter has a general idea of how to best take care of the animal. Demonstrate procedures whenever you can. For example, examine a rabbit while the new owner is watching. Show how to check the teeth and ears and to clip the rabbit's nails. Make sure the animal is in good health before going to a new home. Advise new owners that they too should do a simple health examination every week.

Euthanasia

Although euthanasia of rodents and exotic animals may be rare in your shelter, a discussion of how to properly provide a humane death for these animals is still important. Shelter staff may be less accustomed to handling these creatures, and anatomical differences can complicate matters.

Guinea pigs, ferrets, rabbits and small rodents may all be euthanized by intraperitoneal (IP) administration of sodium pentobarbital. They should be placed in a quiet and dark area until death has occurred. Perform careful verification of death. If death cannot be confirmed, keep the animal in a secure place until rigor mortis has occurred.

For small rodents such as hamsters, gerbils, mice and guinea pigs, 150mg/kg of sodium pentobarbital given IP is an adequate dose.

For ferrets that are not used to being handled, you can use pre-euthanasia drugs appropriate for cats administered by the same techniques.

In general, the same pre-euthanasia drugs used for dogs and cats can be used for rabbits, but doses should be doubled. Sodium pentobarbital dosages should also be doubled, and it may be easily given intraperitoneally.

For potbellied pigs, a 1:1 mixture of ketamine and acepromazine given at a dose of 1 ml per 10 pounds IM will provide deep sedation/light anesthesia. This will allow an intravenous injection of sodium pentobarbital into the cephalic vein.⁹

Telozal[®] (tiletamin-zolazepam) also works extremely well on pigs. It can be given at a dose of 0.3 ml per 10 pounds of body weight up to a maximum dose of 3 milliliters intramuscularly (IM). Once the pig is deeply anesthetized, then sodium pentobarbital may be give intracardiac using a 14-16 gauge needle that is 2 to 3 inches long.

Small Mammal Surrender Form

Date _____ Animal ID _____ Animal Name _____

Do you own this animal? Yes No

Was the animal found as a stray? Yes No

I am knowingly surrendering this animal to this Humane Society, and I certify that I am the rightful owner. Yes No

Reason for Surrender _____

I am not the owner of this animal, and the owner does/does not know I am surrendering this animal to this Humane Society.

Name of owner _____

Address _____

Telephone number _____

I have permission to surrender this animal by the owner. Yes No

Notice to Surrenderer: You are hereby transferring ownership of animal to this Humane Society. Please make sure your decision is final. If you change your mind, you will have to prepare an adoption application, and we reserve the right to approve or deny all applications if the home is deemed inappropriate. The decision is final if the animal is adopted into a new home. No information about the new owner or location will be disclosed. All records are confidential. If records are stolen or recorded in any way by means of copying, writing or other, then legal action will be taken. This Humane Society will do its best to find a suitable home for all adoptable animals. However, in the case of changing health status, behavior or temperament, overcrowding or injury/disease complications, euthanasia may become necessary. You understand this and have agreed to relinquish this animal over to this Humane Society. Animals that are deemed unadoptable will be euthanized by a simple, painless injection. This decision is irreversible. No animal will be released for vivisection, as a food source, for resale or for breeding. This Humane Society is a private nonprofit organization and relies on donations. We are dedicated to the humane and ethical treatment of all animals in our care. We appreciate all donations left on behalf of your surrendered pet and will either keep them to be used at the shelter or pass them on to the new owner at your request. We understand your concerns and will do our best to place your pet in a new, appropriate home depending on the information filled out on their application. Please make sure you understand this before signing. We thank you for your support.

Signature _____

Printed Name _____

Address _____

City _____ State _____ ZIP _____

Telephone _____ Date _____

For Office Use Only

Donation at time of surrender _____

Animal Status:

_____ Turn in

_____ Stray

_____ To be held for _____ days

_____ Date available _____

_____ Court case

_____ Other _____

_____ DOA

_____ Abandoned

_____ Neglected

_____ Abused

Shelter Employee _____

Will the animal be placed for adoption? Yes No

Euthanasia requested or necessary? Yes No

Animal:

Type _____

Name _____

Description _____ Male Female

Medical record available? Yes No

Any background information provided by owner? Yes No

Other Comments

Small Mammal Personality Profile

**adapted from form used by the MSPCA's Nevins Farm*

Date: _____

Animal Name: _____ Animal ID: _____

Where did you obtain your small mammal?

Pet Store Friend/Relative Breeder Gift Found/Stray Other

How long have you had him/her? _____

Was he/she an adult when acquired? Yes No

If you are not the original owner, why did they give him/her up?

Any previous history? _____

of previous homes? _____

Where did he/she live? Indoors Outdoors

What type of cage was he/she kept in? Wire Cage Aquarium Hutch

Habitrail No Cage Other _____ Size _____

What type of bedding was used? Cedar shavings Pine shavings Hay

None Other _____

How often did you clean the cage? _____

How often did you handle him/her? _____

How did he/she react to being handled and picked up? _____

Did he/she live with children? Yes No Age(s) _____

How did he/she react to being handled by children? _____

How would you describe his/her personality? (shy, nervous, social, active, laid back, playful)

Does he/she get along with other animals? Yes No

Describe: _____

How often does he/she spend time out of his/her cage? _____

Where does he/she spend this time? _____

Is he/she used to having nail trims? Yes No

Has he/she been seen by a vet? Yes No

Vet's Name _____

Any past or current medical problems or injuries? _____

What type of food have you been feeding him/her? _____

What type of vegetables, treats or vitamin supplements did you offer him/her?

Is he/she used to being groomed? Yes No

Does he/she bite? Yes No

Any behavioral issues? _____

Favorite toys? _____

Any interesting habits/behaviors? _____

Rabbits

Is your rabbit litter box trained? Yes No

If so, what do you use in the box? _____

Is your rabbit spayed or neutered? Yes No

Does your rabbit chew or dig? Yes No

Has your rabbit ever been protective of his/her cage? (biting, lunging, grunting, etc.)

Yes No

If so, please describe: _____

Ferrets

Is your ferret litter box trained? Yes No

If so, what do you use in the box? _____

Has your ferret been trained to walk on a leash? Yes No

Vaccines? Yes No

If yes, please explain when, where and what type: _____

RABBIT/GUINEA PIG OR "OTHER"

A# _____

P# _____

Pre-Adoption Questionnaire



Name (Last, First, Middle Initial)

Date of Application

Current Address

City

State

Zip

Rent / Own How Long?

Daytime Phone

Evening Phone

Email Address

Landlord or Apt Complex Name (Your landlord will be contacted) Daytime Phone Number

1. How did you first find out about San Diego Humane Society and SPCA?

TV Paper Website Family / Friend Radio Yellow Pages Other: _____

Please check all the appropriate boxes that apply AND provide any explanation as necessary:

2. I want this pet for: Breeder For Child First Pet Gift Family Pet
Companion for Other Pet

3. Do ALL members of household want a new pet? Yes No If no, please explain: _____

How many adults are in the household? _____ Children? _____ Children's ages: _____

Are you over 18 years of age? Yes No Are you a student? Yes No

Do any members of the household have allergies specific to animals? Yes No If yes, please explain:

Veterinarian's Name or Hospital Name

Phone Number

May we phone your veterinarian for a reference? Yes No

If not, please explain: _____

Please list your current pets residing at your home (include any other roommates' pets as well)

Breed / Type Pet's Name Age Sex Altered Owned for # yrs

Have you owned any pets in the last five years not listed as current? Yes No

If yes, please explain: _____

Can the veterinarian verify vaccination history on current or past pets? Yes No If no, please explain:

4. Have you relinquished any pets before? Yes No If yes, please explain including to whom, why and when: _____

Where would your new pet be kept when you are home? _____

Where would your new pet be kept when you are NOT home?

If kept outdoors, explain how your pet would be confined.

Total length of time? _____, Type of shelter? _____ and type of shade provided?

In a 24-hour day, how long would the pet be left alone at any given time?

< 4 hours 4-8 hours 9-12 hours > 12 hours

What equipment is needed for this particular type of pet?

Do you have the necessary equipment for this particular type of pet? Yes No If no, what time period would you require to prepare for your new pet?

Who would ultimately be responsible for the socialization and physical care of your new pet?

Remembering you are applying for a lifetime companion, are you willing to make the investment in both time and finances (up to \$500 annually) to care for and properly manage your new pet? Yes No

Would you be willing to allow a representative to make a home visit at a mutually agreed-upon time?

Yes No

If no, please explain: _____

5. Would you like to receive updated information about upcoming SDHS programs and events?

Yes No

We hope you have thoughtfully considered each of the questions asked. Once again, the adoption of a life-long animal friend should not be impulsive, but rather a carefully made decision that will ensure a loving, lasting relationship.

**Thank you for taking the time
to complete this application!**

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Notes

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